

**Parent and teacher based epidemiological
survey of psychiatric morbidity amongst
school children in Karachi, Pakistan.**

Thesis submitted for the degree of
Doctor of Philosophy (PhD)
at the University of Leicester

by
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CHILDREN THE GEMS OF A NATION.....

*All children embody a universe in themselves
Each child projects his own unique character*

*Children are the path to the fulfillment of all dreams,
Children are the embodiment of the future,
Hope their existence is not lost with the tides of time.....
All children need is love and care,*

*All children embody a universe in themselves
Each child projects his own unique character*

*Children are free from the worries of life,
Children are the future pillars of the nation,
If their foundation is build upon well,
These children will be the achievers of their time....*

*All children embody a universe in themselves
Each child projects his own unique character*

*Children are the beauty of this world of ours,
Children are the scent of life,
Hope they do not get lost in the presence of the wrong,
Children are the colour, scent and soul of the universe.*

*All children embody a universe in themselves
Each child projects his own unique character*

*Children are like the stars in the sky
The way the stars spread light in the dark skies
Don't let these stars of our life ever drown
Children have the life and light of the universe in them*

*All children embody a universe in themselves
Each child projects his own unique character*

*Children are the greatest gift from God
Children are the delicate form of Nature
Each has the matchless treasures of life in them
Children are the living proof of God's undeniable Grace*

Dedicated to all children of Pakistan

Original Urdu version by Sakina Rizivi, translated by Tahira Baig

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Sajida Hassan

ABSTRACT

According to the World Health Organisation (WHO), about 10-20% of children worldwide have mental health problems. Substantial research literature, mostly from developed and developing countries, suggests a complex socioeconomic framework of risk factors operating in multiple contexts that are central to children's lives, namely family, school, and neighbourhood. There is limited evidence on child mental health problems and associated risk factors in Pakistan.

The aim of this study was two fold, to estimate the prevalence of common psychiatric disorders as well as to determine the socioeconomic risk factors of emotional and behavioural problems among Pakistani school children.

A two-phase cross sectional survey of 5-11 year-old children attending mainstream public, private and community schools in Karachi was carried out. In the first screening phase, broad morbidity rates were measured using the Strength and Difficulties Questionnaire (SDQ). A total of 968 parents and 793 teachers participated in the study. In the second phase, 100 children were randomly selected for a detailed diagnostic interview using the Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children (K-SADS--IV-R).

Results indicated a weighted prevalence of 17% common child psychiatric disorder among primary school children in Pakistan. The pattern of psychiatric disorders found in Karachi resembled those identified in other parts of the world, with a preponderance of behavioural disorders, followed by anxiety and mood disorders. Logistic regression analysis reported that poor physical health, male gender, urban neighbourhood, head of family other than father figure, government and community school type, lower teacher's qualifications, less teaching experience, poor child school attendance and academic performance were significantly associated with likely child mental health problems in Pakistan.

This exploratory study suggests estimates of child psychiatric disorders in Pakistan are slight higher than other countries. It also highlights the importance of socio- economic determinants of child mental health problems and points out the necessity of planning and establishing service networks to meet children's mental health needs.

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LIST OF CONTENT

ABSTRACT	iii
ACKNOWLEDGEMENT	iv
LIST OF CONTENT	vi
LIST OF TABLES.....	xx
LIST OF FIGURES.....	xxiv
CHAPTER ONE	1
GLOBAL ISSUES AND PREVALENCE OF CHILD AND ADOLESCENT MENTAL HEALTH PROBLEMS	1
1.1-INTRODUCTION	1
1.1 A- Global interest in child and adolescent mental health issues	3
1.1. B- International child mental health policies	5
1.2- Epidemiology: definitions and overview of concepts.....	6
1.3- Mental health disorders in children and adolescents.....	8
1.3. I- Definitions and classification.....	8
Definitions of mental health problems and disorders.....	8
1.3. II- Classification systems.....	10
Types of classification systems	10
1.3 A- International Classification of Diseases (ICD-10)	11
1.3. B- Classification of the American Psychiatric Association (APA)	12
1.4- Prevalence of overall child and adolescent disorders in the general population.....	13

1.4 .1- Substantive findings in developed countries	14
1.4 .2- Developing countries	20
1.4.3- Comparison between epidemiological studies in developed and developing countries	26
1.5- Classification and prevalence of common child and adolescent disorders in the general population	29
1.5.1- Conduct and oppositional defiant disorders.....	31
Diagnostic characteristics and correlates.....	31
Prevalence of CD/ODD	32
1.5.2- Attention deficit-hyperactivity (ADHD)/ hyperkinetic disorders	37
Diagnostic characteristics and correlates.....	37
Prevalence of attention deficit-hyperactivity (ADHD) and hyperkinetic disorders (HD).....	38
1.5.3- Emotional disorders	41
1.5.3a- Mood disorders.....	41
Diagnostic characteristics and correlates.....	41
Prevalence of mood disorders.....	43
1.5.3b- Anxiety disorders	45
Diagnostic characteristics and correlates.....	45
Prevalence of anxiety disorders.....	47
1.6- Child mental health in Pakistan	49

CHAPTER TWO.....	52
SOCIO ECONOMIC DETERMINANTS OF CHILD MENTAL HEALTH	52
2.1-Effect of socio economic determinants on child welfare.....	52
2.2-Risk factors for child mental health	54
2.2.1-Social dimensions of child mental health.....	56
2.2.1. I- Community factors	59
2.2.1. Ia-Socio economic status	60
2.2.1. Ib-Poverty and low income	61
2.2.1. Ic- Neighbourhood.....	64
2.2.1. II-Family factors	67
2.2.1. II a-Family size	68
2.2.1. IIb- Impact of parental employment	71
2.2.1. IIb.i- Unemployment	71
2.2.1. IIb.ii - Maternal employment	72
2.2.1. IIc- Quality of parental education.....	74
2.2.1. III-School factors.....	75
2.2.1. IIIa- School climate	76
2.2.1. IIIb- Literacy and child mental health.....	79
2.3-Conclusions	80

CHAPTER THREE	82
METHODS	82
3.1-Introduction.....	82
3.2a-Research aims	82
3.2b-Research hypotheses	83
3.3-Research design.....	83
3.4-Target population and settings.....	84
3.4a-School system in Pakistan	85
I-Government schools	86
II-Private schools.....	87
III-Community (NGO) schools	88
A-Community Supported Schools Programme (CSSP)	88
B-Fellowship Schools Programme (FSP)	89
C-Home Schools Programme (HSP)	89
D-Child Development Centre (CDC).....	89
3.5-Sample	90
3.5a-Sample selection (inclusion and exclusion criteria).....	90
3.5b-Sampling strategy	91
3.6-Measures	96
3.6. I-Socio-demographic parent proforma (SDPP)	96
3.6. II-Demographic Teacher proforma (DTP)	97
3.6. III-Children's Global Assessment Scale (C-GAS)	98

III.1-Description of the instrument.....	98
III.2-Administrating and scoring the C-GAS.....	98
III.3-Validity and reliability of the C-GAS	99
III.4-Application of the C-GAS in this study.....	99
3.6. IV-Strengths and Difficulties Questionnaire (SDQ).....	100
IV.1-Description of the instrument.....	100
IV.2-Administrating and scoring the SDQ.....	100
IV.3-Validity and reliability of the SDQ	102
IV.4-Validation of the SDQ in a clinical sample in Karachi, Pakistan.....	104
IV.5- Pilot study: Association between the English and Urdu versions of the Parent SDQ.....	105
Correlation between the English and Urdu versions of the SDQ.....	106
IV.6-Use of the SDQ in this study.....	106
3.6. V.1- KIDDIE-SADS Present and Lifetime Version (K-SADS-P-IVR).....	107
V.2-Administration of the K-SADS-P-IVR	109
V.3-Scoring the K-SADS-P-IVR.....	110
V.4-Validity of the K-SADS-P-IVR	111
V.5-Reliability of the K-SADS-P-IVR	112
V.6-Training for the use and scoring of the K-SADS-P-IVR.....	113
V.7-Urdu translation of the K-SADS-P-IVR.....	114
V.7.1-Standard linguistic validation process	115

V.7.2-Recruitment and briefing of a panel of experts to assist in the translation process	115
V.7.3-Translation process.....	116
Cultural adaptation of K-SADS-IVR items	117
V.7.4-Backward translation step	119
V.7.5-Proof-reading.....	119
V.7.6-Clinician’s review	119
V.8-The use of the tool in this study.....	119
3.7-Ethical approval	120
3.8-Research procedure	122
3.8a-Stage one (screening phase)	122
3.8b-Stage two (interview phase).....	124
3.9-Data management.....	125
3.10-Statistical analysis.....	125
CHAPTER FOUR.....	128
RESULTS I (Screening phase).....	128
Strengths and Difficulties Questionnaire (SDQ)	128
parent and teacher version	128
4.1-Introduction.....	128
4.2.1-Establishing local cut-off SDQ scores	129
4.2.2-Borderline cases on the SDQ.....	132
4.2.3- Analysis of teacher SDQ scores	133

4.3-Ratings of children’s emotional and behavioural problems using the parent version of the SDQ	134
4.3.1- Characteristics of the parent sample.....	134
4.3.2- Rates and types of mental health problems according to SDQ scores (parent version)	137
4.3.3-Parent SDQ scores according to gender	138
4.3.4-Parent SDQ scores according to school type	139
4.3.5-Ordinal logistic regression analysis of demographic characteristics in relation to parent SDQ scores.....	141
Multivariable regression models	144
Regression model: Parent SDQ.....	145
4.3.6-Ordinal logistic regression analysis of demographic characteristics in relation to parent SDQ sub-scales.....	147
4.4-Ratings of children’s emotional and behavioural problems using the SDQ teacher Version.....	148
4.4.1-Characteristics of the teachers’ sample.....	148
4.4.2-Rates and types of mental health problems according to the teacher SDQ version.....	150
4.4.3-Teacher SDQ ratings according to gender	151
4.4.4-Teacher SDQ ratings according to school type	152
4.4.5-Ordinal logistic regression analysis of demographic characteristics in relation to teacher SDQ categories	154

Multivariate regression model: Teacher SDQ.....	157
4.4.6-Ordinal logistic regression analysis of demographic characteristics in relation to teacher SDQ sub-scales	159
4.5- Comparison between parents' and teachers' SDQ ratings	160
4.5.1-Correlation between parent and teacher SDQ ratings	160
4.6-Comparison of mean SDQ parent and teacher ratings in Pakistan and other countries	161
CHAPTER FIVE	164
RESULTS II (Epidemiological survey) SCHEDULE OF AFFECTIVE DISORDERS AND SCHIZOPHRENIA FOR SCHOOL AGE CHILDREN (6-18 YEARS) PRESENT STATE (K-SADS-P-IVR).....	164
5.1-What is weighting and why is it important?	164
5.2-Types of weighting techniques.....	165
5.2a-Sample design or probability weights.....	165
5.2b-Non-response weights	166
5.2c-Post-stratification weights	166
5.3-Adjusting disproportionate sampling using weighting technique.....	166
5.3a-Weighted prevalence of mental health problems in Pakistani school children.....	168
5.3b- Estimation of the prevalence of mental health problems in Pakistani school children: second approach	175
5.4a-Weighted DSM-IV prevalence of common child psychiatric disorders ..	180

5.4b-Weighted DSM-IV prevalence of common child psychiatric disorders according to gender and school type	183
5.5-Characteristics of clinical cases of common child psychiatric disorders...	185
5.5.1-Diagnosis of oppositional defiant and conduct disorder	187
Socio-demographic characteristics of children with a diagnosis of ODD/CD	187
Symptoms of oppositional defiant disorder	187
Symptoms of conduct disorder.....	188
5.5.2-Diagnosis of anxiety disorder	188
Socio demographic characteristics of children with a diagnosis of anxiety disorder	189
Symptoms of generalized anxiety disorder	189
5.5.3-Diagnosis of mood disorder.....	189
Symptoms of mood disorder.....	190
5.5.4-Diagnosis of attention deficit-hyperactivity disorder (ADHD).....	190
Socio demographic characteristics of children with a diagnosis of ADHD	190
Symptoms of ADHD	190
5.6-Comorbidity of common child psychiatric disorders	192
CHAPTER SIX	194
DISCUSSION I: METHODOLOGICAL IMPLICATION	194
6.1-Chapter outline	194
6.2-Overview of findings (SDQ and K-SADS).....	194

6.3-Variation in prevalence of disorders.....	195
6.3.1-Prevalence of conduct problems	196
6.3.2-Prevalence of anxiety and mood disorders.....	196
6.3.3-Prevalence of ADHD.....	197
6.4-Risk factors and possible mechanisms	198
Family characteristics	199
6.4.1-Gender differences.....	199
6.4.2- Head of family.....	200
6.4.3- Physical illness	202
6.4.4- Neighbourhood and communities.....	203
School characteristics.....	205
6.4.5-School type.....	205
6.4.6-School attendance	205
6.4.7-Teacher qualifications	206
6.5-Limitations.....	207
6.6-Methodological issues.....	211
6.6.1-Research design.....	211
Cross-sectional vs. longitudinal research.....	211
6.6.2-Target population and settings.....	212
6.6.3-Sampling strategy and sample selection	213
Sample size.....	213
Sampling bias	214

6.6.4-Measures	215
Screening instrument.....	215
Clinical/ diagnostic interview	216
Problems and limitations of culturally adapted instruments.....	219
6.6.5-Ethical issues	221
6.6.6-Research procedure (one / two stage design).....	223
6.6.7-Statistical analysis	225
6.7-Personal reflective account.....	226
6.7.1-Background and personal experience.....	226
6.7.2-From trainee psychologist to PhD researcher	228
6.7.3-Bringing the study to Pakistan: initial phase.....	228
Working with schools	229
Working with parents	229
Analysing the data	231
CHAPTER SEVEN	234
DISCUSSION II: POLICY AND SERVICE PLANNING.....	234
7.1-Chapter outline	234
7.2-Policy: Health, Education and Welfare	234
7.3-Services.....	239
7.3.1-Schools.....	240
7.3.2-Other frontline agencies.....	244
7.3.3-Specialist child mental health services	247

7.3.4-Care pathways.....	251
7.4-Interventions.....	255
7.4.1-School-based interventions	256
7.4.2-Staff training	258
7.5- Conclusions	261
REFERENCES.....	264
A	264
B.....	269
C.....	273
D	277
E.....	279
F	280
G	284
H.....	290
I.....	292
J.....	293
K.....	294
L.....	298
M.....	301
N	306
O	307
P.....	308

Q	311
R	311
S	316
T	324
U	326
V	326
W	328
Y	332
Z	332
APPENDIX A (Behaviour disorders)	333
APPENDIX B (ADHD)	335
APPENDIX C (Mood disorder)	336
APPENDIX D (Anxiety disorders)	337
APPENDIX E (Map of Karachi)	342
APPENDIX F (Parents demographic sheet)	343
APPENDIX G (Teachers demographic sheet)	344
APPENDIX H (C-GAS)	345
APPENDIX I (SDQ)	347
APPENDIX J (K-SADS-IV-R)	349
APPENDIX K (K-SADS-IV-R permission letter)	353
APPENDIX L (Research information)	354
APPENDIX M (Parent information letter)	355

APPENDIX N (School information letter).....	356
APPENDIX O (Consent form).....	357
APPENDIX P (Ministry of Education letter).....	358
APPENDIX Q (Published papers)	359

LIST OF TABLES

Table 1.4.1 Epidemiological studies in developed countries: Methodological characteristics and key findings.....	17
Table 1.4.1a Epidemiological studies in developed countries: Diagnostic procedures.....	18
Table 1.4.2 Epidemiological studies in developing countries: Methodological characteristics and key findings.....	23
Table 1.4.2a Epidemiological studies in developing countries: Diagnostic procedures.....	24
Table 1.5.1 Prevalence of conduct and oppositional defiant disorders in developing and developed countries.....	33
Table 1.5.2 Prevalence of ADHD/HD in developing and developed countries ..	38
Table 1.5.3a Prevalence of mood disorders in developing and developed countries	42
Table 1.5.3b Prevalence of anxiety disorders in developing and developed countries	46
Table 2.1: Risk factors for child mental health at different levels and in different settings.....	55
Table 3.1a Profile of participating schools according to gender and social class .	92
Table 3.1b: Enrolment of pupils in three school groups according to gender in Sindh, based on Household Integrated Economic Survey (HIES) 2005-06 (HIES, 2006)	92

Table 3.1c: Profile of participating pupils according to gender	92
Table 3.2 Demographic data by socioeconomic status (FBS, 2001).....	97
Table 3.3: Association between Rutter scales and SDQ scores.....	102
Table 3.4 Diagnostic categories included in the K-SADS-P-IVR.....	108
Table 3.5 Validity, sensitivity and specificity of the K-SADS.....	112
Table 3.6 K-SADS inter-rater reliability data scores	113
Table 3.7: K-SADS translation panel	116
Table 3.8: Adaptation of K-SADS-IVR items made in the Urdu version.....	118
Table 4.2: Sensitivity, Specificity, Positive Predictive Value and Negative Predictive Value	131
Table 4.2: Families' socio-demographic characteristics	135
Table 4.3: Frequency rates of mental health problems based on the SDQ for the total sample and according to gender	138
Table 4.4: Rates of mental health problems according to school type	140
Table 4.5: SDQ Mean and SD for three school groups according to parents	140
Table 4.6: Univariate ordinal regression analysis of factors associated with parent SDQ categories	143
Table 4.7: Multivariable ordinal regression analysis of association between socioeconomic factors and rates of likely child mental health problems based on parent-rated total SDQ scores	146
Table 4.8: Multivariable logistic regression of factors associated with parent SDQ sub-scales categories.....	148

Table 4.9: Teachers' characteristics	149
Table 4.10: Frequencies of mental health problems according to gender (n=793)	
Table 4.11: Frequency of mental health problems according to school type	153
Table 4.12: SDQ Mean and SD for three school groups according to teachers ...	153
Table 4.13: Univariate ordinal regression analysis for identifying factors associated with teachers' SDQ rating.....	155
Table 4.14: Multivariable ordinal regression analysis of association between socioeconomic factors and rates of likely child mental health problems based on teacher-rated total SDQ scores.....	158
Table 4.15: Multivariable logistic regression of association between demographic variables and caseness on teacher SDQ subscales	160
Table 4.16: Pearson's product correlation between parent and teacher SDQ scores	160
Table 4.17: Rates of reported mental health problems according to the SDQ	162
Table 4.18: SDQ Mean and standard deviation scores reported in different countries	163
Table 5.1: Weighted K-SADS prevalence, ignoring disproportionate SDQ 18+ sampling.....	169
Table 5.2: Disproportionate sampling of SDQ+ (18+)	170
Table 5.3 Calculation of the new population size and weights for each SDQ sub group.....	173
Table 5.4: Weighted overall prevalence of any psychiatric disorder K-SADS....	174

Table 5.5: Description of sample population for SDQ 18+ and SDQ <18 at stage one and two	177
Table 5.6: Calculation of survey weights for stage two sampling	179
Table 5.7: DSM-IV prevalence of disorders using the K-SADS diagnostic interview, with CGAS impairment	181
Table 5.8: Weighted DSM-IV prevalence rates of specific disorders according to gender and school type	184
Table 5.9: Frequencies of cases according to gender and school type.....	185

LIST OF FIGURES

Figure 2.1: Social and economic factors that influence child mental health.....	56
Figure 2.2: Influences of socio economic risk factors on children.....	58
Figure 2.3 Family stress model.....	70
Figure 3.1: School selection process.....	94
Figure 3.2 Sample selection process for first screening phase, and second phase of diagnostic interviews.....	95
Figure 4.1: ROC Curve: outcome.....	131
Figure 4.2: Frequencies of children rated as normal (non-clinical) and abnormal (within clinical range) on parent SDQ.....	137
Figure 4.3: Line graph showing percentage of SDQ (parent version) ratings according to gender.....	139
Figure 4.4: Bar graph showing percentage of SDQ (parent version) ratings according to school type.....	141
Figure 4.5: Frequencies of children rated normal and abnormal on the teacher SDQ.....	150
Figure 4.6: Line graph showing percentage of SDQ categories (teacher version) according to gender.....	152
Figure 4.7: Line graph showing percentage of SDQ categories (teacher version) according to school type.....	154
Figure 4.8: Bar graph showing percentage of SDQ ratings in Pakistan and other countries.....	162

Figure 4.9: Bar graph showing multi-informant means SDQ scores in different countries	163
Figure 5.1: Data adjusting for disproportionate sampling using two stage weighting technique	167
Figure 5.2: Pie chart displaying prevalence of psychiatric disorders in Karachi	182
Figure 5.3: Bar graph contrasting the prevalence of common psychiatric disorders in Pakistan and UK	182
Figure 5.4: Bar graph displaying DSM-IV weighted prevalence of disorders according to gender and school type	185
Figure 5.5: Bar chart displaying numbers of clinical cases according to gender	186
Figure 5.6: Bar chart displaying numbers of clinical cases according to school type.....	186
Figure 5.7: Pie chart displaying most commonly reported ODD symptoms.....	188
Figure 5.8: Pie chart displaying showing commonly reported symptoms of ADHD.....	191
Figure 5.9: Co-morbidity between the three main diagnostic groups	193
Figure 7.1: The proposed four-tier structure of CAMHS in Pakistan	248
Figure 7.2: Proposed child mental care pathway	251

CHAPTER ONE

GLOBAL ISSUES AND PREVALENCE OF CHILD AND ADOLESCENT MENTAL HEALTH PROBLEMS

1.1-INTRODUCTION

Children are the most important asset and wealth of a nation. Healthy children make a healthy nation. According to the figures provided by the World Population Prospectus, children under 15 years of age constituted about 28.3% of the world's population in 2005, which is expected to fall slightly at 26.9% by the year 2010 (WPP, 2006). The child is not a miniature, but rather an individual in his own right. Children and adolescents have to be respected as human beings with clearly defined rights. It is only in the last 30 years that children's rights have been recognized by world leading organizations.

The mission of the United Nations Children's Fund (or UNICEF) is to advocate for the protection of children's rights, to help meet their basic needs, and to expand opportunities to reach their full potential. These rights and standards that all governments should fulfil in implementing are fully articulated in the United Nations (UN) Convention on the Rights of the Child (CRC, 1989). This is universally applicable to children living in all cultures and societies, and has particular relevance to those living in conditions of adversity.

The convention spells out the basic human rights that children should have: the right to survival; develop to the fullest; protection from harmful influences, abuse and exploitation; and full participation in family, cultural and social life. Children's rights are protected by setting standards in health care; education; legal, civil and social services.

These rights have been reinforced by all subsequent UN reports and conferences for children. "The State of the World's Children 2000: A vision for the 21st century" (UNICEF, 2000), the "Millennium Development Goals" (MDGs) (UN, 2000; 2007), and the annually published "The State of World's Children" report have all highlighted demand to meet basic needs of children all over the world, regardless of race, colour, gender, language, religion, opinions, origins, wealth, birth status or ability, therefore apply to every human being. Their vision is that all children should live a full and healthy life, with rights secured and protected. Their commitment is that all infants start life healthy; young children are nurtured in caring environments; children, including the poorest and most disadvantaged, complete basic education of good quality; and that adolescent have the opportunities to develop fully and participate in their communities.

Over time, progress has been achieved in the eradication of infectious diseases, improvement of nutritional status, and health education in many regions. This change has enabled societies to consider the child mental health as a priority. Most nations and leading organizations acknowledge that a child's physical health can be affected by traumas, genetic disturbances, toxins and illness. However, only recently it has been understood that these same stressors can affect mental health, and have long-lasting repercussions. When risk factors and vulnerabilities outweigh or overcome factors that are protective or that increase resilience, mental health problems can occur. Child and adolescent mental health problems manifest themselves in many domains and in different ways. It is now well established that mental health problems at a young age can lead to continuing impairment in adult life.

1.1 A- Global interest in child and adolescent mental health issues

In 2003, WHO published its report entitled "Caring for children and adolescents with mental disorders". This report pointed out that the *"Lack of attention to the mental health of children and adolescents may lead to mental disorders with lifelong consequences, undermines compliance with health regimens, and reduces the capacity of societies to be safe and productive"* (WHO, 2003a, p6). World-wide 10-15%, even up to 20% of children and adolescents, suffer from mental health problems (WHR, 2000). Suicide is the third leading cause of death among adolescents (WHR, 2001). Depression often has an onset in adolescence, across diverse countries, and is

associated with substantial psychosocial impairment and risk of suicide (Weissman, 1998).

The WHO report was instrumental in integrating child and adolescent mental health as an essential component of overall health and growth. Recent world events have also heightened an interest in the mental health of youth. Unfortunately, too often this is due to concerns about the mental health consequences of war prolonged conflict, natural disasters, AIDS, and substance abuse. Special populations of repatriated child soldiers and street children are a vivid reminder of the many children who have been deprived of an environment that could support healthy development. Furthermore, there is an increased understanding that children who are not mentally healthy can have an adverse impact on the stability and economic viability of societies (Hsu et al, 2002; Thabet et al, 2002; Vostanis, 2002; Clark, 2003; Amina et al, 2007).

Children and adolescents with positive mental health are able to achieve and maintain optimal psychological and social functioning and well-being. They have a sense of identity and self worth, sound family and peer relationships, an ability to be productive and to learn, and a capacity to tackle developmental challenges and use cultural resources to maximize growth (Young Minds Report, 2008). Moreover, children's mental health is crucial for their active social and economic participation. For example, Scott (2001) demonstrated increased costs to society for

children with conduct disorders. In view of these needs, there has been a global requirement to set out clearly defined policies for child mental health and well being, which would be beneficial to the individual, as well as to society at large.

1.1. B- International child mental health policies

In 2005, WHO published the “Guidelines for Child and Adolescent Mental Health Policy and Plans”. This report quoted:

“Children are our future. Through well conceived policy and planning, governments can promote their mental health, for the benefit of the child, the family, the community and society” (p,vii).

One survey revealed that no country in the world has a clearly defined mental health policy pertaining uniquely to children and adolescents (Shatkin & Belfer, 2004). However, 34 countries (7% of countries worldwide) were found to have identifiable mental health policies, which may have some beneficial impact on children and adolescents. The absence of clearly defined policies is unfortunate, as these are essential for service planning and development.

A series of steps are involved in the development of a child mental health policy. These steps include establishing information and data for policy development; gathering evidence for effective strategies; consultation and negotiation; exchange with other countries; determining the vision, values, principles and objectives of

the policy; determining the areas for action; and identifying the major roles and responsibilities of different stakeholders and sectors (Belfer et al, 2009).

The first and most essential step in the development of a child mental health policy is to conduct a 'needs assessment' which answers the critical question: "What are the characteristic features of the population"? This requires an understanding of the prevalence of mental health problems in childhood and young life. In this thesis, I begin by examining epidemiological evidence of the prevalence of mental health problems, both in developing and developed countries, with particular focus on the prevalence and correlates of common mental health problems and disorders across different socio-cultural environments (WHO, 2005).

1.2- Epidemiology: definitions and overview of concepts

Epidemiology can be defined as "the study of the distribution and determinants of health related states or events in specified populations, and the application of this study to the control of health problems" (Last, 2001, p.196). *Prevalence* is one of the most used measures of disease frequency.

Point prevalence (P) is defined as the proportion of persons in a defined population that have the disease under study at a defined time period. It provides an estimate of the probability (risk) that an individual will be ill at a point in time (Hennekens & Buring, 1987).

Period prevalence is similar, except that it covers a specified period rather than one point in time. Diagnostic psychiatric classifications such as the DSM-IV and the ICD-10 often include the presence of symptoms for a minimum length of time (three months). For this reason, it can be difficult to differentiate between *point* and *period prevalence*; hence most studies refer simply to prevalence.

$$P = \frac{\text{number of existing cases of disease} \quad X \quad \text{at a given point or period in time}}{\text{total population}}$$

The main focus of child psychiatric epidemiology is establishing the number of children in the general population who are in need of assessment and treatment. Its principal goals include the determination of the rates and the distribution of child psychopathology. Epidemiological data provides valid information on prevalence and associated risk factors of presumed causal importance, allowing aetiological hypotheses to be generated. It also provides a scientific basis for prevention and development of appropriate mental health services (Bird, 1996; Jenkins, 2003). Evidence on rates of mental health disorders can be essential in informing politicians, policy makers and fellow professionals on important public health issues. These studies can also indicate service priorities in a given region or country. Epidemiological information will establish the main disorders in a given locality, and the major risk factors. This knowledge can consequently indicate the necessary resources and professional skills needed. It can also help to prioritize high-risk groups (Rahman et al, 2000).

The appropriate planning of mental health services will have long-term effects on public issues such as crime, drug abuse and adult mental health, which will impact on future generations. The overall benefits are economic as well as human, given that epidemiological information will help to maximize human and financial resources and to reduce future costs on the consequences of untreated disorders in childhood (Belfer, 2006; Eisenberg et al, 2009).

1.3- Mental health disorders in children and adolescents

The literature review of mental health disorders among children and adolescences is structured in sections that include definitions and classification; the overall prevalence of disorders in developing and developed countries; and the literature on the prevalence of common disorders. The last section of this chapter particularly considers child mental health issues in Pakistan, where this study was conducted.

1.3. I- Definitions and classification

Definitions of mental health problems and disorders

The terms *mental health problems* and *psychiatric disorders* are used synonymously by professionals in day to day practice. Although both terms describe difficulties that need to be addressed by mental health professionals, there are important differences between the two concepts, which require different interventions. In

order to define *mental health problems* and *psychiatric disorders*, it is first necessary to define *mental health*.

Different cultures have varying views on what they perceive as positive mental health in children. In general, children who are *mentally healthy* have the ability to:

- Develop psychologically, emotionally, intellectually and spiritually.
- Develop and sustain mutually satisfying personal relationships.
- Use and enjoy solitude.
- Become aware of others and empathise with them.
- Play and learn.
- Develop a sense of right and wrong, and
- Face problems and setbacks, and learn from them in ways which are appropriate to that child's age (Mental Health Foundation, 1999).

The Department of Health (DoH) (2000) suggested that 'mental health problems in children and young people are broadly defined as disorders of emotions, behaviour or social relationships sufficiently marked or prolonged to cause suffering or risk to optimal development in the child, or distress or disturbance in the family or community' (DoH, 2000, p.25).

The term *mental health problems*, is therefore used to describe a broad range of emotional and/or behavioural difficulties which may cause concern or distress. They are relatively common and encompass *mental disorders*, which are more severe and or persistent (NHS Health Advisory Services, 1995).

The term *disorder* implies the existence of a clinically recognizable set of symptoms or behaviours associated in most cases with distress and with interference in personal functioning. Social deviance or conflicts alone, without personal dysfunction, should not be included in mental disorders (WHO, 1992; NHS Health Advisory Service, 1995). As mentioned above, the terms *psychiatric* and *mental disorders* are used synonymously in the literature. In this thesis I will be using the term *psychiatric disorders*.

1.3. II- Classification systems

Types of classification systems

Classification constitutes a means of ordering information, grouping phenomena and providing a language by which to communicate with other people (Harrington, 2005; Rutter et al, 1975a). It is widely agreed that the diagnostic criteria used to classify disease should, whenever possible, be based on aetiology. In child psychopathology this is not always possible, as there are a large number of psychiatric disorders with unknown aetiology. However, as our understanding of illness increases, diagnostic criteria will evolve and be regularly updated.

Presently, the two major classification systems for child psychiatric disorders are briefly described next.

1.3 A- International Classification of Diseases (ICD-10)

In the late 1960s, the World Health Organization (WHO) persuaded most countries to develop an international classification of diseases. In 1967, the International Classification of Diseases 8th version (ICD-8) (WHO, 1967) was formed and came into use in 1969. This version was replaced in 1978 by the ninth version (ICD-9) (WHO, 1978). A multi - axial system was developed to formulate a comprehensive assessment of psychosocial difficulties (Rutter et al, 1975b); this led to the creation of ICD-10 (WHO, 1992) which remains in use today and includes the following five axes:

Axis I: Clinical psychiatric syndrome

Axis II: Specific delay in development

Axis III: Intellectual capacity

Axis IV: Medical condition

Axis V: Abnormal social situation, including

- Abnormal interfamilial relationship
- Familial mental disorder or handicap
- Inadequate or distorted interfamilial communication
- Abnormal qualities of upbringing
- Abnormal immediate environment

- Acute life events
- Social stressors (Cantwell & Ruttter, 1994; WHO, 1992)

1.3. B- Classification of the American Psychiatric Association (APA)

The first edition of the American Psychiatric Association (APA) Diagnostic and Statistical Manual of mental disorders (DSM-I) was published in 1952. The third edition (DSM-III) published in 1980 was radically different to the previous classification systems, as it was multi-axial (APA, 1980). In 1987, the DSM-III was replaced by an extensive revision the DSM-III-R.

Although the two main bodies in charge of developing classification systems, i.e. the WHO and the APA, joined forces to produce a new worldwide classification, this did not come to fruition, and the APA subsequently developed the DSM-IV in 1994. Despite the lack of a single classification system, the consultation between the developers of DSM-IV and ICD-10 increased the congruence of the two systems. The DSM-IV has axes for:

Axis I: Clinical syndrome

Axis II: Lifelong disorders or handicaps such as personality disorders and specific developmental disorders

Axis III: Associated physical conditions

Axis IV: Severity of psychosocial stressors

Axis V: Highest level of social and occupational functioning in the past year

(Kendell, 1991; APA, 1994)

Although the diagnostic schemes differ in certain ways, their broad classifications are similar (Cox, 2000). Most children with mental health problems have associated difficulties such as medical conditions, developmental delays, and adverse psychosocial situations. A multi-axial formulation, therefore, enables to take all these factors into account while establishing a diagnosis. The ICD-10 has a specific multi-axial framework for psychiatric disorders in childhood and adolescence (World Health Organization, 1994). The DSM-IV uses a somewhat different multi-axial framework across the age span. Currently the ICD-10 and the DSM-IV have few categories of emotional disorders specific to childhood, and these are mostly subtypes of anxiety. The ICD also has a mixed category of emotional and conduct disorders. Mood disorders are diagnosed according to adult criteria in both schemes. The ICD-10 has a higher threshold (more severe symptoms) for hyperkinetic disorders, compared to the DSM definition of ADHD.

1.4- Prevalence of overall child and adolescent disorders in the general population

Over the years, a number of studies have been conducted on the prevalence of child psychiatric disorders in both developed and developing countries. There is, however, a wide variation in these studies on methodological issues such as sample size, sampling framework, age, instruments used and diagnostic criteria to define 'caseness'. Studies also differ in their reporting style; some provide separate prevalence rates based on parent, child and combined reports (Shaffer et al, 1996),

while more recent and methodologically sound studies are based on corroborated information from multi-informants, including parents, teachers and children themselves (Green et al, 2005). Other studies provide prevalence rates with and without impairment. These differences make the comparison of findings difficult.

In order to establish similarities and differences amongst the various studies, I will now describe in detail the overall prevalence of child and adolescent disorders in the general population for developing and developed countries. A number of studies provided an overall prevalence rate, as well as prevalence of specific disorders; others used a similar methodology, but only reported the overall prevalence of disorders, without providing breakdown of diagnoses. Research findings are discussed below in the context of developed and developing countries, followed by an integrated section.

1.4 .1- Substantive findings in developed countries

Table 1.4.1 includes the major epidemiological studies of child psychiatric disorders in the general population in developed countries. The next table 1.4.1a summarizes the diagnostic procedures of these studies. The variation in prevalence rates is due to a number of reasons, including case definition and case finding methods used, the age group under study, and sampling techniques applied (Goodman & Scott, 2005).

The most influential epidemiological research consisted of the Isle of Wight (IOW) studies in the UK (Rutter et al, 1970; 1975 a,b,c). The IOW studies began in 1964-65 with a series of surveys of learning, psychiatric and physical disorders in 3,500, 9 to 11-year-old children. Approximately 7% of the children were found to have psychiatric disorders of sufficient severity to require clinical assessment and treatment. Although the IOW studies were of enormous historical and research importance, they had some methodological limitations, particularly the lack of diagnostic criteria, which should be considered when interpreting the findings. Later studies adopted either DSM or ICD criteria.

Ten years after the IOW surveys, two large studies in New Zealand and Canada found a higher prevalence of DSM-III child psychiatric disorders than previously reported. Both studies used a one-phase design; however, the New Zealand (Anderson et al, 1987) study was restricted to 11-year-old children and a much smaller sample size, compared to the wider age range of 4-16 year-olds and larger sample size of the Canadian study (Offord et al, 1987).

The variation in prevalence, where impairment criteria were taken into account, is clearly noted in the later studies. Fombonne's (1994) study of French school children found a relatively lower prevalence rate, with impairment criteria; this study was based on a large sample of school children using a two-stage design. Similarly, two studies were carried out on separate locations in the USA. The first

study, known as the MECA study (Shaffer et al, 1996), provided prevalence rates with and without varied impairment levels. The second study, widely known as the Virginia twin study (Simonoff et al, 1997), was based on a school sample of twins aged 8-18 years and used a one-stage design. Like previous studies, prevalence rates varied due to the associated impairment criteria.

In 1999, the Great Britain Office of National Statistics (ONS, 1999) conducted a survey of more than 10,000 children using the Strengths and Difficulties Questionnaire (SDQ) and the Development and Well-Being Assessment (DAWBA). This study reported prevalence rates using both ICD-10 and DSM-IV criteria. The survey was replicated with similar findings (Green et al, 2005), since then a number of studies in developing and developed countries have followed a similar methodology. For example, a study in Russia used the same measures as the British survey but found a 70% higher prevalence of disorders (Slobodskaya et al, 2005). The authors attributed this to higher deprivation factors in the child's immediate environment amongst Russian children compared to their British counterparts. In contrast, a Norwegian study with similar methodology found a low prevalence rate of 6.1%. It must also be noted that, although both studies were based on school samples, the Russian study had a much smaller sample size and selected 7-14 year olds, whereas the Norwegian study covered a larger sample size but was restricted to 8-10 year-old children (Heierrang et al, 2007).

Table 1.4.1 Epidemiological studies in developed countries: Methodological characteristics and key findings

Study	Setting	Sampling frame	Design	phase	Sample size	Age Range	Response Rate	Prevalence
Rutter et al, 1970	UK	School (not private)	1 st phase birth cohorts 2 nd phase: screen +/-	Two-phase	2193 286*	10 to 11	88%	7%
Rutter et al, 1975	UK	School	1 st phase: birth cohort 2 nd phase: screen +/-	Two-phase	ILB 1689/322* IOW 1279/136	10	92%	ILB 25% ILO 12%
Anderson et al, 1987	New Zealand	Birth register	Birth cohort	One-phase	792	11	86%	18%
Offord et al, 1989	Canada	Census	Stratified clustered	One-phase	3294	4 to 16	91%	18%
Fombonne et al, 1994	France	School	1 st phase. Random 2 nd phase screen +/-	Two-phase	2441 347*	8 to 11	88%	12%, 5.9%**
Costello et al, 1996	US	School	Stratified, clustered	Two-phase	4067 1015*	9, 11, 13	96% 80%	20%
Shaffer et al, 1996	US	Household	Random	One-phase	1285	9 to 17	84%	32.5%,11.5%**
Simonoff et al, 1997	US	School and volunteers	Random	One-phase	2762	8 to 18 (twins)	75%	14%
Verhulst et al, 1997	Netherlands	Household	Stratified, clustered	Two-phase	2709 780*	13 to 18	82%	22%
Meltzer et al, 2000	UK	Child benefit register	Stratified, clustered	One-phase	10,438	5 to 15	83%	9.5% (ICD), 9.4% (DSM)
Costello et al, 2003	US	Household	Random	One-phase	1420	9 to 16	81%	13.3%
Green et al, 2005	UK	Child benefit register	Stratified, clustered	One-phase	7,977	5 to 16	97%	9.6%
Slobodskaya et al, 2005	Russia	School	Random	Two-phase	448, 172*	7 to 14	83%	15.3%
Bilenberg et al, 2005	Denmark	School	Stratified, clustered	Two-phase	621, 135*	8 to 9	Not known	10.1%
Heierrang et al,2007	Norway	School	Random	Two-phase	9430, 1,011*	8 to 10	97%	6% (ICD), 6.1% (DSM)

*Second phase **with impairment criteria

Table 1.4.1a Epidemiological studies in developed countries: Diagnostic procedures

Study	Measure	Diagnostic system	Impairment criteria	Informants
Rutter et al, 1970	Rutter scales Isle of Wight interview	Rutter, 1965	Disability, distress	P/T//C
Rutter et al, 1975	Rutter scales Isle of Wight interview	Rutter, 1965	Disability, distress	P/T
Verhulst et al, 1985	CBCL; TRF CAS; Psychiatric interview	DSM III	Not known	P/T/C
Anderson et al, 1987	DISC Rutter scales	DSM III	Not known	P/T/C
Offord et al, 1987	Questionnaire (adapted CBCL) Clinical interview	DSM III Rutter et al, 1968	Rutter et al, 1968	P/T/C
Fombonne et al, 1994	Rutter teacher scale CBCL; Interview with parents	ICD 9	CGAS	P/T
Costello et al, 1996	CBCL CAPA	DSM III-R	Children and Adolescent Burden Assessment	P/C
Shaffer et al, 1996	DISC	DSM III-R	Included in DISC; CGAS; Columbia impairment scale	P/C
Simonoff et al, 1997	CAPA	DSM III-R ICD 10	Psychosocial impairment scale	P/T/C
Verhulst et al, 1997	CBCL, DISC	DSM III-R	CGAS	P/T/C
Meltzer et al, 2000	SDQ DAWBA	ICD 10, DSM-IV	Included in SDQ and DAWBA	P/T/C
Costello et al, 2003	CBCL CAPA	DSM-IV	Children and Adolescent Burden Assessment	P/C
Green et al, 2005	SDQ DAWBA	ICD 10	Included in SDQ and DAWBA	P/T/C
Slobodskaya et al, 2005	SDQ	ICD 10	Included in SDQ and DAWBA	P/T/C

	DAWBA			
Bilenberg et al, 2005	CBCL K-SADS	DSM-IV	CGAS	P/T
Heierrang et al, 2007	SDQ DAWBA	ICD-10, DSM-IV	Included in SDQ and DAWBA	P/T/C

P: Parents; C: Child; T: Teacher

CAPA: Child and Adolescence Psychiatric Assessment (Angold et al, 1995)

CAS: Child Assessment Scale (Hodges et al, 1982)

CBCL: Child Behavior Checklist (Achenbach et al, 1983; Achenbach, 1991)

CBQ: Child Behavior Questionnaire (Rothbart, et al, 2001)

CGAS: Children's Global Assessment Scale (Shafer et al, 1983)

DAWBA: Development and Well-Being Assessment (Goodman et al, 2000a)

DISC: Diagnostic Interview Schedule for Children (Shaffer et al, 1996; 2000)

K-SADS-P: Schedule for Affective Disorders and Schizophrenia, present episode, child's version (Chambers et al, 1985, Ambrosini et al, 1996)

SDQ: Strengths and Difficulties Questionnaire (Goodman, 1997; 2001)

TRF: Teacher's Report Form (Achenbach, 1991)

1.4 .2- Developing countries

The high prevalence of psychiatric disorders in children and adolescent is not exclusive to Western societies. The range of disorders in developing countries is not dissimilar from that in the west, and includes the same broad categories of emotional disorders (anxiety, depression, and phobias), behavioural disorders (conduct, hyperkinetic), learning disabilities, and pervasive developmental disorders (autism, Asperger's syndrome). Neuropsychiatric disorders such as epilepsy are also prominent. Table 1.4.2 provides a list of the major epidemiological studies in the developing world, with a summary of their diagnostic procedures.

Although the importance of early detection has been recognized worldwide, until recently there was little systematic research on child psychiatric disorders in developing countries (Rahman, 2000). Unlike studies in the western world, earlier child epidemiological surveys in developing countries from the mid 70's to mid 80's used clinical interviews to reach a psychiatric diagnosis. In 1988, Bird carried out a household survey of children in Puerto Rico using instruments widely used in developed countries, and reported prevalence rates based on impairment criteria. Similar to studies in western countries, prevalence rates varied widely when impairment levels were considered. The same was true for later studies that also showed wide variation in prevalence with and without impairment (Hackett et al, 1999; Eapen et al, 2003).

Two studies by the same research team (Eapen et al, 1998 & 2003) were carried out in separate localities in the United Arab Emirates. The substantial variation in prevalence rates could be due to differences between the sampling frameworks, as well as the inclusion of impairment criteria in the later study.

Since the mid 2000's, a number of studies have been carried out in developing countries, which used instruments and methodologies similar to those of western countries. Overall, most studies from developing countries reported high prevalence rates than those in western countries. These include research from Brazil (Fleitlich et al, 2004), Yemen (Alyahri et al, 2005), India (Sirnath et al, 2005), Bangladesh (Mullick et al, 2005), Puerto Rico (Canino et al, 2004), Ethiopia (Fekadu et al, 2006) and Mexico (Benjet et al, 2009). However, there have been some exceptions to this pattern. For example, the Brazilian Ilhade Mare study (Des Santos et al, 2005) carried out a household survey in rural settings using the same tools as the British study, but reported a much lower prevalence rate of 7% for DSM-IV based psychiatric disorders. The authors of this study pointed out that the low rates could indicate that rural settings are better suited for children, as it allows them to express their behaviour freely. It is important to bear in mind that rural settings have more extensive supportive networks and low levels of danger compared to urban areas. However, the authors also cautioned that parents in rural areas may have under reported symptoms and impairment functioning due to lack of exposure and information (Mullick et al, 2005).

Interestingly, an Indian study of adolescents using a one-stage design provided the lowest prevalence of only 1.8%. This study was limited to 12-16 year-olds, and data was collected from schools as well as by a door-to-door survey. Although studies have suggested that adolescents normally display higher rates of psychiatric disorders, the authors of this study concluded that strong family support was a critical factor associated with this low prevalence rate (Pillai et al, 2008).

Table 1.4.2 Epidemiological studies in developing countries: Methodological characteristics and key findings

Study	Setting	Sampling frame	Design	Phases	Sample size	Age	Response rate	prevalence
Lal et al, 1977	India	Household	Clustered	Two-phase	272	0 to 12	100%	5.6%
Giel et al, 1981	Colombia India Sudan Philippines	Primary care	Clustered	Two-phase	286/117* 151/39* 250/27* 238/68*	5 to 15	>99%	Colombia 29% India 22% Sudan 10% Philippines 15%
Almeida-Filho, 1984	Brazil	Household	Clustered	Two-phase	828 / not known	5 to 14	Not known	3%
Bird et al, 1988	Puerto Rico	Household	Clustered	Two-phase	777 / 386*	4 to 16	92%, 88%*	9%, 18%**
Hackett et al, 1999	India	Household	Clustered	Two-phase	1403/426*	8 to 12	100%	9.4%, 5%**
Eapen et al, 2003	UAE	School	Random	Two-phase	3278/199*	6 to 15	79%	10.4%
Eapen et al, 2003	UAE	Household	Random	Two-phase	620/ 385*	6-18	86%.	22.2%, 14.3%**
Des Santos et al, 2005	Brazil	Household	Random	Two-phase	519/100*	5-14	100%	7.0%
Fleitlich et al, 2004	Brazil	School children	Stratified Random	Two-phase	1,251/100*	7-14	83%	12.4%
Canino et al, 2004	Puerto Rico	Household	Cluster Random	One-phase	1,886	4-17	90.1%	19.8%, 16.4%**
Mullick et al, 2005	Bangladesh	Community	Random	Two-phase	922/208*	5-10	75%	15%
Sirnath et al, 2005	India	Community	Random	Two-phase	2,064/505*	0-16	100%, 88.3%*	12.5%, 5.3%**
Alyahri et al, 2005	Yemen	School	Random	Two-phase	1,210/262*	7-10	Not known	15.7%
Fekadu et al 2006	Ethiopia	Child labour/ school	Random	One-phase	528	5-15	Not known	12.5% , 20.1% (CL)
Pillai et al, 2008	India	Door to door/School	Clustered	One-phase	2048	12-16	91.1%	1.81%
Benjet et al, 2009	Mexico	Household	Random	Two-phase	3005	12-17	71%	8.5%

*Second phase **with impairment criteria, CL: child labour

Table 1.4.2a Epidemiological studies in developing countries: Diagnostic procedures

Study	Measure	Diagnostic system	Impairment criteria	Informants
Lal et al, 1977	Clinical interview	Not known	Not known	P/C
Giel et al, 1981	Reporting Questionnaire for Children E12 semi-structured psychiatric interview	Rutter et al, 1975	Not known	P/C
Almeida-Fiho, 1984	Questionario de Mobidade Psiquiatric Infantil Open psychiatric interview	Rutter et al, 1969	Not known	P
Bird et al, 1988	CBCL DISC + clinical judgment	DSM- III	GCAS	P/T/C
Kasmini et al, 1993	RQC FIC	Rutter et al, 1975	Not known	P/C
Gureje et al, 1994	Rutter's scale; K-SADS	DSM- III-R	CGAS	P/C
Hackett et al, 1999	Rutter's scale Rutter's interviews	ICD 10	Child's performance in tasks Chedoke-McMaster (adapted)	P/T
Eapen et al, 1998	RQC, PRQ, Rutter's scale K-SADS	DSM-IV	Not known	P/C
Eapen et al, 2003	Rutter's scale K-SADS	DSM-IV	GCAS	P/C
Des Santos et al, 2005	SDQ DAWBA	DSM-IV	Included in SDQ and DAWBA	P/T/C
Fleitlich et al, 2004	DAWBA	DSM-IV	Included in DAWBA	P/T/C
Canino et al, 2004	CBCL DISC + clinical judgment	DSM-IV	GCAS	P/C
Mullick et al, 2005	SDQ DAWBA	ICD-10	Included in SDQ and DAWBA	P/T
Sirnath et al, 2005	CBCL, CBQ, DISC, PIS, VSMS	ICD-10	CGAS	P

Alyahri et al, 2005	SDQ, DAWBA	DSM-IV	Included in SDQ and DAWBA	P/T
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Fekadu et al, 2006	DICA	DSM-III R	Not known	C
Pillai et al, 2008	DAWBA	DSM-IV	Included in DAWBA	C
Benjet et al, 2009	CIDI-A	DSM-IV	SDS	C

P: Parents; C: Child; T: Teacher

CAPA: Child and Adolescence Psychiatric Assessment (Angold et al, 1995)

CAS: Child Assessment Scale (Hodges et al, 1982)

CBCL: Child Behavior Checklist (Achenbach et al, 1983; Achenbach, 1991)

CBQ: Child Behavior Questionnaire (Rothbart, et al, 2001)

CGAS: Children's Global Assessment Scale (Shafer et al, 1983)

CIDI-A: Composite International Diagnostic Interview- Adolescent version (Kessler & Ustun, 2004)

DAWBA: Development and Well-Being Assessment (Goodman et al, 2000a)

DISC: Diagnostic Interview Schedule for Children (Shaffer et al, 1996; 2000)

DICA: Diagnostic Interview for Children and Adolescents (Reich et al, 1991)

K-SADS-P: Schedule for Affective Disorders and Schizophrenia, present episode, Child's version (Ambrosini et al, 1996; Chambers et al, 1985)

RQC: Reporting Questionnaire for Children (WHO; Giel et al, 1981)

SDQ: Strengths and Difficulties Questionnaire (Goodman, 1997; 2001)

SDS: Sheehan Disability Scales (Sheehan et al, 1996)

TRF: Teacher's Report Form (Achenbach, 1991)

VSMS: Vineland Social Maturity Scale (Sparrow et al, 1984).

1.4.3- Comparison between epidemiological studies in developed and developing countries

As discussed earlier, in the last few years a number of studies in developing countries (e.g. Brazil, Puerto Rico, India, Bangladesh, Al-Ain, Yemen, Mexico) have adopted similar methods to those used in developed countries, with large and representative samples, and widely established and standardized measures. This enables cross cultural comparisons, and the identification of both the common and distinguishing features of these studies.

The most common sampling frame in developed countries was through birth registers and schools. Samples sizes were considerably large, with several including more than 2,000 subjects, and the largest consisting of 10,500 children in the UK. Earlier studies in developing countries mainly used household samples; however, more recent studies used school samples. The average sample size has gradually increased. It has been noted that, although a household sample is the most representative, therefore the preferred option, it is very costly, as it involves a significant amount of human as well as financial resources. School based samples are gaining popularity in developing countries, despite their limitation of including only school attending children, therefore, potentially excluding those most at risk. However, studies in developing countries that used

schools were able to collect data from larger samples due to the ease of assessing children, compared to the much smaller household samples.

Earlier studies used a range of instruments. Rating scales used in the first (screening phase) included the Rutter parent and teacher scales, the Child Assessment Scale (CAS), and the Teacher's Report Form (TRF). During the last decade, the Child Behavior Checklist (CBCL) (Achenbach, 1983) and the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1999) have replaced the Rutter scales in most countries (CBCL in North American studies and SDQ in Europe). However, some developing countries still use the Rutter scales. The Diagnostic Interview Schedule for Children (DISC) (Shaffer et al, 1996) and the Child and Adolescent Psychiatric Assessment (CAPA) (Angold, 1995) were previously the most popular diagnostic tools, while recent studies mainly used the Schedule for Affective Disorders and Schizophrenia (K-SADS) (Ambrosini, 1996) or the Development and Well-Being Assessment (DAWBA) (Goodman, 1999). Most studies in both developed and developing countries adopted DSM-III-R, DSM-IV or ICD-10 criteria, usually with associated impairment scores. In earlier studies, the C-GAS was frequently used to measure impairment. New measures such as the SDQ and the DAWBA have incorporated impairment criteria in their structure.

Interestingly, higher participation rates were noted in developing countries despite, or perhaps because the population in these countries is not used to taking part in surveys, and thus questionnaires are not posted. Also in most developing countries there are no research ethics committees; hence researchers normally collect data directly from participants. Comparatively the low participation rates in developed countries may be due to the fact that the participants have the right to 'opt out' of research; hence the researchers might be losing out on a substantial number of subjects who might have agreed to participate with some prompting. Prevalence rates vary, with the highest rates mostly in studies that did not include impairment criteria. Overall, although fewer in number, there are some sound epidemiological studies in developing countries, indicating that these are feasible and potentially worthwhile, and highlighting the need to carry out similar studies in other regions.

The previous sections considered the overall prevalence of child psychiatric disorders in the general population in both developing and developed countries. As there is substantial variation in the specific rates of most common disorders within and across regions, I will now discuss such findings on the broad categories of common disorders. These include behavioural or externalizing (ADHD and conduct) disorders, and emotional or internalizing (anxiety and mood) disorders. The section below discusses the diagnostic characteristics, correlates and prevalence rates of common disorders.

1.5- Classification and prevalence of common child and adolescent disorders in the general population

In order to establish trends of common child and adolescent disorders, I have selected major epidemiological studies carried out globally in the last fifteen years. The main methodological features of these studies were discussed in the previous section.

Two important studies were conducted in the United States in 1996. The Great Smoky Mountain study (Costello et al, 1996) was designed to establish children's mental health needs, and use of mental health services in south eastern US, while the MECA study (Shaffer et al, 1996) was based on four US geographical areas. A year later, another major study was conducted in another US location. The Virginia twin study of adolescent behaviour development (Simonoff et al, 1997) used a genetic twin design, to investigate the onset and prognosis of child psychiatric disorders. I further selected two major British epidemiological studies conducted in the last decade. The Great Britain Office of National Statistics (ONS, 1999) and its replicated survey five years later (Green et al, 2005) used the DAWBA diagnostic interview, a relatively new instrument based on the ICD-10 classification system.

As mentioned earlier, in the last few years a number of large scale epidemiological studies have been carried out in developing countries. In Brazil, two studies conducted in separate locations used the same tools as the British ONS survey, but their findings differed. The Taubate study (Fleitlich & Goodman, 2004) was carried out in urban settings, compared to the Ilhade Mare (Des Santos et al, 2005) which was conducted with rural children. The authors suggested that the lower prevalence rates in rural settings could be due to the under reporting of symptoms and the impact of symptoms on functioning. In Bangladesh, a two-phase study selected samples from three areas (urban, rural and slums) (Mullick et al, 2005). Epidemiological studies have also been conducted in two centres, Bangalore and Lucknow, in India (Srinath et al, 2005), as well as Yeman (Alyahri et al, 2005), Russia (Slobodskaya et al, 2005), Puerto Rico (Canino et al, 2004), Ethiopia (Fekadu et al, 2006), Norway (Heierrang et al, 2007), and more recently in Goa, India (Pillai et al, 2008) and Mexico (Benjet et al, 2009). The next section discusses the characteristics and diagnostic criteria of the most common disorders, as well as their specific prevalence rates. I have also highlighted the major reasons for the similarities and differences in the reported prevalence. As discussed earlier, tables 14.1 and 14.2 presents the methodological features and key findings and tables 14.1a and 14.2a provide a summary of the diagnostic criteria, instruments, classification system and type of informants for the studies under consideration. All these factors can influence the prevalence rates of common disorders.

1.5.1- Conduct and oppositional defiant disorders

Diagnostic characteristics and correlates

Children are diagnosed with oppositional defiant disorder (ODD) when they ignore or defy adults' requests and rules. They may be passive, finding ways to annoy others, or active, through verbal or physical behaviour. They tend to blame others for their mistakes and difficulties. They are different from children with conduct disorders in that they do not violate the rights of others. Oppositional defiant disorder may be a precursor of conduct disorder.

Children with conduct disorders display a repetitive and persistent pattern of behaviour, in which the basic rights of others or major age-appropriate societal norms are violated. These behaviours include aggression that causes or threatens physical harm to other people or animals, non-aggressive conduct that causes property loss or damage, deceitfulness or theft, and serious violations of rules. The onset is before the age of 18 years (for the full diagnostic criteria of oppositional defiant and conduct disorder see Appendix A).

Prevalence of CD/ODD

Most epidemiological studies have identified ODD, as the most prevalent externalizing disorders encountered during childhood. The variation in the prevalence of oppositional defiant and conduct disorders in some studies can be explained by the different classification systems and the different diagnostic tools. These research tools include: the Child Behaviour Checklist (CBCL), the Strengths and Difficulties Questionnaire (SDQ) and semi-structured interviews such as the Rutter interview (Rutter et al, 1981), (K-SADS) (Amborsini & Dixon, 1996) or the Development and Well Being Assessment (DAWBA) (Goodman et al, 2000). The table below summarises the rates of conduct and oppositional defiant disorders.

Table 1.5.1 Prevalence of conduct and oppositional defiant disorders in developing and developed countries

Study	Year	Age	Country	Prevalence (CD)	ODD
Costello et al	1996	9-13	US	3.3%	2.7%
Shaffer et al	1996	9-17	US	1.8%*, 3.9%**	2.5%*, 6.5%**
Simonoff et al	1997	8-16	US	4.3%*, 6.6%**	3.9%*, 3.4%**
Meltzer et al	1999	5-15	UK	5.3% (ICD-10) 1.4% (DSM-IV)	2.9% (ICD-10) 2.3% (DSM-IV)
Costello et al	2003	9-13	US	2.7%	2.7%
Canino et al	2004	4-17	Puerto Rico	1.3%*, 2.0%**	3.4%*, 5.5%**
Fleitlich et al	2004	7-14	Brazil	2.2%	3.2%
Green et al	2005	5-16	UK	5.9%	3.2%
Dos Santos et al	2005	5-14	Brazil	3.4% (BD)	NA
Slobodskaya et al	2005	7-14	Russia	8.6% (BD)	NA
Mullick et al	2005	5-10	Bangladesh	2.9%	5.9%
Srinath et al	2005	0-16	India	0.2%	0.9%
Alyahri et al	2005	7 -10	Yemen	1.8%	4.0%
Fekadu et al	2006	5-15	Ethiopia	0.6% (BD)	NA
Heierrang et al	2007	8-10	Norway	0.4%	2.4%
Pillai et al	2008	12-16	India	0.4% (BD)	NA
Benjet et al	2009	12-17	Mexico	3.0%	5.3%

*with impairment, **without impairment, (BD) behaviour disorder, NA: Not Available

In the literature, some studies report separate prevalence rates for conduct and oppositional defiant disorders, whereas others report only conduct disorders, and some provide an overall prevalence of 'disruptive behaviour disorders'. This variation in definitions makes the comparison between studies difficult, and some reported rates can even be considered as misleading. The Great Smoky Mountain study (Costello et al, 1996) established the three-month prevalence rate of conduct and oppositional defiant disorders according to DSM-III-R criteria. A follow-up of this cohort (Costello et al, 2003), using the same measures but DMS-IV criteria, obtained slightly lower rates. Consistent with the literature, both studies reported higher prevalence rates for males than females.

In the MECA study (Shaffer et al, 1996), prevalence rates were reported in a variety of ways, thus making it difficult to select the most appropriate one for comparison with other studies. Separate parents and youth reports as well as combined rates, were provided. The study also reported prevalence rates without and with mild, moderate and sever impairment criteria. Prevalence was reported for conduct, oppositional defiant disorders and a combined category of all disruptive disorders. Table (1.5.1) quotes the combined parent and youth prevalence rates for CD and ODD, based on severe impairment criteria. When considering the informants individually, there is a slight difference, with youth reporting higher estimates. A similar trend was established in the Virginia twin

(Simonoff et al, 1997) and the Puerto Rico study (Canino et al, 2004), where prevalence rates differed widely with respect to impairment criteria.

In the last decade, although most epidemiological studies in developing and developed countries have used similar instruments with slight differences in the methodology and diagnostic criteria, substantial variation remains in reporting behavioural problems. For example, in the British National Surveys (ONS, 1999) prevalence rates were reported using both the DSM-IV and ICD-10 criteria. Moreover, prevalence was reported separately for ODD and CD, as well as a broad category for disruptive behaviour disorders using DSM-IV, whereas using ICD-10, prevalence rates were reported for ODD and CD as well as subtypes of conduct disorders. The second ONS survey (Green et al, 2005) provided ICD-10 based prevalence rates for CD and ODD. Both ONS studies reported higher rates of CD compared to ODD. The reverse was true for the Yemeni study, which, despite adopting the same methodology as the British surveys, reported higher prevalence of ODD compared to CD (Alyahri et al, 2005). This could be due to the restricted age range (7-10 years), compared to the British study which included an adolescent sample, or due to cultural differences. A similar trend was established in the Norwegian study (Heierrang et al, 2007), which was based on a sample of 8-10 year children. In the Brazilian and Russian studies that reported prevalence rates under the broad category of 'behavioural disorders',

slightly higher rates were established (Des Santos et al, 2005; Slobodskaya et al, 2005).

The Bangladesh study used similar instruments to the British study, and provided ICD-10 prevalence of CD and ODD. A break up of prevalence rates based on areas of residence was provided, with higher prevalence rates in slums (6.8%) suggesting that socio-economic conditions serve as risk factors for behavioural disorders (Mullick et al, 2005). In contrast, the Indian study using different instruments reported overall lower prevalence rates and no significant difference in prevalence rates according to areas of residence (Srinath et al, 2005). The authors concluded that the low rates of disorders could be due to the perception of mental health as a stigma and taboo, therefore symptoms may have been under reported.

Overall, it is difficult to conclude the approximate prevalence estimates for conduct and oppositional defiant disorders, due to the wide variation in reported rates, resulting from a number of factors discussed earlier. Generally higher rates of CD are reported in studies with adolescent samples, compared to higher rates for ODD in younger children. Consistent with the literature, socio-economic conditions and deprivation appear to be a substantial risk factor for conduct problems in childhood and later life.

1.5.2- Attention deficit-hyperactivity (ADHD)/ hyperkinetic disorders

Diagnostic characteristics and correlates

Attention Deficit-Hyperactivity Disorder (ADHD) is a neuro-developmental disorder which typically presents during childhood, and is characterized by a persistent pattern of inattention and/or hyperactivity, as well as forgetfulness, poor impulse control or impulsivity, and distractibility. British professionals have traditionally used the more restrictive World Health Organization and ICD-10 term 'hyperkinesis', which can be defined as "an enduring disposition to behave in a restless, inattentive, distractible and disorganised fashion" (Taylor, 1994). Diagnostically there are three main groups of symptoms, including over-activity, inattentiveness and impulsivity. In order to satisfy ICD-10 research diagnostic criteria, hyperactive individuals must have abnormalities on all three axes, compared to a milder requirement of symptoms present only on one axis for a DSM diagnosis of ADHD (for the full diagnostic criteria, see Appendix B).

Prevalence of attention deficit-hyperactivity (ADHD) and hyperkinetic disorders (HD)

Prevalence rates for ADHD vary according to the country, studied population and diagnostic criteria used. DSM based criteria provide a diagnosis of ADHD, contrasted with hyperkinetic disorder according to ICD-10. Some studies provide a diagnosis of 'disruptive behaviour disorders'; in most cases, this would include CD and ODD along with ADHD.

Table 1.5.2 Prevalence of ADHD/HD in developing and developed countries

Study	Year	Age	Country	Prevalence(ADHD/HD)
Costello et al	1996	9-13	US	1.9%
Shaffer et al	1996	9-17	US	1.9%*, 5.1%**
Simonoff et al	1997	8-16	US	1.4%*, 2.4%**
Meltzer et al	1999	5-15	UK	1.4% (ICD-10), 2.2% (DSM-IV)
Costello et al	2003	9-13	US	0.9%
Canino et al	2004	4-17	Puerto Rico	3.7%*, 8.0%**
Fleitlich et al	2004	7-14	Brazil	1.8%
Green et al	2005	5-16	UK	1.5% (HD)
Dos Santos et al	2005	5-14	Brazil	0.9%
Slobodskaya et al	2005	7-14	Russia	1.3% (HD)
Mullick et al	2005	5-10	Bangladesh	2.0% (HD)
Srinath et al	2005	0-16	India	1.6% (HD)
Alyahri et al	2005	7-10	Yemen	1.3%
Fekadu et al	2006	5-15	Ethiopia	0.6% (DBD)
Heierrang et al	2007	8-10	Norway	1.3%
Pillai et al	2008	12-16	India	0.2%
Benjet et al	2009	12-17	Mexico	1.6%

*with impairment, **without impairment, HD: Hyperkinetic Disorder, DBD: Disruptive Behaviour Disorder

The Great Britain survey is probably the only study to provide both DSM-IV and ICD-10 prevalence of ADHD/HD (ONS, 1999). As expected, higher prevalence rates were noted for DMS based ADHD (2.2%) compared to ICD ratings for HD (1.4%). The earlier Great Smoky Mountain study reported a three-month prevalence of 1.9% for ADHD, although its follow-up study that was based on DSM-IV criteria reported an overall lower prevalence rate of only 0.9%. The authors point out that ADHD diagnosis was more common in 9-10 year old children (2.2%) and gradually decreased with age, perhaps masked by co-morbidity such as conduct or mood disorders (Costello et al, 1996 & 2003). In the MECA study (Shaffer et al, 1996) parents reported higher rates (1.2%) than youth self reports (0.3%). However, as with conduct disorders, there was marked variation in prevalence when impairment was taken into account. This pattern also applied to the Virginia twin (Simonoff et al, 1997) and the Puerto Rico study (Canino et al, 2004).

The Brazilian Ilhade Mare study used the same instruments as the British survey but was based on DSM-IV criteria, and reported slightly lower prevalence (Des Santos et al, 2005) compared to another Brazilian study using DSM-IV criteria which reported slightly higher prevalence (Fleitlich et al, 2004). This could be due to the fact that the second Brazilian study was based on school children in urban settings compared to the household rural sample of the earlier study,

hence the higher prevalence of ADHD could be due to teachers' reporting of ADHD in the class room. The authors of the Ilhade Mare study suggested that the lower prevalence rates could be explained by the rural settings being more suited for hyperactive children, since they have more freedom to play outside. Alternatively, parents in rural settings may be under reporting symptoms (Des Santos et al, 2005). The same pattern was reported by two other studies from rural settings in developing countries. A Bangladesh study used a similar design as the British survey and provided overall slightly higher estimates of hyperkinesis. However, there was considerable variation in prevalence rates according to the area of residence, with higher rates for urban compared to rural settings (Mullick et al, 2005). Similar findings were established in the Indian study that used a different methodology and instruments but also established prevalence of hyperkinesias based on ICD-10 criteria, and like the Bangladeshi study, its rates were higher in urban as opposed to rural areas (Srinath et al, 2005).

In conclusion, prevalence of ADHD/HD varied widely depending on the criteria used. Studies that used ICD-10 criteria reported lower prevalence rates compared to studies based on DSM-IV criteria. Most studies reported prevalence rates between 1-2%.

1.5.3- Emotional disorders

Emotional disorders includes affective/mood and anxiety disorders. Their prevalence estimates are inconsistent due to the classification system and criteria used. Some papers report on a broad category of 'emotional disorders', whereas others provide separate prevalence rates for different types of anxiety as well as mood disorders. This makes comparison between studies difficult. Despite these limitations, I have opted to report prevalence of mood and anxiety disorders separately. Overall, these are grouped as 'any anxiety disorders' (AAD) and any mood disorders' (AMD). However, if prevalence of sub-types of individual disorders were provided, these are also briefly presented.

1.5.3a- Mood disorders

Diagnostic characteristics and correlates

Mood disorders include all types of depression and bipolar disorder, are thus often defined as 'affective disorders'. As there is no category for depressive disorder specifically for children in either classification system, adult criteria are used instead. The DSM-IV classifies depression under 'mood disorders' (see Appendix C) and the ICD-10 classifies it under 'mood (affective) disorders'. The ICD-10 also has one category for mixed disorders of conduct and emotions, and one category for emotional disorders with onset specific to childhood (WHO, 1992).

Table 1.5.3a Prevalence of mood disorders in developing and developed countries

Study	Year	Age	Country	Prevalence (MDD)
Costello et al	1996	9-13	US	1.5%
Shaffer et al	1996	9-17	US	2.3%*, 7.2%**
Simonoff et al	1997	8-16	US	1.2%*, 1.3% (DD)
Meltzer et al	1999	5-15	UK	0.9% (ICD-10, DSM-IV)
Costello et al	2003	9-13	US	2.2%
Canino et al	2004	4-17	Puerto Rico	1.7%*, 3.4%**
Fleitlich et al	2004	7-14	Brazil	1.0%
Green et al	2005	5-16	UK	0.7%
Dos Santos et al	2005	5-14	Brazil	3.6% (ED)
Slobodskaya et al	2005	7-14	Russia	8.8% (ED)
Mullick et al	2005	5-10	Bangladesh	0 %
Srinath et al	2005	0-16	India	0.1%
Alyahri et al	2005	7-10	Yemen	0.3%
Fekadu et al	2006	5-15	Ethopia	0.8% (MD)
Heierrang et al	2007	8-10	Norway	0.7%
Pillai et al	2008	12-16	India	0.5%
Benjet et al	2009	12-17	Mexico	4.8%(MD)

*with impairment, **without impairment, DD: depressive disorder, MD: major depression, ED: emotional disorder

Prevalence of mood disorders

As mentioned earlier, estimates of prevalence of mood disorders are complicated, mainly because of the classification system and criteria used. Some studies provide separate rates for major depression, hypomania, and depression not otherwise specified (NOS) or a broad category of 'any depressive disorder', making it difficult to select the most suitable diagnosis for comparison. Table 1.5.3a outlines the reported prevalence rates of mood/affective disorders. Consistent with the literature, studies that focused on younger children reported lower prevalence rates, whereas studies that included adolescents reported higher prevalence estimates.

The two National Great Britain surveys found a 0.9% rate of depression (ONS, 1999 & 2004). Lower rates were established in developing countries, where studies mainly focused on younger school children. For example, the Taubate study in Brazil (Fleitlich et al, 2004) and studies in Yemen (Alyahri et al, 2005), India (Sirnath et al, 2005), and Norway (Heierrang et al, 2007) all found low rates of depression. The Bangladesh study reported no cases of depression (Mullick et al, 2005). The low prevalence of mood disorders in developing countries could also be due to cultural factors, where expression of feelings and emotions are not encouraged, or it could be due to a lack of awareness and denial of the presence of mood disorders in children (Patel, 2007).

Two studies, including the Russian (Slobodskaya et al, 2005) and the Brazilian Ilhade Mare study (Des Santos et al, 2005), used similar instruments to the British surveys. The Russian study was, however, school based and used ICD-10 criteria, whereas the Brazilian study collected data from a rural household sample and the prevalence was based on DSM-IV criteria. Neither of these studies reported rates for affective/mood disorders, instead used a broad category of 'emotional disorders', which resulted in overall higher rates of emotional disorders compared to other countries. The authors of the Russian study pointed out that the unusually high rates of disorders were possibly due to deprivation (Slobodskaya et al, 2005).

Interestingly, studies that included adolescents such as the Great Smoky Mountain study that used DSM-III criteria reported a higher prevalence of 1.5% for a broad category of depressive disorders. Its follow-up cohort study used a similar methodology and provided slightly higher prevalence estimates of 2.2% (Costello et al, 1996 & 2004). In contrast, the MECA study (Shaffer et al, 1996) provided separate rates for major depression and a broad category for 'any depression' based on parent, youth and combined ratings, without and with impairment of varying degree. Table 1.5.3a shows the combined ratings without and with severe impairment criteria for 'any depression'. When impairment was taken into account, the prevalence rates for depressive disorders dropped substantially from 7.2% to 2.3%. Variation in prevalence based on impairment

criteria was also clearly noted in the Virginia twin (Simonoff et al, 1997) and the Puerto Rican study (Canino et al, 2004). Overall, prevalence rates for mood disorders were lower in studies that focused on children, compared to higher rates for adolescents. Prevalence rates ranged from as high as 2.2% to as low as 0% in developing countries, where low rates could be due to cultural factors.

1.5.3b- Anxiety disorders

Diagnostic characteristics and correlates

The ICD-10 includes five diagnoses exclusively for children under the category of 'emotional disorders with onset specific to childhood'. These are: separation anxiety, phobic anxiety, social anxiety, sibling rivalry, and other childhood emotional disorders. The DSM-IV uses adult based criteria to diagnose children with anxiety disorders and includes the following diagnoses under the category of 'anxiety disorders' (see Appendix D): panic disorder, phobias, obsessive compulsive disorder, post traumatic stress disorder, acute stress disorder, anxiety disorder due to a general medical condition, substance induced anxiety disorder, and anxiety disorder not otherwise specified (APA, 1994).

Table 1.5.3b Prevalence of anxiety disorders in developing and developed countries

Study	Year	Age	Country	Prevalence (AD)
Costello et al	1996	9-13	US	5.6% (AAD), 3.4% (SAD)
Shaffer et al	1996	9-17	US	3.2%*, 20.5%** (AAD), 1.8%*, 7.6%** (SPD)
Simonoff et al	1997	8-16	US	8.9%*, 35.8%** (ED) 4.4%*, 21.2%** (SPD)
Meltzer et al	1999	5-15	UK	3.7% (AAD), 1.1% (SAD) (DSM-IV) 3.8% (AAD), 1.0% (SPD) (ICD-10)
Costello et al	2003	9-13	US	2.4% (AAD)
Canino et al	2004	4-17	Puerto Rico	2.9% (AAD), 6.9%***, 1.5% (SAD, SPD)*
Fleitlich et al	2004	7-14	Brazil	5.2% (AAD), 1.4% (SAD)*
Green et al	2005	5-16	UK	3.2% (AAD), 0.8% (SPD)*
Dos Santos et al	2005	5-14	Brazil	3.6% (ED)
Slobodskaya et al	2005	7-14	Russia	8.8% (ED)
Mullick et al	2005	5-10	Bangladesh	8.1% (AAD), 2.0% (OCD)*
Srinath et al	2005	0-16	India	2.9% (SPD)*
Alyahri et al	2005	7-10	Yemen	9.3% (AAD), 3.2% (SAD)*
Fekadu et al	2006	5-15	Ethiopia	2.5% (AAD), 1.5% (SAD)
Heierrang et al	2007	8-10	Norway	1.8% (SPD)*
Pillai et al	2008	12-16	India	1.0% (AAD)
Benjet et al	2009	12-17	Mexico	29.8%(AAD), 20.9%(SP)

*with impairment, **without impairment, AAD: any anxiety disorder, SAD: separation anxiety disorder, SPD: social phobia disorder, SP: specific phobia, OCD: obsessive compulsive disorder, ED: emotional disorder

Prevalence of anxiety disorders

Like mood disorders, prevalence estimates of anxiety disorders are compounded because of classification differences. For this reason, some papers reported on any anxiety disorders, others provided prevalence rates for different types of anxiety disorders, and some just referred to a broad category of 'emotional disorders'. As in the previous section, I have reported the prevalence of 'any anxiety disorder' (AAD), unless data on specific types were provided, in which case these were briefly summarized in Table 1.5.3b.

Anxiety disorders are the most common in most countries. The highest prevalence rate of 20.5% without impairment criteria was reported by the MECA study (Shaffer et al, 1996), interestingly the prevalence rate dropped drastically to 3.2% when impairment criteria were considered. Variation in prevalence based on impairment criteria was also clearly noted in the Virginia twin study (Simonoff et al, 1997) and the Puerto Rican study (Canino et al, 2004). Table 1.5.3b shows the rates of the anxiety disorders with and without impairment in these studies.

High rates for anxiety disorders were reported in Yemen (Alyahri et al, 2008), with an over all prevalence of 9.3%. Equally high prevalence rates were reported in the Bangladesh study (8.1%) (Mullick et al, 2005). Interestingly, OCD was the most common anxiety disorder reported in Bangladesh. The authors of this study

pointed that obsessions and compulsions were mainly related to religious concerns, which could be due to the highly religious nature of the Bangladeshi society.

The first National Great Britain survey (NOS, 1999) showed similar rates of 'any anxiety disorder' using the DSM-IV (3.7%) and ICD (3.8%) diagnostic criteria. In this study, separation anxiety and specific phobic disorder were the most common. The second British survey in 2004 (Green et al, 2005) reported a slightly a lower prevalence of 'any anxiety disorder' (3.2%) compared to the 1999 survey. Simple phobic disorder was the most common type of anxiety disorder reported in the 2004 survey.

In conclusion, prevalence estimates of anxiety disorders are compounded by classification differences. However, anxiety disorders are the most common condition in both developed and developing countries. Marked variation in the rates of anxiety disorders has been established when impairment criteria were taken into consideration. This raises questions on the validity or clinical relevance of measuring mental health disorders without taking into account impairment criteria.

1.6- Child mental health in Pakistan

Children and adolescents in low and middle income countries constitute 35-50% of the population. Although the population in such countries is predominantly rural, rapid urbanisation and social change has resulted in increased poverty and unemployment, which are risk factors for ill child and adolescent mental health (Turan, 2008). There is a vast gap between child and adolescent mental health needs as measured through burden of disease estimates and the availability of resources (Patel et al, 2008). Since the present study is based in Pakistan, which is a low income developing country, it is important to consider the context of child mental health in this society.

Pakistan is a signatory to the Alma-Ata Declaration of 1978, which called on the global community to achieve health for all by the year 2000. Primary health care was the designated model in achieving this goal, and included mental health as one of its components. Recent years have seen phenomenal improvement in the provision of paediatric health in Pakistan, although the area of child mental health remains neglected (Jawaid et al, 2007). In Pakistan the current scarcity of child mental health services mirrors the limited of epidemiological evidence-base on the magnitude of children's needs and how these should be met.

There has been only one study carried out in Lahore, which aimed to establish the prevalence of emotional and behavioural problems (rather than disorders) in school children using the Rutter rating scale. This found a prevalence of 9.3%, with antisocial problems being the commonest mental health presentation (Javed et al, 1992). Another study provided an estimate of mental retardation/learning disability of 19.0/1,000 children in Karachi, which was much higher than rates reported in other countries (Durkin et al, 1998).

Research in both developing and developed countries has provided strong evidence that the aetiology of all mental disorders is 'biosocial' and that the quality of a child's social environment is closely related to the risk of mental health problems. Low income countries like Pakistan face a multitude of social adversities, including poverty, malnutrition, rapid urbanization, educational deprivation, drug abuse and crime.

The majority of children exposed to such factors are at an increased risk of mental health problems (Rahman et al, 2001 a,b). Epidemiological surveys in low income developing countries have concluded that higher poverty rates and greater social inequality may have contributed to higher rates of disorders (Fleitlich et al, 2001; Mullick et al, 2005). Other studies have highlighted the impact of poverty and socio-economic adversities on child psychopathology (Patel et al, 2007). A review of studies suggested an association between poverty

and common mental disorders in six low and middle income countries. Most studies showed an association between indicators of poverty and the risk of psychiatric disorders, the most consistent association being with low levels of education (Patel & Kleinman, 2003).

In Pakistan, the national annual budget for mental health is far below what would be necessary to meet the needs of the population (Khan et al, 2008). Recent calls have urged the need for evidence-based research on the prevalence and nature of mental health problems in the child population (Syed et al, 2007a). Keeping these factors in mind, the next chapter provides a review of major social risk factors for child mental health that are most important in developing countries like Pakistan, and sets the context for this study.

CHAPTER TWO

SOCIO ECONOMIC DETERMINANTS OF CHILD MENTAL HEALTH

The research literature highlights a number of individual, family as well as social factors known to be associated with variations in children's physical and mental well being. These include variables such as parental psychopathology, disrupted early attachment with parents, harsh or inadequate parenting, exposure to abuse or neglect, and adverse peer group influences (Patel et al, 1995 & 1998; Aidoo et al, 2001). Considering the scope of this thesis and its research objectives, in this chapter I will briefly review the literature on socio-economic determinants of child mental health, and will provide an overview of the common risk factors for child mental health problems. I will then discuss in detail the social dimensions of child mental health that are most important in developing countries like Pakistan, and are also the source of research interest for this study.

2.1-Effect of socio economic determinants on child welfare

It is well known and widely recognized that social and economic conditions impact on health throughout life, with the result that if one is poor, they are more likely to experience worse health and to die younger. This is because poor people often live without the basic freedoms of security, action and choice that the better-off take for granted. They often do not have access to adequate food,

shelter, education and health (WHO, 2004a). Consequently, socially isolated and disadvantaged people are substantially more likely to have a poorer health status (WHO, 2004b).

The Millennium Development Goals (MDG) project reports that poverty hits children hardest and, while a severe lack of goods and services hurts every human, it is most threatening to children's rights of survival, health and nutrition, education, participation, and protection from harm, and exploitation. It thus creates an environment that is damaging to children's development in every way, i.e. mental, physical, emotional and spiritual (UN, 2000).

More than one billion children are severely deprived of at least one of the essential goods and services they require to survive, grow and develop. Children are a particularly vulnerable group among the poor, because their welfare hinges on the resources of their parents. Children who are not immunized or who are malnourished are much more susceptible to diseases that are spread through poor sanitation. Child's first few years are not only essential for survival, but also for their continuing physical, intellectual and emotional development (UN, 2000).

Children in poverty are at higher risk of a host of developmental problems. Expectant mothers who are malnourished are more likely to have low birth-weight babies. In turn, malnourished infants and children suffer from stunted physical and mental development. Malnutrition also reduces productivity. Children who are undernourished, for example, enroll in school later, are absent more often, and complete fewer years of schooling than well-nourished children (PRB, 2007). Socio-economic deprivation thus greatly hampers children's ability to achieve their full potential, contributing to a society's cycle of endless poverty and hunger. Apart from the well established effect of deprivation on child's general health status, there is now a substantial and growing body of evidence that also demonstrates the impact of a wide range of risk factors on children's mental health.

2.2-Risk factors for child mental health

A range of risk factors increase children's vulnerability to develop mental health problems. As outlined earlier, deprivation constitutes an important risk. Other factors that increase risk include poor educational and employment opportunities, enduring poor physical health, poor peer and family relationships, witnessing domestic violence, and having a parent that misuses substances or suffers from mental ill health (Rutter & Taylor, 2002; Rutter, 2005).

Table 2.1: Risk factors for child mental health at different levels and in different settings

Risk factors potentially influencing the development of mental health problems in children				
Individual factors	Family factors	School context	Life events and situations	Community and cultural factors
gender/ age	family type	school achievement	physical, sexual and emotional abuse	socioeconomic disadvantage
prenatal brain damage	single parent	Bullying	school transitions	social or cultural discrimination
prematurity	family income	peer rejection	divorce and family break-up	isolation
birth injury	antisocial role models (in childhood)	types of school	death of family member	neighbourhood violence and crime
low birth weight, birth complications	family violence and disharmony	inadequate behaviour management	physical illness/impairment	population density and housing conditions
physical and intellectual disability	parental mental disorder/substance misuse	deviant peer group	unemployment	lack of support services, including transport, shopping, recreational facilities
poor health in infancy	poor supervision and monitoring of child		war or natural disasters	social class
insecure attachment	levels of parental education		poverty/ economic insecurity	ethnicity
low intelligence	low parental involvement in child's activities		homelessness	neighbourhood

Highlighted variables in the previous table refer to socioeconomic risk factors that are of particular interest to this study. I will, therefore, discuss the research evidence on the influence of these factors in detail in the following section.

2.2.1-Social dimensions of child mental health

Substantial research literature, mostly from developed countries, suggests a complex socioeconomic framework of risk factors operating in multiple contexts that are central to the lives of children, namely, home, school, and neighbourhood (Beam et al, 2002; Boys et al, 2003; Ford et al, 2004; Patel et, 2007). A few studies from low and middle income countries have identified similar factors associated with child psychiatric disorders (Eapen et al, 1998; Fleitlich et al, 2001; Walker et al, 2007). The figure below summarizes the social and economic factors that influence child mental health, and highlights how these factors are inter-related.

Figure 2.1: Social and economic factors that influence child mental health

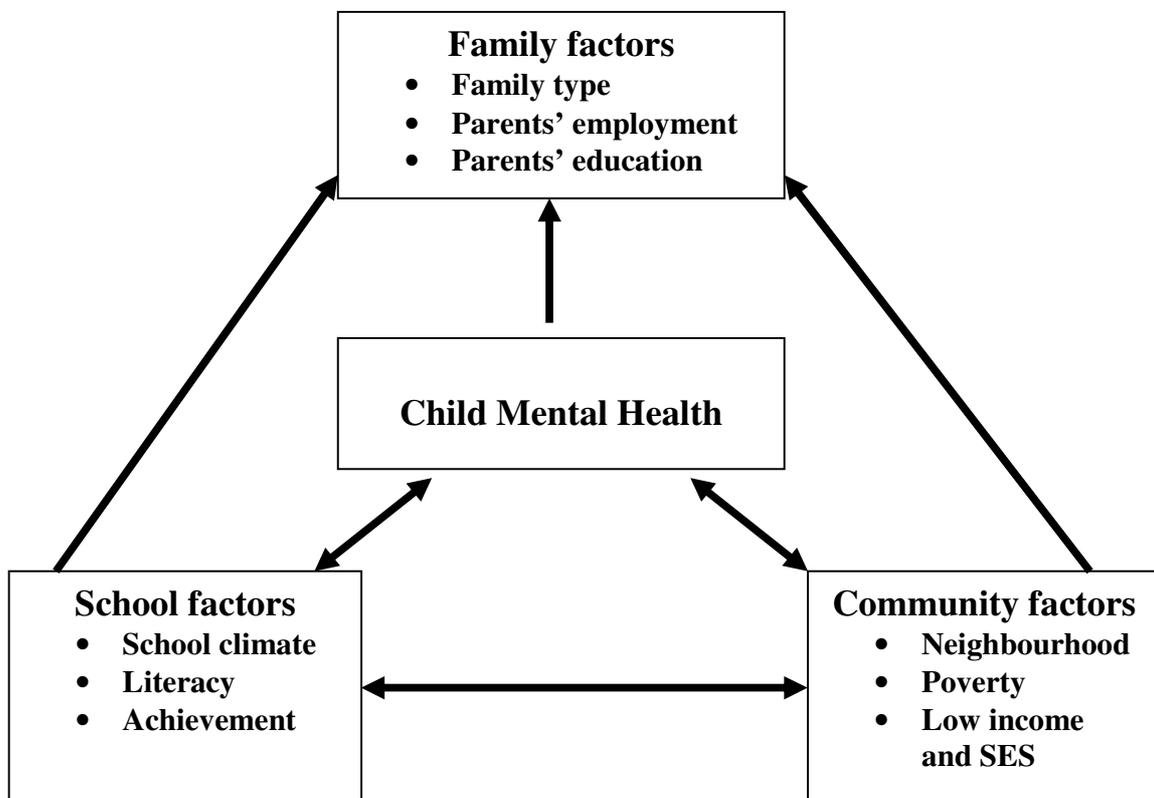
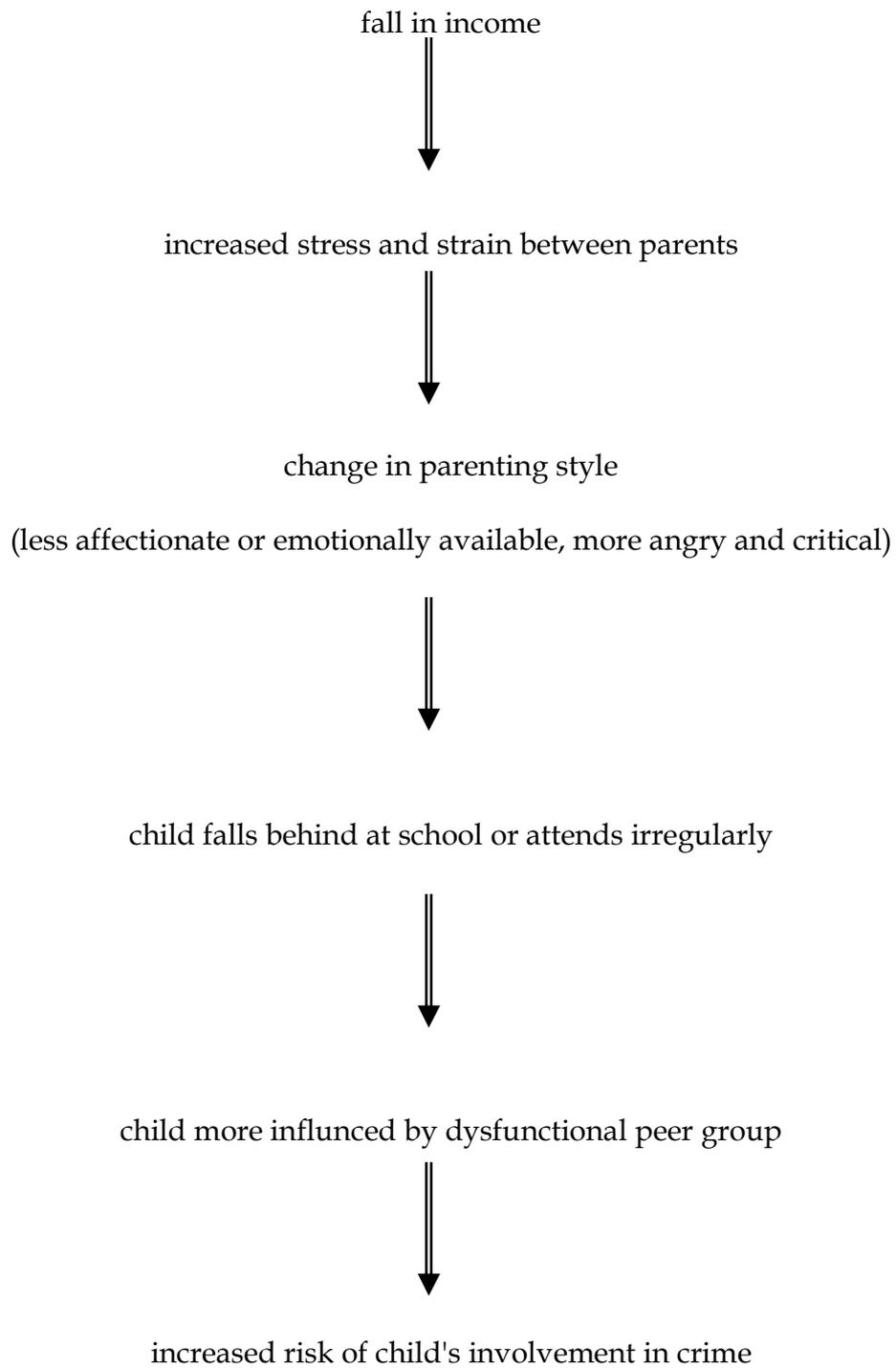


Figure 2.1 demonstrates that child mental health is influenced by three major types of social and economic factors; these include the child's family environment, the wider community, and the child's schooling. Each of these broad categories includes several factors. For example, the child's family environment includes the family type, i.e. extended, nuclear or single parent families. Extended families have also been found to have a protective effect on children's mental health, particularly in developing countries (Rahman et al, 2000; Syed et al, 2007a). Other important family related socioeconomic variables include the parents' occupation and level of education.

Linked to the family environment is the wider community to which the child belongs. This may also have a protective impact in developing countries, particularly in deprived neighbourhoods (Des Santos et al, 2005; Mullick et al, 2005). Similarly, school plays a major role in a child's life. The literature indicates that it is not just the quality of education, but also the type of school environment and climate that can serve both as risk and protective factors for children's mental health (Fleitlich et al, 2004). It is worth noting that there is an interaction between all these social economic risk factors and their influence on children's mental health. For instance, there can be direct links between family income and child outcomes. A decrease in family income can increase parental stress, which can in turn affect the quality of parenting. The following figure 2.2 demonstrates this process:

Figure 2.2: Influences of socio economic risk factors on children



In this example, there are two processes within the family, the parental relationship (stress and strain), and parental supervision and emotional availability. Educational attainment and peer relationships may act as intermediate outcomes, part of a process that relates to the risk of crime. While many children surmount individual risk factors, children who endure multiple risks are more likely to develop mental health problems, as such factors have been found to have a cumulative effect (Essex et al, 2003).

I will now review the evidence from the literature, with particular reference to epidemiological studies carried out in both developing and developed countries mentioned in chapter one, in order to explore the impact of social and economic determinants on children's mental health, and their underpinning mechanisms (Figure 2.1).

2.2.1. I- Community factors

'Community' can be defined as a large group living in close proximity. People living in one community may share beliefs, resources, preferences, needs, risks and a number of other conditions that affect the identity of its members and their degree of cohesiveness (Christensen et al, 2003). The socio-economic status of the members of a community largely depends on their income, social cultural and cross generational factors, which in turn can affect their choice of neighbourhood. For example, a person with poor income, belonging to lower social class, is most likely to live in a deprived neighbourhood. A combination of

these complex factors increases the risk for child psychiatric disorders. Although these three factors are interrelated, I will now discuss each of them separately to highlight their specific characteristics and mechanisms.

2.2.1. Ia-Socio economic status

‘Socio economic status’ refers to the hierarchical distinctions (or stratification) between individuals or groups in societies or cultures. Usually individuals are grouped into classes based on their economic positions within a stratification system (Marmot, 2004). Families of low socioeconomic status often lack the financial, social, and educational supports that characterize families of high socioeconomic status. Poor families often have inadequate or limited access to community resources that promote and support children's development.

Globally and historically, socioeconomic status is among the most important health determinants throughout the life course (Spencer, 2000). Young children seem to be particularly vulnerable to the effects of poverty. This is strongly associated with higher risk of death in infancy and childhood, acute and chronic childhood illness (Larsen & Lubkin, 2006). The association between socioeconomic status and various types of psychiatric disorders has long been of interest to both clinicians and researchers. A large body of research has shown the importance of social status in understanding mental illness and disability (Lewis et al, 1998b).

Epidemiological studies from both developed (ONS, 1999 & 2005) and developing countries (Eapen et al, 1998; Fleitlich et al, 2004; Murali & Oyebode, 2004) throughout the world have consistently demonstrated an inverse relationship between mental illness and social class. It is well established that conduct disorder is three to four times more prevalent in children who live in socio-economically deprived families with low income, or who live in a poor neighbourhood (Murali & Oyebode, 2004).

It is important to note that the mechanisms that place poor children at increased risk of developing psychiatric disorders may be mediated by parental and family correlates, rather than the economic disadvantage itself. It is equally likely that poverty imposes stress on parents, and that this inhibits family processes of informal social control, in turn increasing the risks of harsh parenting and reducing parents' emotional availability to meet their children's needs (Patel et al, 2002).

2.2.1. lb-Poverty and low income

Spencer (2000) states that "low income describes those individuals, families or households whose regular income is low, relative to others in the same country" (pp. 7). Thus, as discussed earlier, people of poor socioeconomic status are classified as living below the poverty line. Children among the poor income groups, face acute and longstanding economic difficulties, for example,

unemployment, debt, and hardships in acquiring basic necessities such as food for survival, and are thus at greater risk of suffering from psychiatric disorders. Epidemiological studies have demonstrated that poverty and social exclusion are well established risk factors for child psychiatric disorders in high-income countries (ONS, 1999 & 2005). In the British survey, children in the poorest households were three times more likely to have a psychiatric disorder than children in the best-off households (ONS, 1999 & 2005). Recent studies have replicated this association in low income countries (Fleitlich et al, 2004; Slobodskaya et al, 2005).

Although governments in developed countries provide some form of financial support and benefits to low income families, this is not usually the case in the developing world. The UN 'Millennium Development Goals Report 2000' states that more than 30 percent (about 600 million) of children in developing countries live on less than US \$1 a day. Poverty and associated health, nutrition, and social factors may thus prevent at least 200 million children in developing countries from attaining their developmental potential (UNICEF, 2007)

Many children in developing countries are severely deprived of at least one of the essential goods and services they require to survive, grow and develop. A rich body of research relating to poverty and health indicates that low income combined with adverse demographic factors and lack of external support often generates stressors and life crises that place children at risk, and can precipitate the onset of child psychiatric disorders. Of particular concern are the direct and indirect effects of poverty on the development and maintenance of emotional, behavioural and other mental health problems (Murali & Oyebode, 2004; Patel et al, 2008). The effects of income inequality can have a wider impact on society, as the mechanisms of stress, frustration and family disruption are associated with increased crime and violence (Wilkinson, 1996).

The risk of low income for child psychiatric disorders is strongest for conduct disorders, which are also associated with school failure and personality disorders in adulthood (Lipman et al, 1996). High rates of conduct disorders amongst children living in poverty are well established in both developed (ONS, 1999 & 2005) and developing countries, (for example, Puerto Rico, Canino et al, 2004). Poverty and social disadvantage are also associated with deficits in children's cognitive skills and educational achievement, which can accentuate further the impairment and burden of conditions such as conduct and attention-deficit hyperactivity disorders (Duncan et al, 1997; Pagani et al, 1999). The impact of poverty on child psychiatric disorders appears to be more marked for boys than

girls. Poverty is also associated with many long-term problems, such as poor health and increased mortality, school failure, crime, substance misuse, and social exclusion (Heitzman, 2007).

2.2.1. Ic- Neighbourhood

A 'neighbourhood' refers to a geographically localized community within a larger city, town or suburb. Earlier I discussed the impact of two important socioeconomic determinants, i.e. social status and low income, and I highlighted how people belonging to low social class fall below the poverty line. Such families are likely to live in poor neighbourhoods, which are characterized by intense deprivation, high rates of unemployment and crime, hopelessly tangled up with poor health, housing and education (Meltzer et al, 2007). In recent years, there has been an increase in rural families migrating to urban areas to meet their basic needs. The World Health Report (WHR) 2001, titled "Mental Health: New Understanding, New Hope" points out that rapid urbanization, breakdown of the joint family, and migration of young adults from villages to towns in search of employment has led to the erosion of traditional social support networks, and this significantly contributes to the development and burden of mental illness.

From the earliest epidemiological UK study conducted by Rutter in the 1970s, a comparison of urban and rural environment demonstrated an excess of child psychiatric disorders in cities, which was largely explained by the concentration of disadvantaged families within these areas (Rutter et al, 1976). Similar trends have been established in other studies from developed countries (Offord et al, 1989; Fombonne 1994; Costello et al, 1996). In the last decade there have been a number of epidemiological studies in developed countries. The two major British surveys (ONS 1999 & 2005) demonstrated that children in deprived conditions were at a higher risk. Two studies from the Netherlands found that behavioural problems in both childhood (Kaif et al, 2000) and early adolescence (Schnieders et al, 2003) were more common among children living in deprived neighbourhoods, even after adjusting for family socioeconomic status, age and gender.

Recent epidemiological studies in developing countries have also established higher rates of disorders in urban and slums areas compared to children living in rural settings (Des Santos et al, 2005). Although most studies have found similar trends, there are few exceptions, such as, one study in China, which found lower rates in urban areas (Shen et al, 1989).

Rapid urbanization is known to have negative effects on child mental health. Urbanization may cause problems such as stressful life events, poor social networks, and rapid growth of cities because of immigration. All these factors may negatively affect mental health (Turan, 2008). Differences in the prevalence rates of child psychiatric disorders with respect to the residential neighbourhood could suggest that, depending on social context and expectations, symptoms might have different meanings. Hyperactivity, for example, might have become more of a problem when children were expected to sit still at school, while it might have been less conspicuous in traditional rural life.

A study conducted to determine the impact of childhood psychopathology and perceived neighbourhood trust and safety in the UK, found that the children's perception of neighbourhood trust and safety, in terms of the trustworthiness or honesty of the people who live there, or feeling safe walking alone, had a strong association with childhood psychopathology, particularly emotional disorders (Meltzer et al, 2007). Another UK study conducted to determine if social capital is associated with either the type or severity of psychiatric disorders of childhood, found that perceptions of the local area were significantly associated with severity of illness and social networks were associated with type of diagnosis (Pearson & Oyebode, 2009) suggesting that some aspects of social capital serve as a risk factor for child mental health problems.

Quinton (1988) concludes that, although the urban environment is not necessarily 'toxic', it is often the case that families with multiple mental health problems are concentrated in inner cities rather than rural areas. For example, studies in developing countries that collected data from different residential areas, i.e. urban, rural and slums, found higher rates of child psychiatric disorders amongst the urban poor, i.e. slums areas, perhaps because the rural poor had greater social stability and support (Des Santos et al, 2005; Mullick et al, 2005).

In short, community factors, especially socioeconomic status, income level and the neighbourhood families live in, all affect their physical and mental health well being. A child's own perception of the neighbourhood can have particularly adverse implications on their development (Leventhal & Brooks-Gunn, 2000). As their first interaction this community is through their immediate family, family environment may thus pose a number of risk factors in its own right. I will now discuss the most important family factors that have been established to be of high risk for child psychiatric disorders.

2.2.1. II-Family factors

I have already discussed how material deprivation may exert deleterious mental health effects (Aber et al, 1997). Socioeconomic disadvantage also affects family relationships and can initiate or aggravate marital dissatisfaction, conflict, and

aggression within families, thereby jeopardizing children's mental health. For this reason, I will particularly consider how essential family factors can be affected by socioeconomic adversities, and the resulting impact on children's mental health.

2.2.1. II a-Family size

Large family size and unemployment have been found to be associated with increased psychiatric morbidity. One study corroborated previous research findings and concluded that large family size may result in lower quality of child upbringing, in the presence of other mediating adversities, and both can lead to child psychiatric disorders (Lai, 2000). The UK child mental health surveys (1999 & 2005) found that prevalence rates of disorders varied by family type. Children of lone parents were twice as likely to have a mental health problem as those living with married or cohabiting couples (16 per cent compared to eight per cent). Mental disorders were also more common in reconstituted (step) (15 per cent) than in non-step families (nine per cent). Children of cohabiting couples (11 per cent) were more likely to have a disorder than those whose parents were married (seven per cent), and children in small-size families were at lower risk of disorder than those with four children or more.

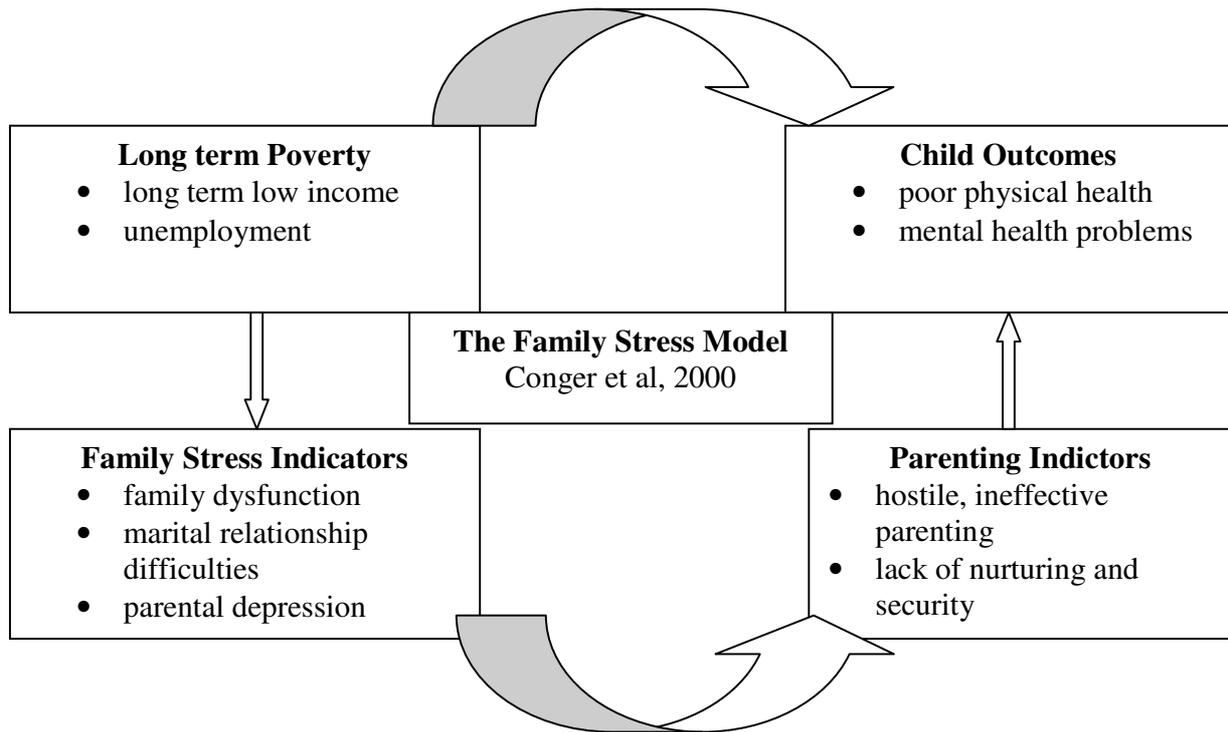
Similar findings have been established in developing countries. Similar associations were found in studies in Arabic countries (Abolfotouh et al, 1997; Eapen et al, 2003). This could be because, in developing countries, poor households usually live in extended family set-ups, where a number of people are crammed into one small home; low income means that children maybe unnourished and physically unhealthy; parents are often unemployed and have limited educational qualifications to achieve sustainable employment to support their families.

It is also evident that the child who experiences poverty may be exposed to other family related life adversities (Caan, 2000). Poverty can result in a less favourable family environment and poor quality parenting. This diminishes the ability of parents to provide supportive, consistent behaviour, and may render parents more vulnerable to debilitating effects of life events. The 'Family Stress Model' (Figure 2.3) (Conger et al, 2000) proposes that the experience of poverty is one of the more important factors that can place severe strains on marital relationships, precipitate and sustain parental depression and family dysfunction.

Family distress increases problems in the marital relationship, and this is in turn linked to less effective parenting. This complex notion involves insufficient surveillance, lack of control over the child's behaviour, lack of warmth and support, inconsistency, and display of aggression or hostility by parents or older

siblings towards the child. All these factors have independent and cumulative impact on children's physical and mental health well being (Conger et al, 2000).

Figure 2.3 Family stress model



Although these factors are inter-related, I will now discuss the two other important family/socioeconomic variables, i.e. parental education level and employment, and will examine the available evidence on how these can impact on child mental health.

2.2.1. IIb- Impact of parental employment

Previous research provides evidence of two contrasting but equally important factors of parental employment. Firstly, the absence of long-term employment, particularly fathers' unemployment. Secondly, there is a substantial literature on the impact of mothers' employment on children. I will discuss each of these factors and examine how they impact children's mental health.

2.2.1. IIb.i- Unemployment

Extensive research with adults has repeatedly established a link between unemployment and mental health problems, including suicide (Owen et al, 1995; Lewis et al, 1998a). However, the direction of this link, that is whether unemployment is the cause or effect of poor mental health, is inconclusive (Lewis et al, 1998b). It is possible that unemployment does not cause mental disorders per se, but it can amplify the symptoms of pre-existing illness or trigger mental health problems for someone already vulnerable. Unemployment can also place people at greater risk through experiencing problems such as substance use. Social isolation, combined with substantial free time and fewer or no job responsibilities, may in turn increase someone's vulnerability to these problems (Gallo et al, 2001). A Danish survey found that unemployment may degrade and humiliate parents, causing considerable strain on their behavior towards their children (Nygaard et al, 2000).

The type of parental employment can also impact on children. For instance, the UK surveys (ONS, 1999 & 2005) found that children from unskilled, working-class backgrounds were three times as likely to have a psychiatric disorder as children from professional backgrounds. Another study found that exposure of fathers to psychosocially adverse work conditions, in addition to exposure to unemployment or the threat of unemployment, during the first 16 years of their children's life were associated with greater odds of attempted and completed suicide by their children (Ostry et al, 2006).

2.2.1. IIb.ii - Maternal employment

Research has established that maternal employment plays a vital role in child development. Scholars have proposed two conflicting views concerning the effects of maternal employment on children from low-income families. One is that maternal employment, poverty, and single-parent status function as cumulative burden on families, thereby resulting in poorer developmental and educational outcomes among low-income children of employed mothers (Weiss et al, 2007). The other is that the financial and psychological benefits associated with maternal employment are so considerable, that children whose mothers are employed demonstrate better social and academic outcomes than low-income children whose mothers are not employed (Hill et al, 2005).

Also, studies have found that congruence between actual and preferred employment status is associated with positive outcomes for mothers and children. Thus, maternal employment might have different effects on families in which mothers opt to work during the children's early years, as opposed to those in which mothers are forced to seek employment due to adversity (Ferrant et al, 2001). Professional working mothers have a positive effect on the child's development. Shahzad (2002) conducted a study in Pakistan and found that children of professional working mothers had high levels of achievement compared with children of non working mothers. This research also found that adolescents from dual working families scored higher on cognitive and social competence than their counterparts in single working families.

Ahmad (2002) reported a significant difference in the achievement levels of adolescents of working and non-working mothers in a nuclear family structure. The author concluded that this difference could be due to many factors such as women living in nuclear households being able to make independent decisions for the well-being of child, as compared to extended households where decision making is a process mainly in the hands of the elderly members.

2.2.1. IIC- Quality of parental education

Policy makers, researchers and health care professionals, from both the developed and developing worlds, have long been concerned about the link between health and education. Education and literacy rank as key determinants of health, along with income distribution, employment, working conditions and social environment, although the inter-relationships and weighting of these determinants demand further research (Evans et al, 2004; World Bank, 2000). The social consequences of poor education constitute an important factor through diminished opportunities to access resources that can improve quality of life (Hussain et al, 2000). It is important to bear in mind that the relationship between low educational level and psychiatric disorders may be confounded or explained by a number of pathways. For example, malnutrition can impair intellectual development, thus lead to poor educational performance and impaired psychosocial functioning (Patel & Kleinman 2003).

Therefore, as discussed earlier, although income is a key determinant, levels of education also play an important role in child health (Spencer, 2000). A mother's level of education correlates closely with a child's risk of dying before the age of two years. In developing countries, improvement in female literacy has been associated with reduction in infant mortality rates (Save the Children, 2000). Women's income subsequently rises by 10–20% for each additional year of schooling. Educated women are more likely to postpone marriage and childbirth,

provide better health care to their families, send their children to school, and contribute to overall economic growth (Filmer, 1999).

Similar to the impact of parents' educational status on children's general health, this has also been found to be associated with their mental health. The UK national surveys found higher prevalence of mental health problems among children whose parents had no educational qualification, as opposed to those with parents educated to degree level (Green et al, 2005). Mothers with low education were more likely to have poor parent-child interactions, for example through greater parental stress or likelihood of depression (Berg et al, 2003), and this is a well established mediator of child mental health problems (Yeung et al, 2002).

So far, we have discussed the impact of parental educational on the child. Research has shown that school factors, in particular the type of schooling, quality of the school environment, and literacy can also have a profound influence on child mental health.

2.2.1. III-School factors

Considering how much time most children spend in school, the psychosocial dimension of education has sparked the interest of a growing number of researchers concerned with school effectiveness and children's emotional well-

being. I have divided the literature evidence into two categories, firstly by mainly considering the school environment, including its physical structure, as well as pupil-teacher interaction; and secondly by focusing on learning difficulties and school failure. I will now briefly discuss each of these topics, and how they may operate as risk factors for child mental health.

2.2.1. IIIa- School climate

There have been several systematic reviews (Lister-Sharp et al, 1999; Catalano et al, 2002; Wells & Brown, 2003) which have concluded that 'whole school approaches' are essential when attempting to tackle children's emotional and social issues. Studies that promoted the 'whole school approach' focused on the totality of schools as an organization in its community, including all aspects of school life, such as ethos, relationships, communication, management, physical environment, learning strategies, curriculum, special needs procedures, relationships with parents and the surrounding community, and their effect on children (Weare, 2004).

The physical school environment is an essential factor. It encompasses the school building and all its contents, including its infrastructure, furniture, and availability of scientific facilities; the site on which a school is located; and the surrounding environment, with which children may come into contact, as well as nearby land, roadways and other hazards. WHO, in its document entitled

'Physical School Environment: An Essential Component of a Health-Promoting School' states that the "provision of safe and sufficient water, sanitation, and shelter from the elements are basic necessities for a healthy physical learning environment. Equally important is the protection from biological, physical, and chemical risks that can threaten children's health infectious diseases carried by water, and physical hazards associated with poor construction and maintenance practices are examples of risks children and school personnel face at schools throughout the world" (WHO, 2003b, p. 2).

Research has established considerable evidence on the links between areas with high levels of deprivation and lower levels of educational attainment. Lupton (2004 & 2005) found a strong relationship between levels of deprivation and the 'quality' of schools in an area. This is especially important in developing countries, where education systems are already challenged by inadequate resources, crowded classrooms and inconsistent quality. It has been found that the quality of school environment can serve as a risk factor for learning and emotional problems, and increase the risk for early drop-outs (Patel et al, 2000a).

Besides the role of the physical environment, another important school factor is the quality of teacher-pupil interaction, in particular teachers' attitudes and behaviours towards their pupils. Kearney and colleagues (1991) defined teacher misbehaviours that interfere with student learning. The concept includes

activities that range from an unsatisfactory teacher training (e.g. non-stimulating lectures) to aggressive actions such as sarcasm or unfair testing. Van Morrow (1991) also described negative teacher behaviours, including criticism, embarrassment and humiliation that can have harmful effects on pupils.

A more harsh term, 'teacher maltreatment', focuses on psychological maltreatment that occurs in school settings. This involves acts that are judged by professional experts to be psychologically damaging. An example of maltreatment in schools is using fear and intimidation to install discipline in the classroom. Sava (2002) reports that there are three categories of negative effects: educational (lack of motivation, high rates of drop-outs), psychological (including, anxiety, low mood, low self-esteem, school refusal), and physical/somatic outcomes, which can occur as a result of teachers' maltreatment of pupils.

I will next discuss the effect of literacy on child mental health; this includes the risk of early drop-outs and school failure, as well as learning difficulties that can lead to co-morbid mental health problems among school children.

2.2.1. IIIb- Literacy and child mental health

As discussed earlier, teacher maltreatment is a risk factor for early drop-out from school. School failure has long been known to produce a whole raft of educational, social and personal consequences. In the immediate school context it can result in alienation, disruption, bullying and violence. In the wider social context it can lead to unemployment, which can spiral to poverty and social exclusion (Weare, 2000 & 2004). Studies which specifically examined the causes of school failure found that behavioural, emotional and learning difficulties constitute prominent risk factors. For example, an Indian study found that mental health problems were independent risk factors for later school drop-outs (Patel et al, 2008). Another case-control study from Brazil reported a strong association between school drop-out and conduct disorder (Tramontina et al, 2001).

It is important to note that family poverty and low socio-economic status are consistently related to lower school performance and school retention rates. In extremely poor conditions, parents can willingly emerge their children in the labour market to meet their families' financial needs, and this may impact on the child's physical health (Khan et al, 2007), as well expose children to added risks such as sexual and physical abuse (Scanlon, 2002).

A review of the literature on the role of schools and child mental health would be incomplete without consideration of the interface with learning. Children with learning disorders (LD) exhibit academic functioning out of proportion to their intellectual capacities. Their impaired ability in learning may be global or confined to the academic skills of reading, writing, arithmetic or spelling. According to the Diagnostic and Statistical Manual-IV (DSM-IV) (American Psychiatric Association, 1994) learning disorders are of four types: Reading disorders, Mathematics disorders, Disorders of written expression, and Learning disorders not otherwise specified (NOS). Estimates of the prevalence of learning disorders range from 2% to 10%, depending on the nature of ascertainment and the definitions applied (APA, 1994). Children with learning disorders face numerous problems in school settings. Studies in both developing and developed countries show that children with learning disorders have high rates of mental health problems in the classroom (Kishore et al, 2000; Allington, 2006). Teachers who are unaware of learning difficulties and their effective management can display harsh treatment towards such pupils, which in turn may serve as a risk factor for dropouts and mental health problems (Sava, 2002).

2.3-Conclusions

The overarching conclusion of this literature review is that a number of socio-economic variables serve as risk factors for child psychopathology, without any one single factor placing a child at risk of mental health problems. Rather, when

more than one factor is present, there is a compounding effect and the vulnerability increases significantly. Poverty is considered a major risk factor (Leroy & Symes, 2001). Factors related to poverty that may place a child at risk include family structure, neighbourhood, parental educational and unemployment. The financial circumstances of a family can also cause stress, that impacts on parenting styles, which in turn can precipitate and maintain child mental health problems (Goosby, 2006; Kuruvilla et al, 2007). Thus, there is a complex interaction between the various social-economic risk factors and their impact on children. This interaction often adds to complexity of their mental health conditions, influences their severity, and determines the nature of services required. In epidemiological studies, the identification of risk factors is, therefore, essential for the prevention of disorders and for service planning.

The review of epidemiological literature of child psychiatric disorders discussed in chapter one and the associated socioeconomic risk factors described in this chapter highlight the need for similar studies to be conducted in other locations world-wide. The lack of such evidence in Pakistan, and the need to address this essential topic among Pakistani children, were the rationale for this study.

CHAPTER THREE

METHODS

3.1-Introduction

This chapter describes the methods of the study. The chapter is divided into a number of sections. The first part describes the aims and hypotheses. The next section describes the study design, the characteristics of the target population and the sampling frame; followed by a description of the measures, and the ethical issues considered. The final section provides a detailed description of the research procedure and the statistical analysis.

3.2a-Research aims

- To generate prevalence estimates of the common child mental health disorders in school children, with sufficient precision to be useful for service planning.
- To establish prevalence of child mental health disorders across the different educational settings.
- To establish socio demographic predictors of psychopathology.

3.2b-Research hypotheses

- Prevalence rates of common mental health disorders among school children in Karachi will be similar to those established in western child populations.
- Children attending government and community run schools will have higher rates of mental health problems compared to those attending private schools.
- The higher rates of mental health problems among children attending government and community run schools will be confounded by the lower socioeconomic background, with this variable being the strongest predictor of child mental health problems.

3.3-Research design

A cross sectional survey was the chosen design, for the following reasons:

- a) This type of design is an efficient and affordable method of obtaining information needed to support policy decision making and service planning.
- b) This design can provide abundant information on a wide range of correlates, including population characteristics that impact on needs.

The main limitation of cross sectional surveys for analytical as opposed to descriptive epidemiology is that they can only indicate patterns of aetiology. As exposure and outcomes are measured simultaneously, such a design can only establish associations between population variables rather than cause-effect mechanisms (Susser, 2001). Such limitations were not relevant for the accomplishment of the main objectives of this study. Testing possible causal pathways through longitudinal and intervention studies will be important goals for future research.

The study employed a two-stage design, with a first *screening phase* of all children included in the survey by means of parent and teacher rated mental health questionnaires (Strength and Difficulties Questionnaire described later in this chapter). In the *second phase*, 50% of the top positive scoring probands and 50% of the screen negatives on the questionnaire were assessed by the researcher using a diagnostic interview (Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children, also described later in this chapter).

3.4-Target population and settings

The study was conducted in Karachi, Pakistan. Karachi is located in the east of Pakistan, and its population at the time of the survey was estimated as 15 million. It is divided into 18 municipal districts, each having its own union council and district "Nazim" (mayor) (see Appendix E). As the target population

constituted primary school children from the various districts in Karachi, I will briefly describe the educational scene in Pakistan, with particular focus on the characteristics and features of government, private and community schools.

3.4a-School system in Pakistan

Several types of schools operate in Pakistan, namely government, private, community (run by non-government organizations, NGOs) and denni madrassahs (religious schools). The education system varies across the country. Schools differ in terms of ownership, size, tuition fees, clientele, physical facilities, curricula, textbooks, medium of instructions, staff qualifications, working conditions, pupil-teacher ratio, quality of education, and presence or absence of segregation (Ali et al, 1993).

Pakistan's educational system is very complicated. Kizilbash (1995) aptly summarised the existing range of schools:

Pakistan, like many other post-colonial societies, has a system of education that defies clear and precise description. Just the range of schools are enough to challenge an attempt at classification. On the one end of the spectrum are the denni madrassahs, religious schools of the different sects. Then there are old missionary schools, set up in the colonial period by Catholic and Protestant churches, which are prestigious semi-autonomous schools for the privileged; Army and Garrison schools that also serve the ordinary public; private English medium schools, English and Urdu medium schools of average and poor quality that have substantially expanded in the recent years; district and divisional

public schools that exist only in large towns or cities; plain old government schools and government model / pilot schools; municipal cooperation and nationalized government schools; and schools set up by the NGOs in the non formal stream (p.102).

I will now discuss the characteristics of the three major school groups, namely government, private and community (NGO) schools and their sub-types that constitute the study target population (FBS, 2001).

I-Government schools

The large majority of children attend Government or Public, i.e. State, schools which follow the government educational system. Education in these schools has three stages:

- Primary, i.e. classes 1 to 5, which enrol students of 5.6 to 9.6 years.
- Middle, i.e. classes 6 to 8, which correspond to ages of 10.6 to 12.6 years.
- Higher secondary, i.e. classes 9 to 10, which serve pupils of 13.6 to 15.6 years.

The medium of instruction in most schools is Urdu. Pupils learn their subject content and take exams in Urdu, while English is offered as a subject. The government Urdu medium schools are the largest in number. The quality of teaching in most schools in deprived areas is low. Classrooms are usually bare, and in rural areas lessons are often held outdoors, because of lack of space and

resources. Teachers often carry canes and corporal punishment is allowed, particularly in boys' schools. This is one of the main reasons why so many children drop-out of education (Rahman, 2005).

II-Private schools

To meet the growing educational needs, many private schools have been set up in recent years, with varying educational objectives. These include missionary, semi-autonomous, and Army cantonment and Garrison schools. Private schools follow the same grade structure as the government schools. There is, however, less segregation, particularly at primary level. Urdu is the medium of instruction in lower class private schools, whereas middle and upper class private schools operate in English. Most teachers in middle and elite private schools hold a University degree. Some teachers have additional qualifications such as M.Ed/B.Ed, Early Childhood Education Certificate or Montessori Diploma.

The private schools can also be categorized as higher, middle and lower, according to the fee structure. Ordinary government schools charge Rs 2-25 per month, while private schools differ hugely, ranging from Rs 1500 and above for the higher private schools, and as low as Rs 800 for the lower schools. Middle schools charge tuition fee ranging from Rs 801-1499 (Rahman, 2005).

III-Community (NGO) schools

There are various types of community (NGO) schools set across the country to meet the educational needs of children in remote regions, particularly focusing on female literacy. Community schools are run by non-governmental organizations (NGOs), mostly have a low fee structure, and cater for lower socio economic classes. There are various types of community school programmes. I will now briefly discuss the four NGO school types that were part of this study.

A-Community Supported Schools Programme (CSSP)

The Community Supported Schools Programme (CSSP) was initiated in 1998. The CSSP aims to develop an alternative parallel delivery system and to increase access to schooling. These schools are community centred and focus on working towards the community needs and rights to self-expression, self-definition and self-realization. Enabling students to enter into a formal education system and enhancing self-esteem and confidence within the young learners, the programme also assists the communities' in adapting and generating change. Currently, the CSSP is operational in five districts of Sindh, and caters for the educational needs of approximately 4,000 children (<http://www.sef.org.pk/cssp.asp>).

B-Fellowship Schools Programme (FSP)

The Fellowship Schools Programme (FSP) was established in 1997-1998, to provide quality educational interventions in far flung areas of Sindh. The FSP is designed on self-reliance, and promoting low-cost, high quality education for communities in the target areas (<http://www.sef.org.pk/fsp.asp>).

C-Home Schools Programme (HSP)

The Home Schools Programme (HSP) was launched to increase children's accessibility to quality primary education. This programme provides support to individuals willing to establish 'Home Schools' within their community. Such home schools offer 'Non-Formal Basic Education'. Non-formal education refers to instructions that are not compulsory or structured, and are learnt outside the context of a formal school. Community involvement is the vital thrust of this programme; parents do not only provide the premises, but are also actively involved in daily school matters and monitoring through the Village Education Committees (VECs) (<http://www.sef.org.pk/hsp.asp>).

D-Child Development Centre (CDC)

The Child Development Centre (CDC) in Karachi is the primary operating unit of the Child Labour Education Programme (CLEP) that provides an accessible educational facility, for the unique needs of working children. The CDC is open 12 hours daily for six days a week. The main aim of the centre is to provide self-

development opportunities to working and street children (<http://www.sef.org.pk/clep.asp>).

3.5-Sample

3.5a-Sample selection (inclusion and exclusion criteria)

1. Children between 5 to 11 years attending mainstream primary schools in Karachi. Consequently, children younger than five and older than eleven were excluded from the study. This age range was chosen mainly because this is the age for compulsory schooling in Pakistan according to 'Compulsory Primary Education Ordinance (2002)'.
2. The study was restricted to mainstream schools, because the detection of mental health problems in children with moderate to severe learning disabilities would have required different measures from those used with the mainstream population. For this reason, children with moderate to severe learning disabilities (defined on DSM-IV criteria as having an IQ lower than 70) were not part of the sample.
3. Only one child per family was selected. If, during random sampling, two or more children from the same household were identified, one of them was then selected for participation in the study.
4. School was the main sampling unit, and children were selected to participate in this study from the three major school groups. Children

attending religious or special educational schools were not included in the sample.

5. Children not attending school were excluded.
6. Active parental consent was required before a child could be considered for inclusion in the study. Consequently, children of those parents who did not give consent, were excluded.

3.5b-Sampling strategy

The sampling unit consisted of schools selected from the various districts in Karachi. In order to obtain a sample representative of the general population, data were collected from three main school groups, i.e. public or government run, community (NGOs) schools and private schools. All schools were selected within predetermined SES areas. The following profile was thus created:

- A. Government schools in lower SES areas.
- B. Private schools in lower SES areas.
- C. NGO (community) schools in lower SES areas.
- D. Government schools in middle SES areas.
- E. Private schools in middle SES areas.
- F. NGO (community) schools in middle SES areas.
- G. Private schools in higher SES areas.
- H. NGO (community) schools in higher SES areas
- I. Government schools in higher SES areas.

Table 3.1a Profile of participating schools according to gender and social class

	SES	School type	Gender
A	L	PS	M=87, F= 78
B	L	GS	M=163, F=132
C	L	NGO	M=181, F=146
D	M	PS	M=39, F=42
E	M	GS	M=4, F=11
F	M	NGO	M=9, F= 23
G	U	PS	M=14, F=12
H	U	GS	M=11, F= 7
I	U	NGO	M= 7, F= 2
			Total N= 968

L=Lower, H=Higher, M=Middle, U=Upper, GS=Government school, NGO=Community school, PS=Private school, M=Male, F=Female

Table 3.1b: Enrolment of pupils in three school groups according to gender in Sindh, based on Household Integrated Economic Survey (HIES) 2005-06 (HIES, 2006)

Schools	Males	Females	Total Population
Private school	1,288,422	1,222,728	2,509,150
Government school	1,644,978	1,422,419	3,067,397
Community schools	100,150	101,286	201,436

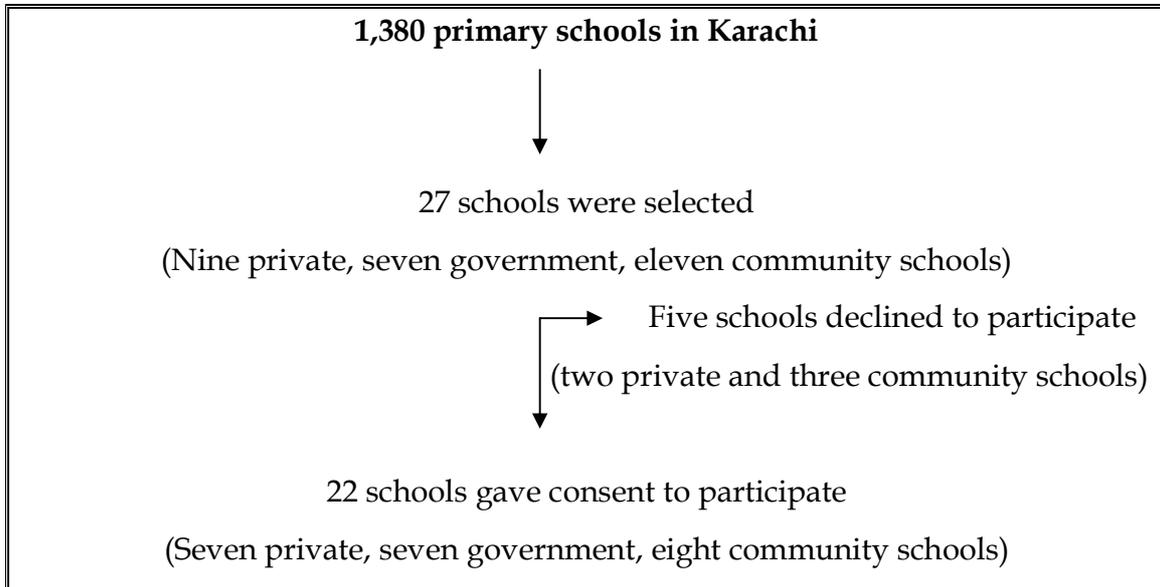
Table 3.1c: Profile of participating pupils according to gender & schools overall response rate

Profile	School type	N	Gender	Response rate
A	Private schools	272	M=140, F=132	38.8%
B	Government schools	328	M=178, F=150	46.8%
C	Community schools	368	M=197, F=171	46.0%

The Sindh Education Foundation (SEF) was established in 1992 as a semi-autonomous organization with the aim of providing education to disadvantaged communities. A town-wise list of all the primary schools in Karachi was obtained from the SEF. Karachi has a total of 1,380 primary schools located across the city (FBS, 2001). SEF authorities advised the research team to select eleven out of the eighteen towns in Karachi city, assuring that school authorities in these towns were most likely to cooperate.

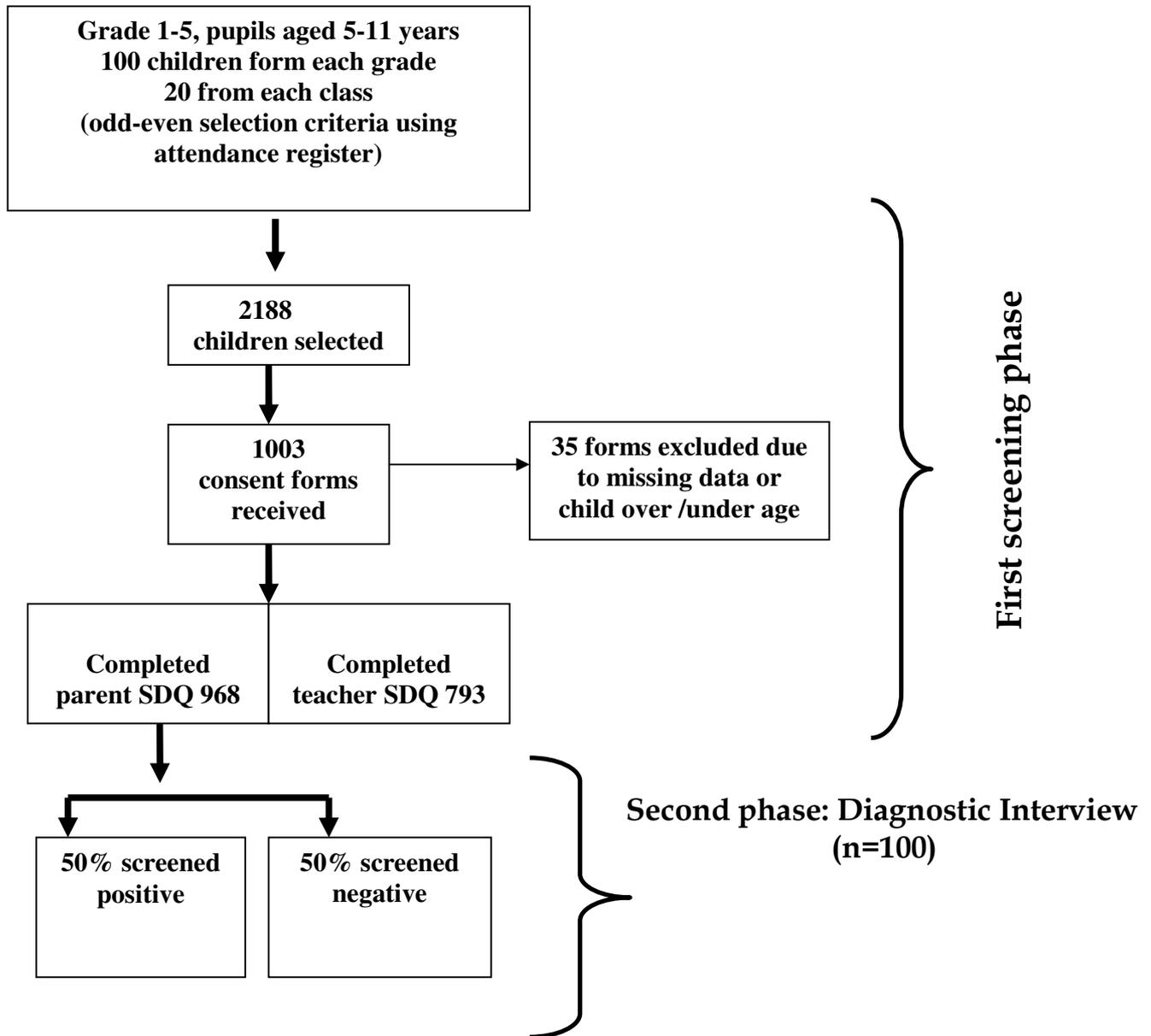
From each of these eleven towns, one community school was selected. In nine of these towns, we were also able to identify one private and seven government run schools. Of those, 27 schools selected, 22 agreed to participate, including seven private, seven government and eight community schools. Five selected schools, including two private and three community schools, declined to take part in the study, asserting that the topic might upset parents or was irrelevant to their pupils (Figure 3.1). From each of the remaining schools, 100 children were selected, 20 from each class (grade 1-5). If there were less than 20 children in a class, all were selected. If there were more than 20 children per class, 20 were selected from the attendance register, using a pseudo-random technique, alternating odd-even serial numbers on the attendance register.

Figure 3.1: School selection process



A total 2,188 children were selected, and consent forms and information sheets were sent to their parents (Figure 3.2). Consent forms were collected by the teachers. Parents who agreed to participate in the study were invited to the school for data collection. It was not possible to collect information on non respondents. One thousand and three (N=1,003) parents agreed to participate in the study, of whom thirty-five were excluded due to missing data or children being over /under age. Data analysis was carried out on 968 parents and 793 teacher rated questionnaires.

Figure 3.2 Sample selection process for first screening phase, and second phase of diagnostic interviews



3.6-Measures

3.6. I-Socio-demographic parent proforma (SDPP)

This 17-item proforma was developed based on existing literature. It elicited details, including: child age, gender, type of schooling, parental education, occupation, age, residential neighbourhood, social class, head of the household, family income, family type, physical illness/disability (past 12 months), and ethnicity (see Appendix F). Parental occupation, education and income were rated as categorical variables. Occupation was grouped into five major categories. These included non-earning, business, government employees, skilled labour and private jobs. Parental education was grouped into four categories based on the education system of Pakistan, including uneducated (no formal education), less than 10 years of schooling, 10 years of schooling, and higher education. Monthly household income was grouped into three categories, i.e. low, middle and high income, based on cut-offs provided by the 'Federal Bureau of Statistics' (FBS), Government of Pakistan (FBS, 2001):

Low socioeconomic status households with monthly income of Rs 14,000 and below. This income group was categorized as people spending a very high percentage of their income on food, transport and house rent. Their expenditure on items relating to personal appearance, cleanliness and laundry was minimal. These families depended on government subsidized institutions for education.

Middle socio economic status households with monthly income of Rs 14,000, to 30,000. This group had a lesser amount of expenditure for appearance and education, as compared to the higher socioeconomic group.

High socio economic status households with monthly income of Rs 30,000 and above. This group consisted of people with high emphasis on personal appearance, education and recreation, as compared to the two previous groups.

Table 3.2 Demographic data by socioeconomic status (FBS, 2001)

	Lower SES	Middle SES	Higher SES
Average monthly income (Pakistani Rupees)	14,000 and below	14,000 to 30,000	30,000 and above
Most common educational level of parents	None Primary/ Middle Grade 10 Skilled Vocational	Intermediate Bachelor Masters Degree	Bachelor Masters Degree
Most common occupations	Clerical/Sales Drivers/Soldiers Labourers	Clerical/Sales Lecturers/Teachers Doctors	Professionals Business personnel Civil servants
Most common family structure	Extended/Joint	Joint/Nuclear	Nuclear

3.6. II-Demographic Teacher performa (DTP)

This was designed to provide information by the teacher regarding the child, and included a four-point rating scale on the child's school performance, attendance, teacher qualifications, and years of teaching experience (see Appendix G).

3.6. III-Children's Global Assessment Scale (C-GAS)

III.1-Description of the instrument

The C-GAS was adapted from the Adult Global Assessment Scale and was developed by Shaffer et al (1983). The Children's Global Assessment Scale (CGAS) is one of the most widely used measures of the overall severity of disturbance in children. It is a uni-dimensional (global) measure of social and psychiatric functioning for children aged 4-16 years. The C-GAS can be used as an indicator of need for clinical services, a marker for the impact of treatment, or a single index of impairment in epidemiological studies. The C-GAS is a rating scale with a range of scores from 1 to 100, designed to be used by clinicians who are knowledgeable about a child. Anchors at 10-point intervals include descriptors of functioning and psychopathology for each interval.

III.2-Administrating and scoring the C-GAS

The C-GAS does not require administration time, because it is based on prior clinical assessment. The time of integrating knowledge of the child into a single score is estimated at about five minutes. No ethical permission is required to use the C-GAS, as this is considered integral to clinical practice. The single numerical score representing severity of disturbance ranges from 1 (most impaired) to 100 (healthiest). On the basis of the descriptors, raters are expected to synthesize their knowledge about the child's social and symptomatic functioning and condense this information into one score. For example, a score of 61-70 indicates

that the child has some difficulty in a single area but is generally functioning pretty well. Scores above 70 are considered to be within normal range, whereas scores on the low end of the continuum indicate a need for constant (1-10) or considerable supervision (11-20) (see Appendix H).

III.3-Validity and reliability of the C-GAS

The reliability of the C-GAS has been tested in research and clinical settings in a variety of ways. In research settings (where a C-GAS score is determined on the basis of case vignettes, a review of psychiatric evaluation records and test reports, or videotapes of clinical interviews), the joint reliability is high, ranging from 0.83 to 0.91 (Rey et al, 1995). However, when tested in typical clinical settings, only moderate agreement has been demonstrated (0.53-0.66) (Green et al, 1994). The C-GAS scores are highly correlated with measures of psychosocial functioning and symptoms, with moderate to large effect sizes. For example, the C-GAS has been found to be inversely correlated with the Aberrant Behaviour Checklist (ABC-I) ($r=-.71$) and the Clinical Global Impressions Scale CGI-I ($r=-.52$) (Wagner et al, 2007).

III.4-Application of the C-GAS in this study

In this study, the C-GAS was used as a measure of overall severity. The C-GAS was used to assimilate and synthesize knowledge about the child's psychosocial functioning, and condense it into a single index.

3.6. IV-Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997)

IV.1-Description of the instrument

The SDQ is a brief mental health screening questionnaire for 4-16 year-olds. It exists in several versions to meet that needs of researchers, clinicians and educationalists. Each version of the SDQ covers 25 items, 20 of which describe problems and five describe the child's attributes. These items are grouped into five subscales (emotional, conduct, hyperactivity/inattention and peer relationships problems, and pro-social behaviour) each including five items, (Goodman, 1997 & 2001) (see Appendix I).

IV.2-Administrating and scoring the SDQ

The response for each item is scored between 0 and 2. The scoring is as follows:

0-not true

1-somewhat true

2-certainly true

If an item is phrased positively, these scores are reversed. Item scores are summed to provide a score for each problem category. The score for each category thus ranges from 0 to 10. To generate a 'total difficulties' score, the scores for the four problems subscales (conduct, emotional, hyperactivity and peer problems) are summed without including the pro-social score. The total difficulties score can, therefore, range from 0 to 40.

Subscales and total difficulties scores can be classified as normal, borderline and abnormal. These bands which are not adjusted for age or gender have been chosen, so that approximately 80% of children in the community are considered to be in normal category, 10% in the borderline and 10% in the abnormal category (Goodman, 1997).

According to established cut-offs in the UK, the interpretation of the scores is as follows:

- Scores ranging from 0 to 3 in the subscales of emotional problems are considered to be normal, 4 is considered to be borderline, and scores between 5 to 10 are considered to be abnormal, i.e. requiring clinical assessment.
- Conduct and peer problems scores ranging from 0 to 2 are considered to be normal, 3 is borderline, and scores between 4 to 10 are considered to be abnormal.
- Hyperactivity scores ranging from 0 to 5 are considered to be normal, 6 is borderline, and scores between 7 to 10 are abnormal; and
- Pro-social behaviour scores are defined reversely to the previous subscales, thus scores ranging from 6 to 10 are considered to be abnormal, 5 is borderline, and scores between 0 to 4 are considered to be abnormal.

IV.3-Validity and reliability of the SDQ

In order to test the validity of this instrument, Goodman (1997) compared the SDQ to other research tools. He initially administered the Rutter parents' and teachers' scales (Rutter, 1967; Rutter et al, 1970) and the SDQ to 403 children attending dental and psychiatric clinics, and found a high correlation between the two instruments (Table 3.2).

Table 3.3: Association between Rutter scales and SDQ scores (Goodman, 1997)

SDQ	Rutter Parent Scale	Rutter Teacher Scale
Total difficulties score	0.88	0.92
Conduct problems Score	0.88	0.91
Emotional problems Score	0.78	0.87
Hyperactivity problems Score	0.82	0.90

The same authors validated this screening questionnaire in 5–15 year-old children living in the community (N= 467), and attending a psychiatric clinic (N=232). SDQ scores correlated highly ($r=0.74$) with the ratings of a standardized interview (Goodman, 1999). Another study investigated the value of SDQ in predicting child psychiatric disorders in the community. It was found that the SDQ identified individuals with psychiatric disorders, with a specificity at 94.6% and a sensitivity of 63.3%. The SDQ identified over 70% of children with conduct,

hyperactivity, depressive and anxiety disorders, but less than 50% of children with specific phobias, separation anxiety and eating disorders (Goodman et al, 1998; Goodman et al, 2000a; Goodman, 2001).

Goodman and Scott (1999) compared the properties of the SDQ and the Child Behavior Checklist (CBCL; Achenbach, 1991) both of which were completed by mothers of 132 children aged 4 to 7 years. Total SDQ and CBCL scores were highly correlated, and equally able to discriminate psychiatric from non psychiatric cases. The SDQ was more sensitive than the CBCL in detecting inattention and hyperactivity problems. The total scores of the German (Klasen et al, 2000) and Urdu versions (Syed, 2007b; 2009) of the SDQ and the CBCL were also moderately correlated with each other.

The Strengths and Difficulties Questionnaire (SDQ) has been widely applied and evaluated in developed and developing countries. Its structure, normative scoring and psychometric properties have been extensively investigated in samples from the UK (Goodman et al, 1999; 2000a; 2000b; 2000c; 2003) and Europe (Koskelainen et al, 2000; Sourander et al, 2001; Ronning et al, 2004), the Americas (Dickey et al, 2001), Australia (Hawes et al, 2004) the Middle East (Thabet et al, 2000; Alyahri et al, 2006) and Asia (Samad et al, 2005). The SDQ is available in over 60 languages, and this makes the instrument particularly

attractive for international collaborations and cross-cultural comparisons across clinical and non clinical populations (Vostanis, 2006).

IV.4-Validation of the SDQ in a clinical sample in Karachi, Pakistan

A study to test the validity of the Urdu version of the Strengths and Difficulties Questionnaire (SDQ) was carried out in Pakistan. The sample consisted of children aged 4-16 years presenting to psychiatric (N=72) and paediatric out-patient clinics (N=140). Parents were interviewed using the extended version of the SDQ. Mean difficulties scores were significantly higher in the psychiatric (mean=21.7) than the paediatric group (mean=14.4). The difference was statistically significant ($p < 0.01$, 95% CI=5.3-9.3) with an effect size of 1.1. Adequate sensitivity (> 61%) was obtained for each type of psychiatric disorder using the abnormal SDQ category score as a cut-off. According to the algorithm for the parent rated version, a child scoring >2 on the SDQ impact supplement, combined with a score of >7 for emotional, >6 for conduct or >8 for hyperactivity problems is likely to have an emotional, conduct or hyperactivity disorder respectively. A ROC curve analysis showed an area under the curve >0.70 for all scores (Samad et al, 2005).

IV.5- Pilot study: Association between the English and Urdu versions of the Parent SDQ

The majority of people in Pakistan communicate in Urdu, the official language of the country. In addition, there are several regional languages, however, a small number of parents, mainly of private school children, are more fluent with reading and writing in English compared to Urdu. Since it was essential to select a representative sample of parents and children, a pilot study was conducted to determine the association between the English and Urdu version of the parent SDQ. Thirty-eight parents of primary school children were randomly selected from a private school in Karachi. The parents were informed of the study, and were provided with information sheets and consent forms. All parents approached agreed to participate, and were requested to rate their child's behaviour using both the English and Urdu version of the SDQ.

Descriptive statistics were computed for the socio-demographic characteristics of children and parents. Data were analyzed using the software package SPSS (version 15.0). As the data was normally distributed association between the English and Urdu SDQ versions was computed using Pearson product correlation coefficient. The sample had similar demographic characteristic as the larger epidemiological study. Data was collected for 13 females (34.2%) and 25

males (65.8%) from grades 1-5. Most parents were educated and had at least a graduate degree.

Correlation between the English and Urdu versions of the SDQ

A high number of parents reported Pearson product moment correlations of 0.992 ($p < 0.000$) between the two SDQ versions. Manual analysis of errors suggested that some items had been missed in either the English or Urdu version, and in two cases there was a discrepancy in the marking of items. However, since the majority of the sample did not report any errors, it could be concluded as a misunderstanding on part of the parents.

Pearson Correlation	.992(**)
Sig. (2-tailed)	.000
N	38

** Correlation is significant at the 0.000 level (2-tailed).

IV.6-Use of the SDQ in this study

The main aim of using the Strengths and Difficulties Questionnaire (SDQ) was to facilitate the second stage sampling, with minimal possibility of false positive and false negative cases. Since the second phase diagnostic interview will be used with a relatively smaller sample, the use of the SDQ in a larger sample

would enable within-group comparisons according to socio-demographic correlates. Although the SDQ does not provide precise prevalence, nonetheless the SDQ rates can be contrasted with previous findings.

3.6. V.1- KIDDIE-SADS Present and Lifetime Version (K-SADS-P-IVR)

The Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children (6-18 years) (K-SADS-P-IV) was updated by Ambrosini and Dixon (1996) to its current version (K-SADS-P-IV-R), which is compatible with the DSM-IV. The Research Diagnostic Criteria (RDC) were used to reach a diagnosis of those syndromes covered both by the research diagnostic criteria (Spitzer et al, 1978) and the Diagnostic and Statistical Manual 4th version (DSM-IV) (APA, 1994). For psychiatric disorders not included in the RDC, DSM criteria were employed. The K-SADS has been translated and its reliability and validity for child and adolescent psychiatric diagnosis has been established in a number of countries, including Israel (Shanee et al, 1997), Greece (Kolaitis et al, 2003), Korea (Kim et al, 2004), Iran (Ghanizadeh et al, 2006) and Spain (Ulloa et al, 2006). The diagnostic categories included in the K-SADS P IV-R are presented in Table 3.3 (due to the length of the instrument (128 pages), the complete K-SADS-P-IV-R is not included, see Appendix J for selected items).

Table 3.4 Diagnostic categories included in the K-SADS-P-IVR

Affective Disorders	Emotional Disorders	Behavioural Disorders	Psychosis	Eating Disorders
Major Depression a) Non - Endogenous b) Endogenous c) Psychotic	Avoidant	Oppositional Defiant	Schizophrenia	Anorexia Nervosa
Minor Depression	Generalized Anxiety	Conduct Disorder	Schizo-affective	Bulimia Nervosa
Dysthymia	Overanxious	ADHD	Schizotypal	
Bi-polar a) Mania b) Bi-polar I c) Hypomania d) Bipolar II	Separation Anxiety	Substance Abuse	Paranoid	
Cyclothymia	Obsessive Compulsive			
	Simple Phobia			
	Social Phobia			
	Panic Disorder			
	Post Traumatic Stress Disorder			

V.2-Administration of the K-SADS-P-IVR

The authors of this instrument recommend that the K-SADS should be administered to the parent (s) first and then to the child alone (Kaufman et al, 1997). The first section of the interview is unstructured. This section aims to establish the following:

- A chronology of the evolution of the current episode of the disorder.
- The onset of the disorder, and
- The period of severe symptoms

Following the unstructured interview, the parent is interviewed using the semi-structured section. The child is subsequently assessed on their own. During the interview, the child is asked about the presence or absence of each symptom. Following the recording of the child's account, the assessor makes a clinical judgement as to the presence or absence, and the severity of the symptoms. When there are discrepancies between the parent and child reports, the examiner should explore with the child any discrepancies with their parent's perception. If such discrepancies are not resolved, the parent and child should be seen together. The assessor ultimately needs to use his/her best clinical judgment to resolve the discrepancy. The most frequent disagreement occurs in terms of describing subjective phenomena such as guilt, hopelessness, sleep difficulties, hallucinations and suicidal ideation (Ambrosini, 2000).

V.3-Scoring the K-SADS-P-IVR

The K-SADS-P-IV-R rates each DSM/RDC symptom required for a diagnosis. These ratings are on a numerical range, usually from either 0 to 6, or 0 to 4. When a symptom has a score of 3 or above, it is considered that this symptom is positive. Some symptoms can also be scored from 0 to 2. These ordinal values represent levels of symptom severity and frequency.

For those symptoms scored from 0 to 6, the coding is as follows:

- 0 = No information
- 1 = Not at all
- 2 = Slight
- 3 = Mild
- 4 = Moderate
- 5 = Severe
- 6 = Extreme

For symptoms scored from 0 to 4, the coding is:

- 0 = No information
- 1 = Not at all
- 2 = Slight
- 3 = Mild to moderate

Some items are scored from 0 to 2, with the following coding:

- 0 = No information
- 1 = Symptom or behaviour absent
- 2 = Symptom or behaviour present

V.4-Validity of the K-SADS-P-IVR

The K-SADS has been validated against several established diagnostic instruments. For example, one major study compared the Depressive section of the K-SADS to the Beck Depression Inventory (BDI) for adolescents, the Children Depression Inventory (CDI) for pre-adolescents and the clinician rated Hamilton Depression Rating Scale (HDRS) in 356 adolescents and 116 pre-adolescents psychiatric out-patients. Patients with major depressive, minor depressive and dysthymic disorder were compared with non depressed psychiatric controls. The findings supported satisfactory validity (Mc Conville et al, 1995; Mc Laughlin et al, 1997). Similar results were established by Kaufman et al (1997), who compared the K-SADS-P IV-R to the internalizing and externalizing subscales of the Child Behavior Checklist, (CBCL), the Connors parent rating scale for ADHD, and the screen for child Anxiety related emotional disorder. Table 3.4 summarizes some of these findings.

Table 3.5 Validity, sensitivity and specificity of the K-SADS when compared to the BDI, HDRS and CDI (Mc Conville et al, 1995; Mc Laughlin et al, 1997)

Measure	N	Cronbach's α	Sensitivity	Specificity
BDI	356	0.90	92	71
HDRS	144	0.82	93	95
CDI	116	0.89	41 *	87

BDI: Beck Depression Inventory, HDRS: Hamilton Depression Rating Scale; CDI: Children Depression Inventory

*The low sensitivity found was not related to the K-SDAS, but rather to the CDI. In the pre-adolescent sample, the CDI was not very sensitive in identifying affective disorders, nor did it differentiate between major depression and dysthymic disorder. Researchers in this field have argued that the CDI measures a broader depressive construct than other instruments (Jensen et al, 1993).

V.5-Reliability of the K-SADS-P-IVR

Chambers et al (1985) investigated the test-retest reliability of the K-SADS in 52 children aged 6-17 years and found that the majority of the symptoms were reliably assessed in the test-retest format for depression, conduct, oppositional defiant and attention deficit-hyperactivity disorders. Similar results of inter-rater reliability using videotaped interviews were established by Ambrosini et al (1989). Reliability scores have consistently improved in recent editions of the K-SADS. Inter-rater reliability has been higher in major depressive, minor depressive/dysthymic, generalized anxiety, separation anxiety and oppositional

defiant disorders (Ambrosini, 2000). The inter-rater Kappa coefficient of six diagnoses in two versions of the K-SADS is presented in Table 3.5.

Table 3.6 K-SADS inter-rater reliability data scores (Kappa) (Ambrosini, 2000)

Diagnosis	K-SADS III-R (N=25)	K-SADS IV (N=20)
Major Depression	0.80	0.90
Minor Depression	0.88	0.88
Generalized Anxiety Disorder	0.85	0.78
Separation Anxiety Disorder	0.85	0.85
Oppositional Defiant Disorder	0.89	0.80
ADHD	0.89	0.80

V.6-Training for the use and scoring of the K-SADS-P-IVR

Although in the past some formal training used to be available in UK, this is no longer the case. The author Professor Ambrosini informed me that no training courses were available in the USA and the UK, in spite of the recommendations that training should be undertaken before using this instrument. Professor Ambrosini sent the latest version of the K-SADS-IVR and the scoring forms (see Appendix K). I was in regular communication with Professor Ambrosini, who offered guidance and advice on how to use this instrument. Any doubts in relation to the K-SADS-IVR were discussed and supervised by Professor Ambrosini via emails.

Before the research took place and in order to become familiar with the instrument, I also received informal training from a clinician (Consultant child and adolescent psychiatrist) who had used the instrument in a previous study (Arcelus et al, 2001; 2003). I also remained in regular contact with other researchers who had used the K-SADS in their studies.

V.7-Urdu translation of the K-SADS-P-IVR

Health research in Pakistan often requires that English language questionnaires which have been developed in the west, are translated into the local language. Many of the concepts measured by these questionnaires are complex and may apply to a different culture. Simple translations may, therefore, lead to problems of validity and reliability in the Pakistani setting. Keeping these issues in mind, I translated the entire K-SADS-IV-R diagnostic interview section for mood, emotional and behavioural disorders, as well as the Children's Global Scale (C-GAS), from English to Urdu with the help of a panel of experts.

I will now discuss the process of translation, and the details of the panel that assisted in the translation process.

V.7.1-Standard linguistic validation process

The first step involved a conceptual analysis of the original instrument, in collaboration with the author of the K-SADS-IVR to define the notions investigated through each item. The developer of the K-SADS-IVR Professor Ambrosini, was involved throughout the linguistic validation process, whenever further clarification was needed.

V.7.2-Recruitment and briefing of a panel of experts to assist in the translation process

Translation panel members were recruited from different professional backgrounds. As the panel had to assess the translated instruments for use with children in Pakistan, it was vital to ensure that members had substantial clinical and research experience. The selected translation panel thus consisted of nine members from a variety of backgrounds; including one Psychiatrist and researcher with experience of child psychiatry, one Psychologist, one Paediatrician, one GP, one Social worker, one school counsellor, one Islamic scholar and two English and Urdu language experts.

Table 3.7: K-SADS translation panel

Professional background	Name	Qualifications
Psychiatrist	Dr Ehsanullah Syed	Child psychiatrist
Psychiatrist	Dr Alvina Ali	Specialist Registrar
Psychologist	Ms Sana-e Zehra	MA Psychology
Paediatrician	Dr Mohamad Aleem	MBBS/MD/Paeds
GP	Dr Tabbssum Zehra	MBBS/MD/Mphil
Student Counsellor	Ms Saira Taqi	Counsellor
NGO worker	Ms Rubian Hafeez	Social worker
Educationalist (Urdu expert)	Ms Husnara Ansari	B.Ed, B.Phil
Educationalist (English expert)	Ms Tahira Baig	MA English
Islamic Scholar	Ms Fatimah Hassan	MA Islamic studies

V.7.3-Translation process

The aim of a linguistic validation process is to obtain a translation of an original instrument in a target language that is both conceptually equivalent to the original, and easily understood by people to whom the translated questionnaire is administered. This is achieved using an internationally accepted translation methodology. In the present study, only the three common broad categories covering affective, emotional and behavioural disorders were included (the

reasons for selecting these disorders have already been discussed). Each section was translated by at least two members of the panel. The researcher then compared the two versions, and revised the most suitably translated and culturally accepted items. The translated and revised instruments were sent to the panel members to rate the appropriateness of translation on a three-point rating scale (agree, disagree, needs amendment). Each panel member was expected to rate on two basic guidelines. Firstly, does this translation represent the concept that was conveyed by the original statement in English? Secondly, that they consider the conceptual, semantic and cultural equivalence, rather than the linguistic equivalence. Those items that failed to achieve consensus in translation were amended and reworded/phrased, based on a unanimous decision by the panel members.

Cultural adaptation of K-SADS-IVR items

Translation included changing some of the items, to make them consistent with the children's community and their cultural/religious background. The changes were derived in the cultural context of Pakistani children living in Karachi. A major challenge was to ensure literal and conceptual equivalence of idioms and cultural symbols, as each can contribute to the latent meanings within any communication. For example, 'feeling blue' or 'butterflies in the stomach' required alternative conceptually equivalent terms. A table indicating the major adaptations made is presented next.

Table 3.8: Adaptation of K-SADS-IVR items made in the Urdu version

Symptoms	Item	Changes made
Loss of libido/dating	How has your interest in boys/girls (sex) been this past week? I'm not asking about dating (performance) but about your interest in boys/girls (sex). How much do you think about it?	Items related to sexual activities were re-phrased, in order to avoid insulting.
Anhedonia/ loss of interest	Are you less sexually interested than you used to be [in adolescents]?	
Anhedonia/ loss of pleasure	[For adolescents] Do you enjoy sex as much as you used to?	
poor judgment	At that time, did you do anything sexual that you usually don't do? What happened?	
Unusually energetic/more active	What about in school, in your club, scouts or gang, church, at home, with friends, hobbies, new projects or interests?	Items referring to the child's social activities added places such as the mosque, Imambargah and Jamatkhan, apart from churches, to cater for children from all major religious backgrounds.
Sleep problems	Do you sleep alone or with your parents?	Taking into consideration socioeconomic adversities and poor housing, this item was scored in the context of a family's living conditions.
Non-confrontational stealing	Often persistently stealing over \$10 per week, or something valuable once during present episode. Has stolen very valuable object (over \$50).	Items were converted to Pakistani rupees, in order to understand the worth of items stolen.
Vandalism	Often vandalizes or at least once damage was over \$100. Most of time will vandalize when the opportunity is there, or at least once, with damage over \$500.	Items were converted to Pakistani rupees, in order to understand the, worth of items destroyed.
Substance abuse/dependence	Were you ever addicted to alcohol or drugs?	For substance abuse, specific mention was made to the most common drugs in Pakistan.

V.7.4-Backward translation step

Although the importance of the back translation process has been emphasized in the literature (Pena, 2007), due to the time frame and resources constraints of this study, it was not possible to carry out this process. This is an important task for future research.

V.7.5-Proof-reading

Proof-reading of the translated Urdu version was carried out by two independent consultants, who were not part of the original translation process. I then compared the suggestions put forward by the independent proof readers and incorporated the results into the final draft.

V.7.6-Clinician's review

The final draft of the translated Urdu KSADS-IVR was reviewed by a child psychiatrist from Pakistan practicing in the UK, with excellent command of both English and Urdu. Suggestions put forward by the reviewer were incorporated into the final Urdu version of the K-SADS-IVR.

V.8-The use of the tool in this study

The K-SADS-IVR was the main instrument used in this study. This tool was used to investigate:

1. The psychiatric diagnosis of children attending three schools types in Karachi.

2. The degree of psychiatric co-morbidity in children.
3. The relationship between disorders and socio demographic correlates.
4. The extend to which the screening instrument (SDQ) could detect likely psychiatric disorders.

3.7-Ethical approval

Psychiatric research with children and adolescents is ethically justified by the need to reduce the burden that mental illnesses places on young people, their families, and society. Such research must be conducted with careful attention to the ethical principles of beneficence, justice, and respect for persons. Child mental health practitioners who collaborate on research trials or advise patients and families about research participation should consider nine domains when evaluating the ethical acceptability of particular protocols. These domains include: scientific merit and design; expertise, commitment, and integrity; risks and benefits; confidentiality; participant selection and recruitment; informed consent and decisional capacity; incentives; institution and peer/professional review; and data presentation (Hoop et al, 2008).

One of the most important domains of ethical interest is concerned with the protection of children perceived as vulnerable and open to exploitation by researchers (Mahon et al, 1996). Issues of informed consent, the appropriateness of children as research subjects, the research methods and potential for physical,

emotional or psychological harm are considerations that are assessed before permission is given for the research to commence (Medical Research Council, 2001). If researchers are to involve children, they must use methodologies which support children's intellectual and social abilities. Methodologies must also ensure that the researchers fulfil their social and ethical obligations by protecting children in the eventuality of physical, psychological or emotional threat (Jamison & Gilbert, 2000). A relationship based on trust and mutual respect can be developed, allowing the researcher to uphold the ethical imperatives when working with children (Keddie, 2000). This approach is consistent with the social, intellectual and communication requirements of children participating in research (Birbeck et al, 2007).

Although it is internationally accepted that ethical approval should be routinely sought when conducting research with children and adolescents (Medical Research Council, 2001), there was no research ethics committee in Pakistan when this study was carried out. However, this was discussed in detail with the educational, health and welfare authorities, and was approved by them. After explaining the purpose of the study, written consent was obtained from the school authorities, followed by the parent of each child (see Appendix for sample copy). Participants were free to decline answering any specific question or to withdraw from the study at any time. Confidentiality of participants was maintained during the administration of the questionnaires. Confidentiality of

the subject's information during the study was also assured. The conclusions and arising recommendations of this study were disseminated to the school authorities who shared it with the parents, without disclosing individual or school data.

3.8-Research procedure

3.8a-Stage one (screening phase)

The data were collected between January and June 2006 from private and community schools, and between April and May 2007 from government run schools. In order to obtain consent from schools, a meeting was initially held with the educational authorities and school principals. They were provided with consent forms, information sheets, and a brief outline of the research procedure, including the kind of assistance required by the schools (See Appendix L, M, N & O). The materials were available in English, Urdu and Sindhi, the regional language spoken in some areas of Karachi.

After schools had consented to participate in the study, the researcher identified the sample through the attendance register. Parents of selected children were sent an information sheet and a consent form asking whether they were willing to participate, and whether they gave permission for their child's teacher to be approached. Parents who agreed to participate were invited to a meeting held at the school for parents and teachers. They were given a short presentation on

child mental health disorders, and the rationale of the study was explained. This procedure was carried out with the aim of providing awareness, as there is a lack of information on child mental health issues in the country, as well as encouraging participation in the study and reducing the number of drop-outs. Following the presentation, SDQ data was collected from parents. Teacher SDQ questionnaires were distributed and collected from the school at a later date. As most parents of private school children could read, they completed the questionnaires, however, in the community and government schools the majority of parents were uneducated. For those parents needing assistance, the principal researcher (SH) along with other researchers helped them to fill in the questionnaires.

A team of five researchers assisted with data collection. All had Master's degrees, while two of them, including the principal investigator, had a Master's degree in Psychology. Before data collection, they were all trained through various means in interviewing techniques and mental health concepts. Training included interviews of volunteers, role-play and recorded interviews. All data was entered into a specially designed database and was verified by independent double entry.

3.8b-Stage two (interview phase)

Recruitment to the second phase depended on the SDQ results of the screening phase in order to maximize case finding efficiency. Due to lack of resources and time constraints, it was not possible to interview all the cases. Therefore, a random sample of 50% of the top scoring screen positives probands and 50% of the screen negatives scorers on the parent SDQ were assessed by the researcher using the Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children (6-18 years) (K-SADS-P-IV-R) with parents of selected children. Other studies have used similar approaches (Eapen et al, 1998; Bilenberg et al 2005; Slobodskaya et al, 2005). The in-depth assessment interview was carried out at the school or home as per parents' choice. All parents invited to take part in this phase agreed to do so.

The K-SADS-P-IV-R was translated in Urdu to ensure that the items were easily understood and applicable to the families' cultural context (details of the translation process were discussed earlier). Although the author of the K-SADS had stated that the parent interview should ideally be corroborated by the child and other informants such as teachers, the present study did not involve multi informant interviews, due to resource and time constraints. The children's global impairment was assessed and rated on the Children's Global Assessment scale (C-GAS), which was also translated in Urdu (see Appendix H).

3.9-Data management

I reviewed the collected SDQ parent and teacher screening questionnaires thoroughly every evening, discussed the relevant discrepancies with the respective interviewers the next day, and requested them to contact the parents/teachers and complete the missing or incomplete information. This ensured that there was no missing data. Data was double-entered by hired data entry operators using Epi info version 6.04. I matched the two data files, and the discrepancies found were corrected by cross checking with original questionnaires. This process was repeated until no discrepancy was found between the two data files.

3.10-Statistical analysis

Statistical advice was provided by the Trent Research & Development Support Unit (Trent RDSU). The data was coded, entered, and analyzed using the SPSS statistical package version 15 (SPSS, 2001), SAS version 9.0 (SAS, 2008) and STATA version 9.0 (STATA, 2008). Descriptive statistics were computed for the socio-demographic characteristics. The frequency distribution of the 'normal', 'borderline' and 'abnormal' categories of parent and teacher SDQ ratings were also computed. Mean and standard deviation of continuous SDQ scores were calculated. In order to describe the severity of child mental health problems, descriptive statistics of continuous parent and teachers' SDQ scores was computed. As the SDQ total data for both parents' and teachers' was

approximately normally distributed, comparison of the levels of emotional and behavioural problems according to gender and school type was explored using independent t-tests, ANOVA and chi-square. All ANOVAs were between subjects (between group) design. ANOVAs and t-tests were subjected to normality and homogeneity of variance tests (Sheskin, 2004). Regression models such as linear, logistic or ordinal regression, are useful tools in establishing the relationship between multiple independent variables and the dependent (outcome) variable. The ordinal regression method is particularly used to establish the relationship between the independent variables and the ordinal dependent variable (Bender et al, 2000). Since the SDQ produces an ordinal outcome, the association of socio-demographic variables with total SDQ scores was examined using ordinal regression analysis. As this is an exploratory study, the backwards stepwise ordinal regression model was selected, as this is the preferred method of exploratory analyses, where the analysis begins with a full or saturated model and variables are eliminated from the model in an iterative process. The fit of the model is tested after the elimination of each variable to ensure that the model still adequately fits the data. When no more variables can be eliminated from the model, the analysis has been completed (Hill & Lewicki, 2006).

Whereas the first phase was based on a random sample of children and did not require weighting, the second phase of the study did require weighting to adjust for the disproportionate sampling according to school type and the over-sampling of SDQ high scorers. To analyze sample survey data, the SURVEYFREQ procedure in the SAS programme was used, which incorporated the sample design into the analysis (Agresti, 2007). After the data was weighted, the frequencies of psychiatric disorders in children under study, and the rates of psychiatric disorders according to gender and school type, were calculated.

The results of the study are presented in the next two chapters. Chapter four is divided into three sections, and presents the socio-demographic characteristics of the parents and teachers, the results of both SDQ versions, and a comparison between the two informants. Chapter five presents the diagnostic prevalence of common mental health disorders.

CHAPTER FOUR
RESULTS I (Screening phase)
Strengths and Difficulties Questionnaire (SDQ)
parent and teacher version

4.1-Introduction

This chapter presents the results of the first screening phase. As described earlier in chapter three, the study was carried out in two phase. The first consisted of the screening phase and the second of the diagnostic interviews. Although I will be presenting the results in this order, there were several issues regarding the screening questionnaire (SDQ) that needed to be highlighted, therefore these are briefly discussed at the beginning of this chapter.

Firstly, many cross cultural studies have shown a slight variation in SDQ cut-off scores. For this reason, it was essential to establish local cut-offs for the SDQ, in order to obtain most accurate estimates of emotional and behavioural problems in our sample. Secondly, a recurrent difficulty in interpreting the SDQ scores is related to 'borderline cases', i.e. whether a researcher should consider them as clinically significant or not. A final issue relates to the analysis of teacher SDQ data. Since diagnostic interviews were not conducted with teachers (the limitations have been mentioned in chapter three), it was essential to determine how best to analyze teacher SDQ scores.

Following the brief discussion of these three major issues and how these were addressed, the final results of the first phase will be presented. The results chapter is based on two parts. The first part describes in detail the results of the screening phase. Parents and teachers data are presented separately and then are compared on the different informants' detection of mental health problems.

4.2.1-Establishing local cut-off SDQ scores

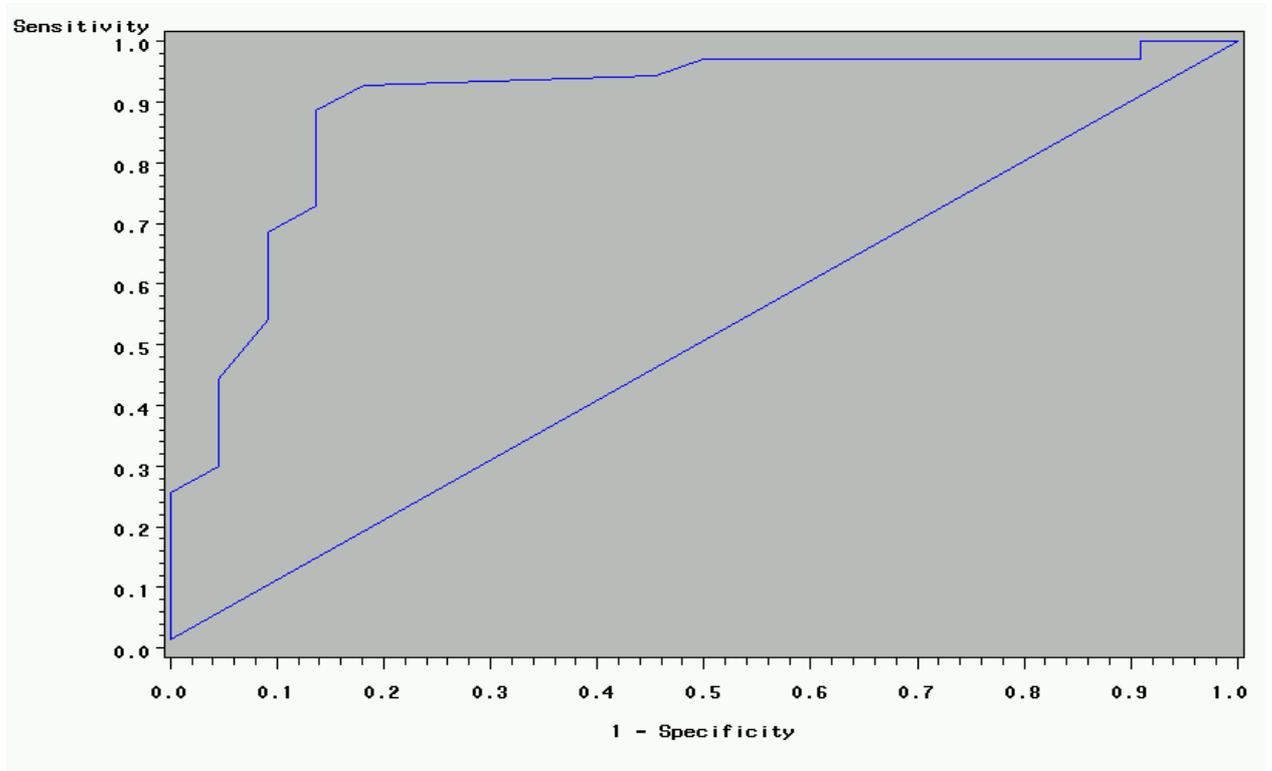
The psychometric properties of the SDQ have been tested in several cultural contexts, in schools and clinical settings. Cross cultural studies have shown that cut-offs differ slightly across populations (Woerner et al, 2004; Vostanis, 2006). Although the Strengths and Difficulties Questionnaire (SDQ) had been validated in Pakistan and local cut-offs were obtained for a clinical population, the earlier study did not use a diagnostic interview as its gold standard and results were limited to a clinical sample (Samad et al , 2005). In this study we thus aimed to validate the SDQ in a community sample of primary school children using the K-SADS diagnostic interview as a 'gold standard', and to establish appropriate SDQ cut-off scores for the local population.

A receiver operating characteristics (ROC) curve analysis was carried out and locally derived cut-offs for total SDQ scores were calculated. The ROC curve analysis provides a method to assess the overall discriminative power of psychiatric rating scales for the full range of their scores, and makes it possible to identify the best cut-off for the scale (Fombonne et al, 1992). For each cut-off level, an instrument has a true positive and a true negative rate. High values for both these co-efficients are desirable, although they are inversely related. ROC curves can be obtained by plotting the true negatives rates

(specificity) and the true positive rates (sensitivity) for the different thresholds of the rating scale. The area under the curve (AUC) is the most commonly used index to assess the overall discriminative power of an instrument. The AUC varies between 0.50, which corresponds to the chance line, and 1.0 a value associated with perfect accuracy. This parameter can be interpreted as the probability of correctly classifying the subject (Harrell, 2001).

An AUC > 0.89 was observed for total SDQ scores. Optimal cut-offs obtained from ROC curves provided an abnormal range of 18 and above for Pakistani school children. Interestingly, unlike other countries, the abnormal range obtained for the Pakistani population was similar to that of the original SDQ English version (Goodman et al, 1999). Figure 4.1 provides the ROC curve. The Urdu version of the SDQ was able to detect a difference between cases and non cases, based on the total scores. Using a cut-off of 17 and above to define abnormal cases, a sensitivity of 88% and specificity of 90% were obtained. The Urdu SDQ was, therefore, able to determine correct cases 96% of the time, compared to 70% correct detection of non-cases. Overall, the Urdu SDQ classified 89% of the cases correctly.

Figure 4.1: ROC Curve: outcome= Mental disorders (AUC=0.895)



The table below summarizes the values of sensitivity and specificity when a cut-off of 17 and above on SDQ was selected as abnormal.

Table 4.2: Sensitivity, Specificity, Positive Predictive Value and Negative Predictive Value

Sensitivity = $TP / (TP + FN)$	88.73
Specificity = $TN / (TN + FP)$	90.48
PPV = $TP / (TP + FP)$	96.92
NPV = $TN / (TN + FN)$	70.37
Correctly Classified = $(TP + TN) / (FP + FN)$	89.13

TP= true positive, TN= true negative, FP= false positive, FN= false negative

Therefore, it was concluded that the SDQ is an efficient measure of mental health morbidity in Pakistan. Most studies have defined outcome as changes in either continuous total SDQ scores or frequencies of likely cases defined according to locally established cut-offs. Taking into consideration the variation in the psychometric properties and cut-off scores that are appropriate to different populations (depending on culture, age and gender) and according to different informants, it is statistically preferable that researchers base their analysis on changes of continuous SDQ scores, while an analysis according to likely caseness can offer more meaningful clinical interpretation (Vostanis, 2006).

In light of this, I will be analyzing SDQ scores both as continuous and categorical variables. When treating the SDQ as a categorical variable, the cut-off of 17 and above was used to define abnormal cases, according to the findings of the previously described analysis of SDQ scores in comparison with a diagnostic (K-SADS) interview.

4.2.2-Borderline cases on the SDQ

The SDQ scores can be grouped into normal, borderline and abnormal categories (Goodman et al, 1999). In the course of statistical analysis, which usually requires SDQ scores to be recoded into a binary variable, the researcher is often faced with the dilemma of how to treat the borderline cases. Although no clear guidelines have been provided, the author of the SDQ suggests that researchers can adjust banding and caseness criteria depending on the study aims. Also, that they can set the threshold higher when avoiding false positives and the threshold lower when avoiding false negatives (Goodman et al, 1999; www.sdqinfo.com).

Most epidemiological studies that aim to establish prevalence of child mental health disorders in a population often consider borderline scores to be in the normal category (i.e. as clinically non-significant). This is likely to reduce the number of false positives. Adopting such a strategy is recommended in developing countries, as it is cost effective and tends to reduce the burden on child mental health professionals by reducing the referrals of inappropriate cases (Mullick et al, 2001; Samad et al, 2005). In view of the above mentioned benefits and the research aims, when the SDQ was treated as a binary variable, borderline cases were considered as clinically non significant, i.e. 'normal'.

4.2.3- Analysis of teacher SDQ scores

As discussed earlier in chapter three (Methods), diagnostic interviews were not conducted with teachers, hence it was not possible to establish local cut-offs for the SDQ teacher version. It was also not suitable to use the cases obtained by the K-SADS parental interview, since previous evidence indicated a weak correlation between parent and teacher SDQ ratings (this was confirmed in this study, please refer to page 17 for detailed results). In view of these limitations, it was considered preferable to use the UK teacher SDQ cut-off provided by its author Goodman; however, these results will be interpreted with caution.

The next two sections describe the results of the first phase that were based on parent and teacher SDQ ratings.

4.3-Ratings of children's emotional and behavioural problems using the parent version of the SDQ

4.3.1- Characteristics of the parent sample

Data analysis was carried out on 968 parent forms. Table 4.2 reports the descriptive statistics for socio-demographic variables. Children's mean age was 8.4 years, with a standard deviation (SD) of 1.85. Of those, 28% children attended private schools, 38.1% community schools and 33.9% attended government schools. The mother's mean age was 35 years (SD=7, range 20-65). 61.1% of mothers and 35.1% of fathers were uneducated. Only 7.9% of mothers and 16.2% of fathers had completed graduate/higher education. The majority of mothers were housewives (74.9%) and of lower socioeconomic status (81.3%).

The sample was ethnically diverse. Since languages or dialects reflect different ethnic groups in the Pakistani culture, spoken language is often the most appropriate determinant of ethnicity. A number of linguistic or ethnic groups were represented in the sample. Urdu was the language spoken by 26.9% of the households, with 24.4% Sindhi, 11.4% Balochi, 9.5% Pashto and 9.4% Punjabi. The remaining 18.5% reported different languages spoken in the subcontinent as their primary means of communication.

Table 4.2: Families' socio-demographic characteristics (n=968)

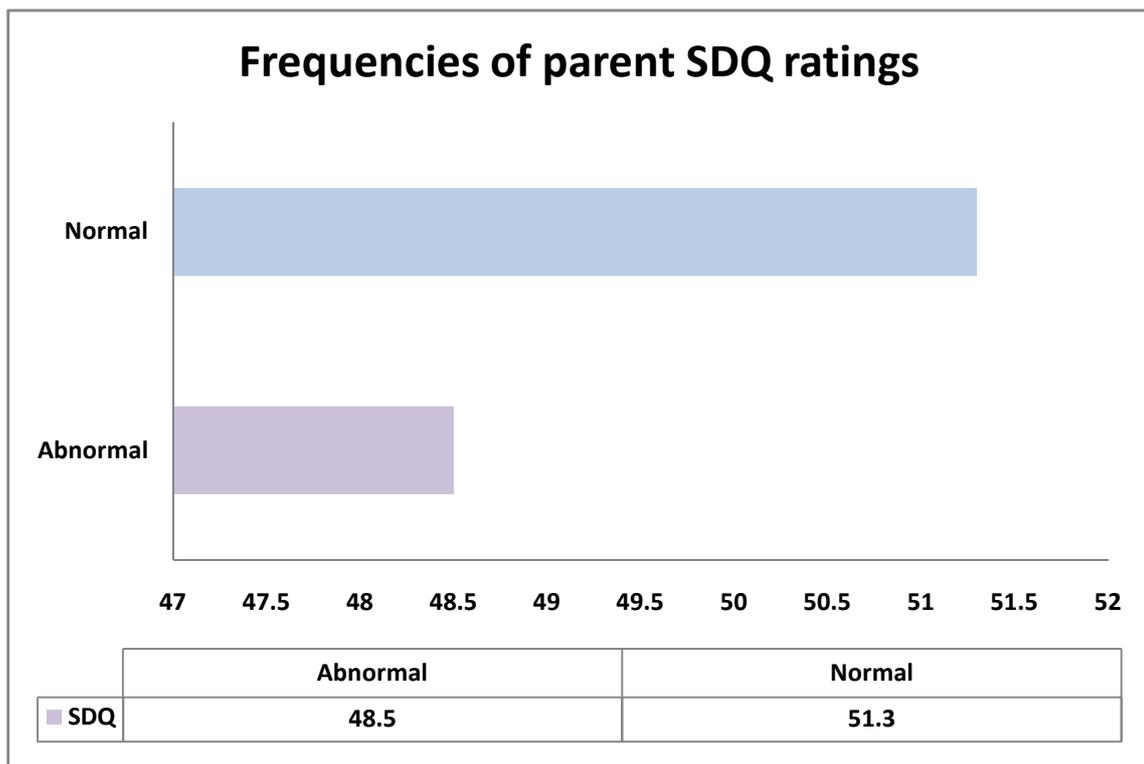
	n (%)
Gender	
Male	515 (53.2)
Female	453 (46.8)
School type	
Private school	272 (28.1)
Community school	368 (38.0)
Government school	328 (33.9)
SES	
Lower	787 (81.3)
Middle	128 (13.2)
Upper	53 (5.5)
Mother's education	
Not educated	591 (61.1)
< 10 years of schooling	125 (12.9)
10-12 years of schooling	176 (18.2)
Graduate degree/higher	76 (7.9)
Father's education	
Not educated	340 (35.1)
<10 years of schooling	264 (27.3)
10-12 years of schooling	207 (21.4)
Graduate degree/higher	157 (16.2)
Father's occupation	
Unemployed	258 (26.7)
Business	131 (13.5)
Government	139 (14.4)
Skilled labour	176 (18.2)
Private employment	264 (27.3)
Mother's occupation	
Unemployed	725 (74.9)
Business	1 (0.1)
Government	45 (4.6)
Skilled labour	154 (15.9)
Private employment	43 (4.4)

Family type	
Extended	519 (53.6)
Nuclear	449 (46.4)
Head of family	
Grandfather	349 (36.1)
Grandmother	29 (3.0)
Father	510 (52.7)
Mother	45 (4.6)
Other	35 (3.6)
Ethnicity	
Urdu speaking	260 (26.9)
Sindhi	236 (24.4)
Bolochi	110 (11.4)
Punjabi	91 (9.4)
Pushto	92 (9.5)
Other	176 (18.5)
Location of residence	
Urban	530 (54.8)
Rural	102 (10.5)
Slums	336 (34.7)
Location of school	
Urban	866 (89.5)
Rural	102 (10.5)
Child's history of physical illness	
Yes	192 (19.8)
No	776 (80.0)

4.3.2- Rates and types of mental health problems according to SDQ scores (parent version)

Using the established local SDQ cut-offs, parents rated a high proportion of children as having likely emotional and behavioural problems. Figure 4.2, shows that 48.4% of all children were categorized as 'abnormal' based on parent SDQ ratings. However, it must be noted that estimates of emotional and behavioural problems may have been higher because these frequencies were reported using only a screening questionnaire. Similar findings have been reported in other studies.

Figure 4.2: Frequencies of children rated as normal (non-clinical) and abnormal (within clinical range) on parent SDQ



4.3.3-Parent SDQ scores according to gender

Table 3 presents SDQ scores for the entire sample of 968 children, as well as gender based scores focusing on the problems that are of greatest clinical interest, namely emotional, conduct and hyperactivity scores, along with the total difficulties score. Gender wise analysis of SDQ scores indicates overall higher rates for males than females. Conduct problems were the most common presentation in both genders. Emotional problems were more common in females, although a substantial proportion of males were also rated with significant emotional symptoms (Table 4.3).

Table 4.3: Frequency rates of mental health problems based on the SDQ for the total sample and according to gender (n=968)

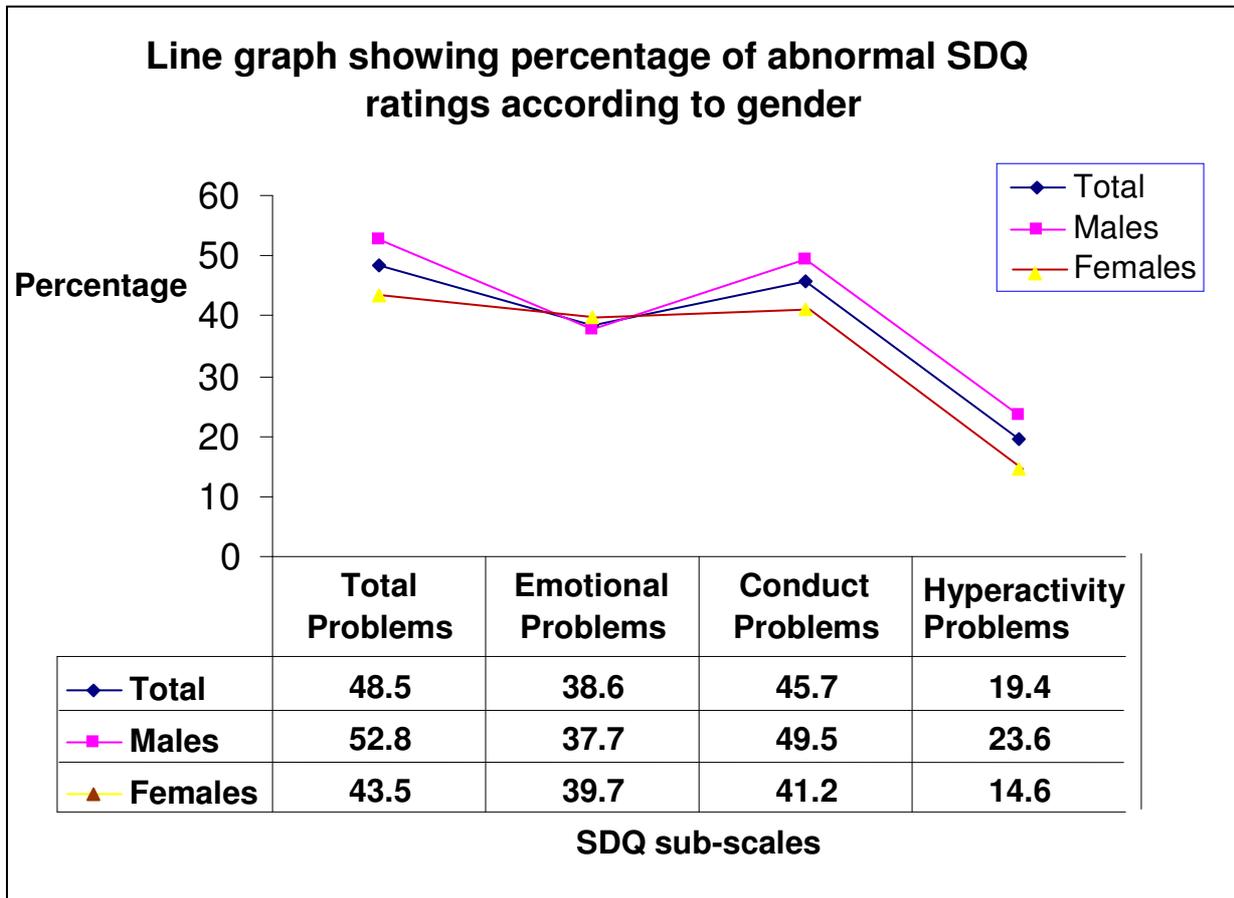
SDQ scales	Males		Females		Total sample	
	N	A	N	A	N	A
Total problems	47.2	52.8	56.5	43.5	51.6	48.5
Emotional problems	62.3	37.7	60.3	39.7	61.4	38.6
Conduct problems	50.4	49.5	58.7	41.2	54.3	45.7
Hyperactivity problems	76.4	23.6	85.3	14.6	80.6	19.4

Key: N=Normal, A=Abnormal SDQ rating

The SDQ total data was approximately normally distributed. Gender differences in SDQ ratings were calculated using independent t-tests and chi-square tests. For parent SDQ scores, there was a significant difference between males and females, with males scoring higher than females ($F(1,966)=2.41, p=0.0163$). The mean (95% CI) male score was 17.5 (16.9 to 18.2) and the mean female score was 16.4 (15.7 to 17.1). A chi-square test showed that there was a significant difference in the proportions assigned to the different SDQ

categories by parents: 52.8% of males were rated as abnormal compared to 43.5% of females (chi-square=8.0, df=2, p=0.0183).

Figure 4.3: Line graph showing percentage of SDQ (parent version) ratings according to gender



4.3.4-Parent SDQ scores according to school type

Comparison of SDQ ratings between children attending different school types showed high abnormal ratings for government schools, followed by community (NGO) and private schools. Within private schools pupils emotional problems were most commonly reported, whereas conduct problems were most commonly reported for children attending community and government schools (Table 4.4).

Table 4.4: Rates of mental health problems according to school type SDQ scales (n=968)

SDQ scales	PS		CS		GS	
	N	A	N	A	N	A
Total problems	73.8	26.2	59.7	40.4	24.1	75.9
Emotional problems	68.6	31.4	58.2	41.7	58.8	41.2
Conduct problems	70.5	29.5	48.2	51.8	47.9	52.1
Hyperactivity problems	84.1	15.9	79.1	20.9	79.3	20.7

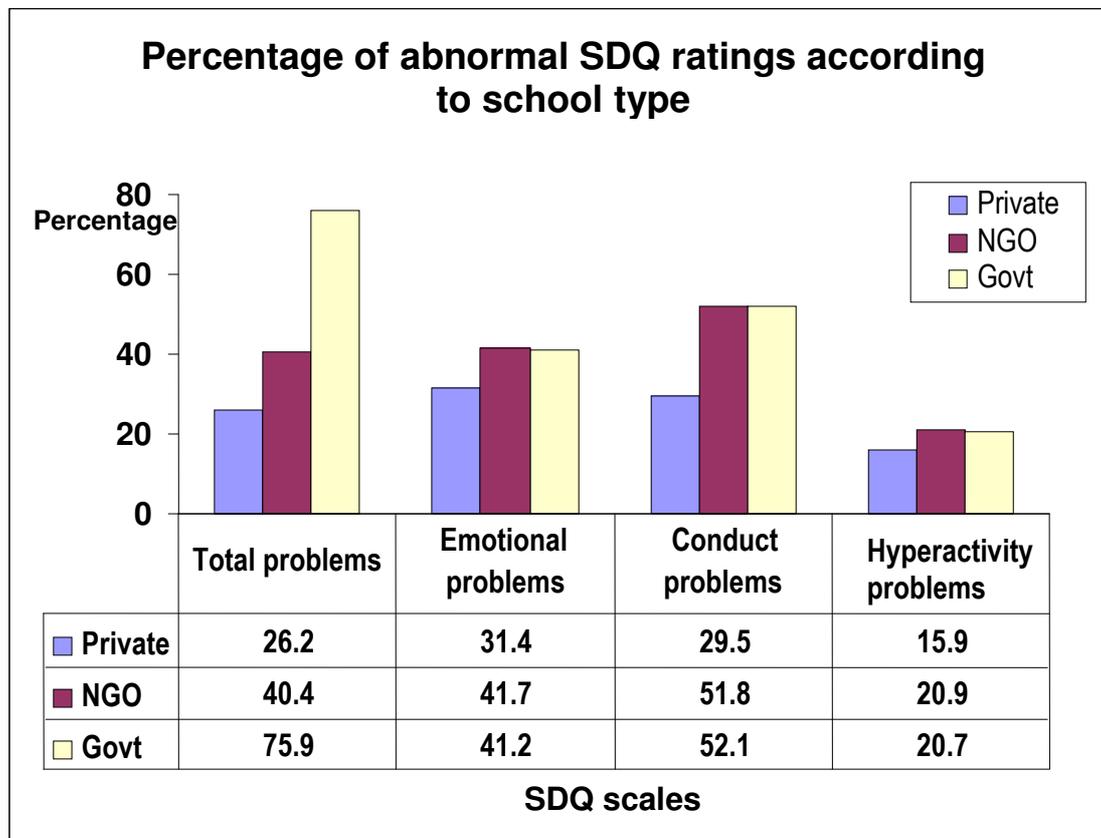
Key: PS=Private Schools, CS=Community (NGO) School, GS=Government Schools, N=Normal, A=Abnormal SDQ rating

As SDQ total data was approximately normally distributed, analysis of variance test was carried out to determine whether there were significant differences between schools and SDQ scores, and following these, overall Anovas and post-hoc tests were conducted to determine where any differences lay. For parents, the overall Anova was significant ($F(2,965)=167.2, p<0.001$). Table 4.5 provides a summary of the mean and SD of the three school groups. Post hoc tests showed that all pair-wise differences were highly significant (Public v Private $p<0.001$, Public v NGO $p<0.001$, Private v NGO $p<0.001$). Categorical SDQ data was also analysed using chi-square tests. There were significant differences in the frequency of children rated in the three SDQ categories according to parents (chi-square=183.7, $df=4, p<0.001$). 26.2% of Private, 40.4% of NGO and 75.9% of Government school children were rated within the clinical range.

Table 4.5: SDQ Mean and SD for three school groups according to parents

School type	N	Means	SD
Private schools	272	13.09	6.04
Community schools	363	15.40	5.60
Government schools	328	22.04	7.27

Figure 4.4: Bar graph showing percentage of SDQ (parent version) ratings according to school type



4.3.5-Ordinal logistic regression analysis of demographic characteristics in relation to parent SDQ scores

As SDQ produces an ordinal outcome, i.e. normal, borderline or abnormal, ordinal logistic regression was conducted to determine the association between demographic characteristics and the risk of child mental health problems. A range of socio-economic variables were used as candidate predictors.

For parents, factors which significantly increased the odds of being rated as 'abnormal' on the SDQ included individual child level variables: male gender (OR=1.38, 95%CI=1.09-1.76, $p<0.0077$) and physical illness (OR=4.10, 95%CI=2.89-5.83, $p<0.0001$); school type: government versus NGO (OR=4.83, 95%CI=3.52-6.67, $p<0.0001$), government versus

private (OR=9.43, 95%CI=6.67-13.33, $p<0.0001$), and NGO versus private school type (OR=1.95, 95%CI=1.45, 2.62, $p<0.0001$); and family variables, including nuclear family versus extended family (OR=1.29, 95%CI=1.01-1.65, $p<0.0350$), lack of maternal (OR=1.85, 95%CI=1.18-2.90, $p<0.0074$) and paternal education (OR=1.31, 95%CI=1.18-2.50, $p<0.0045$), head of family other than the father (OR=1.51, 95%CI=1.17-1.96, $p<0.0017$), urban neighbourhood (OR=18.89, 95%CI=9.2-38.65, $p<0.0001$), and lower social class (OR=0.56, 95%CI=0.39-0.79, $p<0.0012$). The child's ethnicity and age were not significantly associated with child mental health problems according to parent SDQ ratings (Table 4.6).

Table 4.6: Univariate ordinal regression analysis of factors associated with parent SDQ categories (Normal/borderline/Abnormal, n=968)

Predictor	OR	95% CI	P
Gender			
Female v male	0.72	(0.57-0.92)	0.0077
Physical illness			
Ill v not ill	4.1	(2.89-5.83)	0.0001
Child age	1.004	(0.94-1.07)	0.9136
School			0.0001
NGO v public	0.21	(0.15-0.29)	0.0001
Private v public	0.11	(0.07-0.15)	0.0001
Private v NGO	0.51	(0.38-0.69)	0.0001
Family type			
Extended v nuclear	0.77	(0.61-0.98)	0.0350
Father's education			0.0232
None v graduate	1.58	(1.10,2.26)	0.0119
Metric v graduate	1.72	(0.88-1.93)	0.1760
Non-Metric v graduate	1.31	(1.18-2.50)	0.0045
Mother's education			0.0007
None v graduate	1.85	(1.18-2.90)	0.0074
Metric v graduate	1.04	(0.63-1.73)	0.8658
Non-Metric v graduate	1.45	(0.84-2.47)	0.1781
Father's employment			0.0001
Business v unemployment	0.87	(0.58-1.30)	0.5077
Govt v unemployment	0.51	(0.35-0.76)	0.0008
Labour v unemployment	1.92	(1.30-2.82)	0.0010
Private v unemployment	0.67	(0.48-0.93)	0.0150
Mother's employment			0.0361
Govt v unemployment	0.43	(0.24-0.77)	0.0043
Labour v unemployment	0.97	(0.70-1.35)	0.8593
Private v unemployment	1.15	(0.64-2.07)	0.6450

Social class			0.0017
Lower v upper	1.61	(0.95, 2.71)	0.0745
Middle v upper	0.90	(0.49-1.64)	0.1041
Middle v lower	0.56	(0.39-0.79)	0.0012
Neighbourhood			0.0001
Slums v rural	18.89	(9.2-38.65)	0.0001
Urban v rural	41.43	(20.3-84.5)	0.0001
Slums v urban	0.46	(0.35-0.60)	0.0001
Head of family			0.0002
Grandfather	1.51	(1.17-1.96)	0.0017
Grandmother	2.94	(1.33-6.48)	0.0074
Mother	1.39	(0.78-2.48)	0.2648
Others	3.30	(1.57-6.92)	0.0016
Ethnicity			0.7397
Bolochi v Urdu	1.01	(0.66-1.55)	0.9497
Others v Urdu	1.06	(0.73-1.52)	0.7621
Punjabi v Urdu	0.72	(0.46-1.14)	0.1577
Pushto v Urdu	0.96	(0.61-1.51)	0.8677
Sindhi v Urdu	0.99	(0.71-1.39)	0.9593

Multivariable regression models

Variables with a p-value less than 0.10 were selected for inclusion in the multivariate ordinal regression models. The final multivariate regression models is reported in Tables 4.7. The multivariate analyses were adjusted for gender and school type, as these two variables were among the sample selection criteria.

Regression model: Parent SDQ

The final parent multivariable model was selected using backward stepwise ordinal regression. Variables with p-values >0.05 were successively removed from the model in an iterative process which involved re-running the model after each non-significant variable had been removed. Only variables with a p-value <0.05 were retained in the final model (Table 1). Odds (95% CI) of being in an abnormal SDQ category were a consequence of: being male (OR=1.48, 1.12-1.96, $p<0.0054$); attending a public rather than NGO (OR=4.17, 2.94-6.25, $p<0.0001$) or private school (OR=8.33, 5.55-12.5, $p<0.0001$); being physically ill (OR=2.83, 1.89-4.23, $p<0.0001$); residing in an urban rather than rural neighbourhood (OR=46.34, 21.7-99.1, $p<0.0001$) or slums (OR=1.73, 1.3-2.3, $p<0.0002$); and having a head of the family other than the father (all categories significantly worse than father being the head of family) (Table 4.7).

Table 4.7: Multivariable ordinal regression analysis of association between socioeconomic factors and rates of likely child mental health problems based on parent-rated total SDQ scores

Predictor	Adjusted OR	95% CI	P
Gender			
Male v female	1.48	(1.12-1.96)	0.0054
School type			0.0001
Public v NGO	4.17	(2.94-6.25)	0.0001
Public v private	8.33	(5.55-12.5)	0.0001
Private v NGO	0.50	(0.36-0.70)	0.0001
Physical illness			
Ill v not ill	2.83	(1.89-4.23)	0.0001
Neighbourhood			0.0001
Urban v rural	46.3	(21.7-99.1)	0.0001
Urban v slums	1.73	(1.3-2.3)	0.0002
Head of family			0.0001
Grandfather v father	1.88	(1.39-2.54)	0.0001
Grandmother v father	3.45	(1.44-8.24)	0.0053
Mother v father	2.43	(1.17-5.03)	0.0172
Other v father	2.41	(1.05-5.41)	0.0324

4.3.6-Ordinal logistic regression analysis of demographic characteristics in relation to parent SDQ sub-scales

Multivariable logistic regression analysis was conducted to determine the factors associated with the SDQ sub-scales, namely emotional, conduct and hyperactivity problems. Table 4.8 provides a summary of the factors that remained significantly associated with the different types of psychopathology.

Factors associated with emotional problems include: school type (OR=0.63, 95%CI=0.45-0.86, $p<0.0037$), physical illness (OR=0.36, 95%CI=0.26-0.51, $p<0.0001$), lack of mother's education (OR=0.58, 95%CI=0.38-0.86, $p<0.0073$), father's unemployment (OR=1.97, 95%CI=1.32-2.92, $p<0.0008$), urban residential neighbourhood (OR=2.69, 95%CI=1.71-2.22, $p<0.0001$) and head of the family other than father (OR=3.52, 95%CI=1.58-7.83, $p<0.0020$).

Factors associated with hyperactivity, include: male gender (OR=2.09, 95%CI=1.56-2.8, $p<0.0001$), community and government school type (OR=0.68, 95%CI=0.48-0.95, $p<0.0073$), physical illness (OR=0.53, 95%CI=0.38-0.76, $p<0.0004$), urban residential neighbourhood (OR=4.76, 95%CI=2.55-8.90, $p<0.0001$) and head of the family other than father (OR=3.85, 95%CI=1.63-9.09, $p<0.0020$).

Factors associated with conduct problems, include: male gender (OR=1.4, 95%CI=1.09-1.81, $p<0.0070$), community and government school type (OR=0.45, 95%CI=0.33-0.62, $p<0.0001$), physical illness (OR=0.38, 95%CI=0.27-0.54, $p<0.0001$) and urban residential neighbourhood (OR=2.19, 95%CI=1.43-3.35, $p<0.0003$).

Table 4.8: Multivariable logistic regression of factors associated with parent SDQ sub-scales categories

	Emotional	Conduct	Hyperactivity
School type	0.6 (0.4-0.8) 0.0037*	0.4 (0.3-0.6) 0.0001*	0.7 (0.5-0.9) 0.0073*
Gender	-	1.4 (0.9-1.8) 0.0070*	2.0 (1.5-2.8) 0.0001*
Mother education	0.5 (0.3-0.8) 0.0073*	-	-
Father's employment	1.9 (1.3-2.9) 0.0008*	-	-
Physical illness	0.3 (0.2-0.5) 0.0001*	0.3 (0.2-0.5) 0.0001*	0.5 (0.3-0.7) 0.0004*
Neighbourhood	2.6 (1.7-2.2) 0.0020*	2.1 (1.4-3.3) 0.0003*	4.7 (2.5-8.9) 0.0001*
Head of family	3.5 (1.5-7.8) 0.0020*	-	3.8 (1.6-9.0) 0.0020*

4.4-Ratings of children's emotional and behavioural problems using the SDQ teacher Version

4.4.1-Characteristics of the teachers' sample

Data analysis was carried out on 793 SDQ teacher versions. Table 4.9 presents the teachers' characteristics. Teachers' data consisted of slightly higher numbers of males, than females. Most of the data was based on community and government school children, with a relatively lower number of private school children. Teachers reported most of the pupils' school attendance and academic performance as "Good". Two teacher variables, teacher qualification and experience, were included in the analysis. Most of the teachers had at least an intermediate degree (Year 12), while a small number had a postgraduate

degree. The majority of teachers had more than five years of teaching experience and, about 10% had less than one year teaching experience.

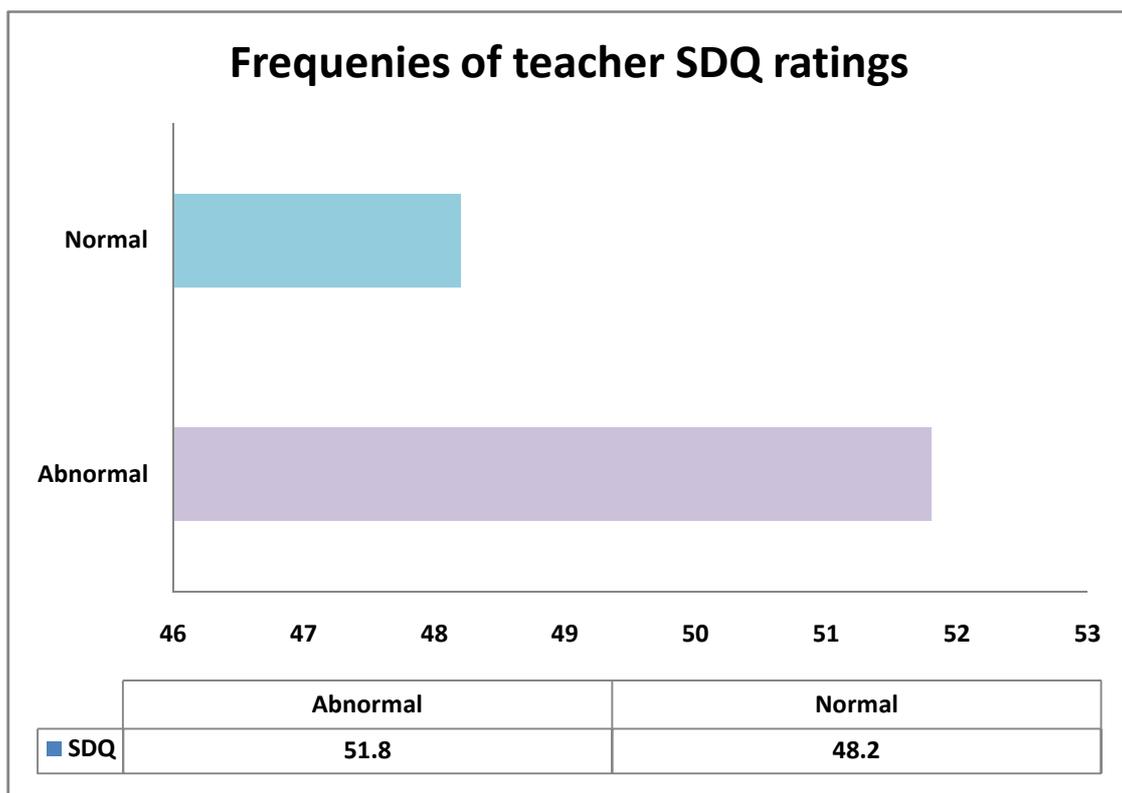
Table 4.9: Teachers' characteristics (n=793)

	n (%)
Gender	
Male	429 (54.1)
Female	364 (45.9)
School type	
Private school	142 (17.9)
Community school	346 (43.6)
Government school	305 (38.5)
Teacher qualification	
10 years of schooling	230 (29.0)
10-12 years of schooling	261 (32.9)
Undergraduate / Bachelors	215 (27.1)
Graduate degree/higher	87 (11.0)
Teaching experience	
Less than one year	77 (9.7)
One year	157 (19.8)
2-4 years	183 (23.1)
>5 years	306 (38.6)
>10 years	70 (8.8)
Academic performance	
Not satisfactory	176 (22.2)
Good	269 (33.9)
Very good	191 (24.1)
Satisfactory	157 (19.8)
School attendance	
Not satisfactory	170 (21.4)
Good	258 (32.5)
Very good	205 (25.9)
Satisfactory	160 (20.2)

4.4.2-Rates and types of mental health problems according to the teacher SDQ version

As discussed earlier, the UK cut-off was used in determining estimates of emotional and behavioural problems rated by teachers. Also as previously discussed, borderline cases were treated as 'normal'. Applying the same principle as the parent data to the teacher SDQ, SDQ scores were coded into binary variables using the UK cut-off advised by Goodman (1999). A high proportion of children were rated as 'abnormal' by the teachers. These frequencies should be interpreted with some caution, since the rates may have differed, if local norms were available for the population.

Figure 4.5: Frequencies of children rated normal and abnormal on the teacher SDQ



4.4.3-Teacher SDQ ratings according to gender

Gender wise analysis of teacher SDQ subset scores displayed different pattern to those established from parent ratings. Table 4.10 below summarises the frequencies of likely disorders. Conduct problems and Hyperactivity was most common in males, where as emotional problems were common amongst females.

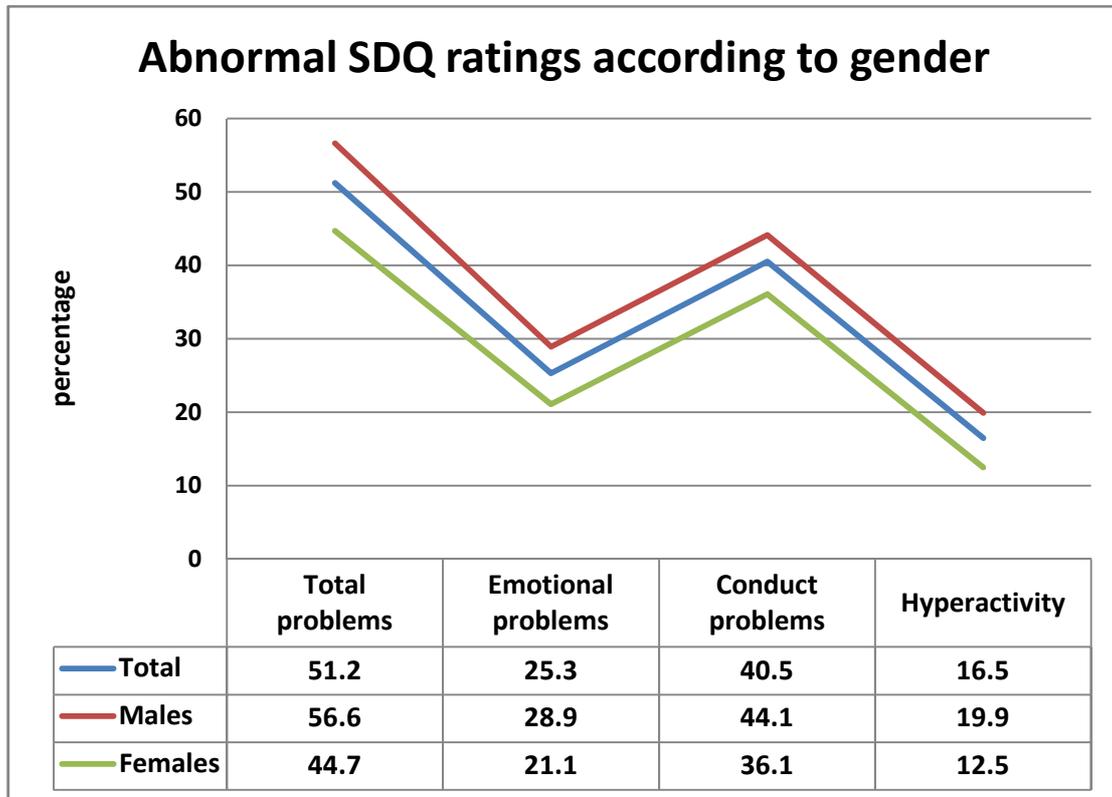
Table 4.10: Frequencies of mental health problems according to gender (n=793)

SDQ scales	Males		Females		Total sample	
	N	A	N	A	N	A
Total problems	43.4	56.6	55.3	44.7	48.8	51.2
Emotional problems	71.1	28.9	78.9	21.1	74.7	25.3
Conduct problems	55.9	44.1	63.8	36.1	59.5	40.5
Hyperactivity	80.1	19.9	87.5	12.5	83.5	16.5

Key: N= Normal, A= Abnormal rating on SDQ

Gender differences in SDQ ratings for both informants were also calculated using independent t-tests and chi-square tests. For teachers, there was a significant difference between males and females, with males scoring higher than females ($F(1,791)=3.2$, $p=0.0014$) on SDQ total problems scale. The mean (95% CI) male score was 17.7 (95% CI=16.8 to 18.5) and the mean female score was 15.6 (95% CI=14.7 to 16.6). A chi-square test also confirmed that there was a significant gender difference in the total SDQ caseness (chi-square=13.4, $df=2$, $p=0.0012$).

Figure 4.6: Line graph showing percentage of SDQ categories (teacher version) according to gender



4.4.4-Teacher SDQ ratings according to school type

Similarly, teachers' SDQ ratings showed remarkably different results from those of parents in relation to the type of school. Teachers in government schools rated the highest percentage of children falling within the 'abnormal' category, followed by community and private schools. Conduct problems were the most commonly reported across all three school groups (Table 4.11).

Table 4.11: Frequency of mental health problems according to school type (n=793)

	PS		CS		GS	
	N	A	N	A	N	A
Total problems	50.9	49.1	49.5	50.5	46.1	53.9
Emotional problems	76.6	23.4	76.0	24.0	71.3	28.7
Conduct problems	65.1	34.9	56.7	43.3	58.3	41.7
Hyperactivity	87.2	12.8	81.3	18.7	83.1	16.9

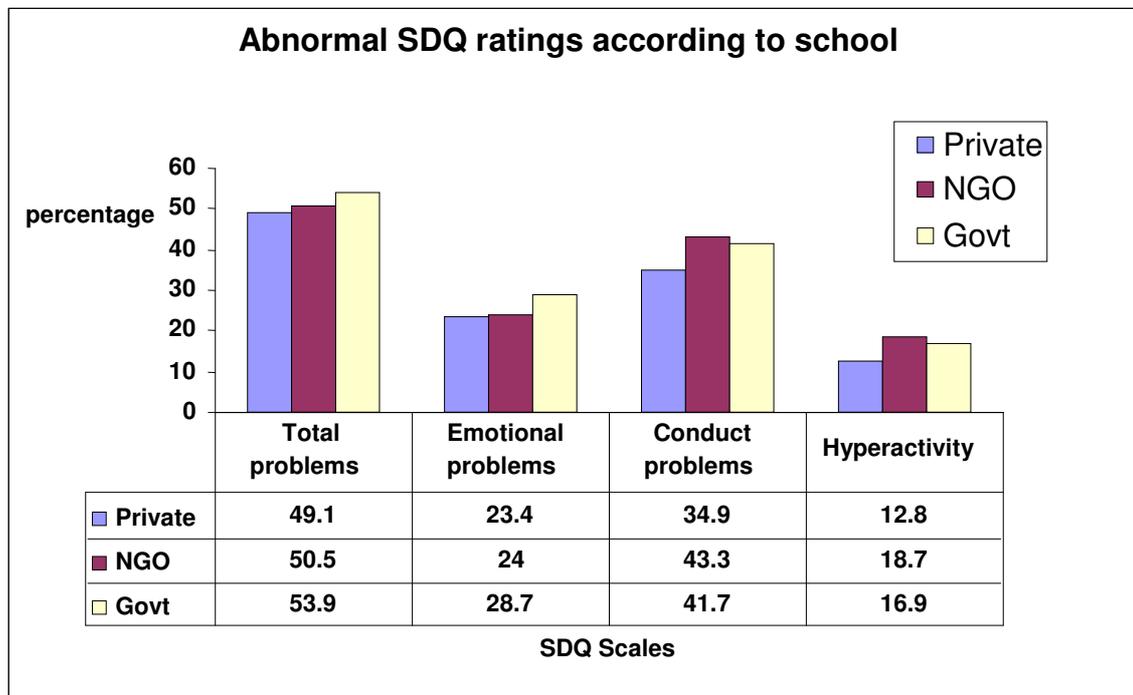
Key: PS=Private schools, CS=Community schools, GS=Government schools, N=Normal, A=Abnormal rating on SDQ

As SDQ total data was approximately normally distributed, analysis of variance was conducted to determine whether there were significant differences between schools, and following these overall Anovas, post-hoc tests were conducted to determine where these differences lay. The overall Anova was not significant ($F(2,790)=1.12, p=0.3271$) for the teachers. Table 4.12 provides a summary of the mean and SD of the three school groups. Chi-square test confirmed there was no significant difference between the SDQ ratings of caseness for the three school groups ($\text{chi-square}=2.61, \text{df}=4, p=0.6255$). Percentages for abnormal classifications were 49.1% for private, 50.5% for NGO and 53.9% for government school children.

Table 4.12: SDQ Mean and SD for three school groups according to teachers

School type	N	Means	SD
Private schools	218	16.77	8.16
Community schools	321	16.77	9.09
Government schools	254	17.28	9.48

Figure 4.7: Line graph showing percentage of SDQ categories (teacher version) according to school type



4.4.5- Ordinal logistic regression analysis of demographic characteristics in relation to teacher SDQ categories

Ordinal logistic regression was conducted to determine the association between teacher demographic characteristics and the likelihood of child psychiatric problems. In the univariate regression analysis, most demographic variables in the model were associated with child mental health problems, including gender, school type, teacher qualification, years of teaching experience, child’s school attendance and performance (Table 4.13).

Table 4.13: Univariate ordinal regression analysis for identifying factors associated with teachers' SDQ rating (Normal/Borderline/Abnormal, n=793)

Predictor	OR	95% CI	P
Gender			
Female v male	0.61	(0.47-0.80)	0.0003
School			0.6343
NGO v public	0.87	(0.63-1.19)	0.3692
Private v public	0.88	(0.62-1.24)	0.4603
Private v NGO	1.01	(0.73-1.40)	0.9333
Physical illness			
Ill v not ill	1.72	(1.23-2.41)	0.0016
Ethnicity			0.0752
Bolochi v Urdu	0.61	(0.38-0.96)	0.0338
Others v Urdu	1.09	(0.71-1.66)	0.6949
Punjabi v Urdu	0.89	(0.52-1.51)	0.6676
Pushto v Urdu	0.59	(0.37-0.95)	0.0286
Sindhi v Urdu	0.86	(0.59-1.25)	0.4221
Child age	1.004	(0.93-1.08)	0.9032
Family type			
Extended v nuclear	0.94	(0.72, 1.23)	0.6638
Father's education			0.7583
None v graduate	1.20	(0.82-1.77)	0.3527
Metric v graduate	1.12	(0.73-1.71)	0.5993
Non-Metric v graduate	1.23	(0.82, 1.84)	0.3236
Mother's education			0.1727
None v graduate	1.05	(0.65-1.70)	0.8375
Metric v graduate	0.73	(0.42-1.26)	0.2579
Non-Metric v graduate	1.16	(0.65-2.07)	0.6160
	155		

Father's employment			0.3661
Business v unemployment	1.39	(0.88-2.19)	0.1497
Govt v unemployment	1.19	(0.76-1.85)	0.4348
Labour v unemployment	1.34	(0.89-2.02)	0.1612
Private v unemployment	1.00	(0.70-1.42)	0.9899
Mother's employment			0.4955
Govt v unemployment	0.65	(0.34-1.23)	0.1843
Labour v unemployment	0.94	(0.66-1.35)	0.7514
Private v unemployment	1.24	(0.66-2.35)	0.5017
Social class			0.6877
Lower v upper	0.91	(0.49-1.67)	0.7525
Middle v upper	0.78	(0.39-1.56)	0.4776
Middle v lower	0.86	(0.58-1.27)	0.4389
Neighbourhood			0.0001
Slums v rural	1.31	(0.83-2.06)	0.2448
Urban v rural	2.98	(1.91-4.64)	0.0001
Slums v urban	0.44	(0.33-0.59)	0.0001
Head of family			0.0595
Grandfather	1.32	(0.99-1.75)	0.0555
Grandmother	1.11	(0.51-2.40)	0.8015
Mother	1.15	(0.60-2.19)	0.6716
Others	3.18	(1.31-7.74)	0.0106
Teacher qualifications			0.0003
Bachelors v PG	1.30	(0.81-2.06)	0.2698
Intermediate v PG	1.38	(0.87-2.16)	0.1637
Matric v PG	2.41	(1.51-3.86)	0.0002
Years teaching experience			0.0007
0-1 v >10	0.76	(0.39-1.50)	0.4317
1 v >10	0.49	(0.27-0.87)	0.0156
2-4 v >10	0.38	(0.21-0.67)	0.0008
>5 v >10	0.38	(0.22-0.66)	0.0005

Attendance			0.0001
Good v very good	2.39	(1.69-3.39)	0.0001
Not satisfactory v very good	3.16	(2.10-4.74)	0.0001
Satisfactory v very good	1.62	(1.11-2.37)	0.0122
Performance			0.0001
Good v very good	1.71	(1.21-2.42)	0.0024
Not satisfactory v very good	2.11	(1.41-3.15)	0.0003
Satisfactory v very good	2.59	(1.74-3.85)	0.0001

Multivariate regression model: Teacher SDQ

The final teacher multivariate model was selected using similar backward stepwise ordinal regression (Table 4.14). Odds (95% CI) of being in an abnormal SDQ category were associated with: being male (OR=1.48, 95%CI=1.11-1.96, $p<0.0069$); teacher not having a post graduate qualification (overall p value <0.0001), or having less than 10 years teaching experience (overall p -value <0.0001); unsatisfactory school attendance (OR=1.62, 95%CI=1.01-2.61, $p<0.0463$); and the child not having good academic performance (p -value for all categories versus very good $p<0.0001$).

Table 4.14: Multivariable ordinal regression analysis of association between socioeconomic factors and rates of likely child mental health problems based on teacher-rated total SDQ scores

Predictor	Adjusted OR	95% CI	P
Gender			
Male v female	1.48	(1.11, 1.96)	0.0078
Physical illness			
Ill v not ill	1.58	(1.09, 2.26)	0.0138
Neighbourhood			0.0001
Rural v urban	0.35	(0.22, 0.56)	0.0001
Slums v urban	0.47	(0.34, 0.64)	0.0001
Slums v rural	1.34	(0.83, 2.17)	0.2260
Teacher qualifications			0.0001
Postgraduate v Bachelors	1.29	(0.75, 2.21)	0.3501
Postgraduate v Intermediate	1.50	(0.91, 2.46)	0.1073
Postgraduate v Matric	3.76	(2.20, 6.41)	0.0001
Years of teaching experience			0.0001
0-1 v >10 years	0.33	(0.14, 0.77)	0.0103
1 v >10 years	0.16	(0.07, 0.34)	0.0001
2-4 v >10 years	0.16	(0.08, 0.32)	0.0001
>5 v >10 years	0.12	(0.06, 0.25)	0.0001
Attendance			0.0103
Good v very good	1.41	(0.93, 2.12)	0.1006
Not satisfactory v very good	1.62	(1.01, 2.61)	0.0463
Satisfactory v very good	0.81	(0.48, 1.35)	0.4130

Performance	2.58	(1.69, 3.92)	0.0001
Good v very good	2.68	(1.62, 4.43)	0.0001
Not satisfactory v very good	2.90	(1.77, 4.75)	0.0001
Satisfactory v very good			0.0001

4.4.6- Ordinal logistic regression analysis of demographic characteristics in relation to teacher SDQ sub-scales

The results of the analyses for the teacher SDQ subscales scores are reported in Table 4.15. Interestingly, none of the sub-scales, i.e. emotional, conduct problems and hyperactivity problems were associated with specific school variables, such as academic performance and school attendance, or with teacher's qualification and years of teaching experience.

Factors associated with emotional problems included: physical illness (OR=0.36, 95%CI=0.26-0.51, $p<0.0001$), lack of mother's education (OR=0.57, 95%CI=0.38-0.86, $p<0.0065$), father's unemployment (OR=2.0, 95%CI=1.37-2.92, $p<0.0003$), urban residential neighbourhood (OR=2.67, 95%CI=1.71-4.17, $p<0.0028$) and head of family other than the father (OR=3.98, 95%CI=1.60-9.48, $p<0.0018$).

Factors associated with hyperactivity included: lack of mother's (OR=0.40, 95%CI=0.22-0.72, $p<0.0020$) or father's education (OR=2.66, 95%CI=1.60-4.41, $p<0.0001$), and head of family other than the father (OR=0.24, 95%CI=0.11-0.53, $p<0.0004$). Whereas conduct problems according to teachers were only associated with living in an urban residential neighbourhood (OR=0.58, 95%CI=0.35-0.95, $p<0.029$).

Table 4.15: Multivariable logistic regression of association between demographic variables and caseness on teacher SDQ subscales

	Emotional	Conduct	Hyperactivity
Physical illness	0.3 (0.2-0.5) 0.0001*	-	-
Mother's education	0.5 (0.3-0.8) 0.0065*	-	0.4 (0.2-0.7) 0.0020*
Father's education	-	-	2.6 (1.6-4.4) 0.0001*
Father's employment	2.0 (1.3-2.9) 0.0003*	-	-
Neighbourhood	2.6 (1.7-4.1) 0.0028*	0.5 (0.3-0.9) 0.0029*	-
Head of family	3.9 (1.6-9.4) 0.0018*	-	0.2 (0.1-0.5) 0.0004*

4.5- Comparison between parents' and teachers' SDQ ratings

4.5.1-Correlation between parent and teacher SDQ ratings

The correlation between parents' and teachers' SDQ ratings was investigated using Pearson's product moment correlation coefficient (Table 4.16). There was a significant correlation between parent and teacher total SDQ scores ($r=0.41$, $p<0.0001$). The correlation remained significant for the subscales, although this was low for emotional ($r=0.13$, $p<0.0003$), moderate for conduct ($r=0.31$, $p<0.0001$), and high for hyperactivity scores ($r=0.56$, $p<0.0001$).

Table 4.16: Pearson's product correlation between parent and teacher SDQ scores

SDQ scores	Correlation	p value
Total difficulties	0.41	0.0001
Emotional problems	0.13	0.0003
Conduct problems	0.31	0.0001
Hyperactivity problems	0.56	0.0001

4.6- Comparison of mean SDQ parent and teacher ratings in Pakistan and other countries

Table 4.17 and 4.18 displays the mean SDQ ratings and SD according to parents and teachers contrasted with previous findings from other countries. Although several studies used the SDQ to screen for child mental health problems, only a few of those reported the findings separately for parents and teachers. Only five published papers were identified that presented both parent and teacher SDQ data on a community population (table 4.17). The British and Sri Lankan study also provided mean and SD scores for each of the SDQ subscales for both informants (Table 4.18).

Table 4.17 clearly shows that the rates of mental health problems among Pakistani children were higher than those reported in other countries. In the Pakistani, Egyptian and British study, higher rates were reported by teachers compared to parents, in contrast with the Russian, Sri Lankan and Bangladesh study, where parents reported higher rates for overall mental health problems compared to teachers' ratings. Table 4.18 clearly shows that the overall mean scores for both parents and teachers were higher for Pakistani children compared to their British and Sri Lankan counterparts. Parents' ratings were generally higher for total SDQ, hyperactivity, emotional and conduct problems, compared to teachers' ratings.

Table 4.17: Rates of reported mental health problems according to the SDQ

Author	Year	Country	Parents	Teachers
This study	2009	Pakistan	48.5%	51.8%
Elhamid et al	2009	Egypt	20.6%	34.7%
Slobodskaya et al	2005	Russia	26.9%	21.1%
Mullick et al	2001	Bangladesh	13%	9.9%
Goodman et al	2000	Britain	9.0%	12.0%

Figure 4.8: Bar graph showing percentage of SDQ ratings in Pakistan and other countries

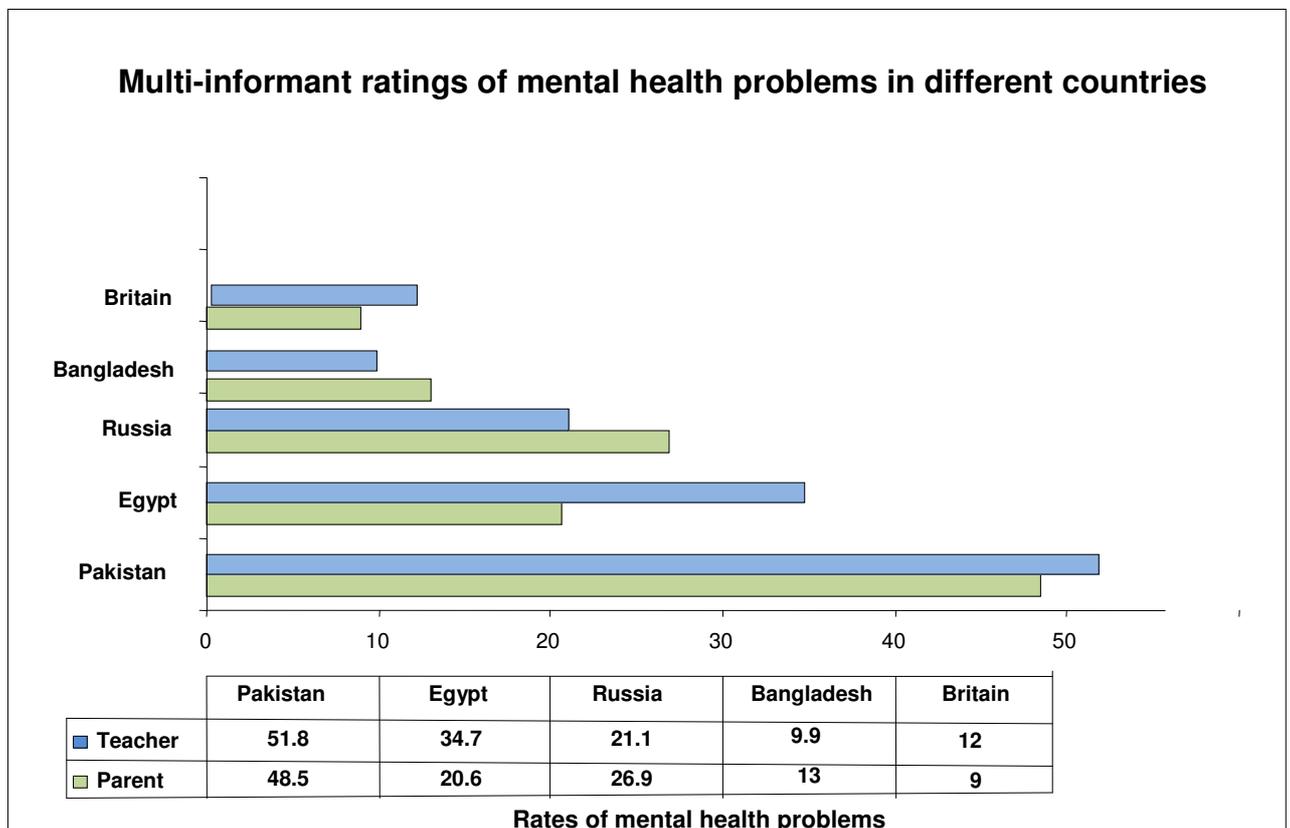
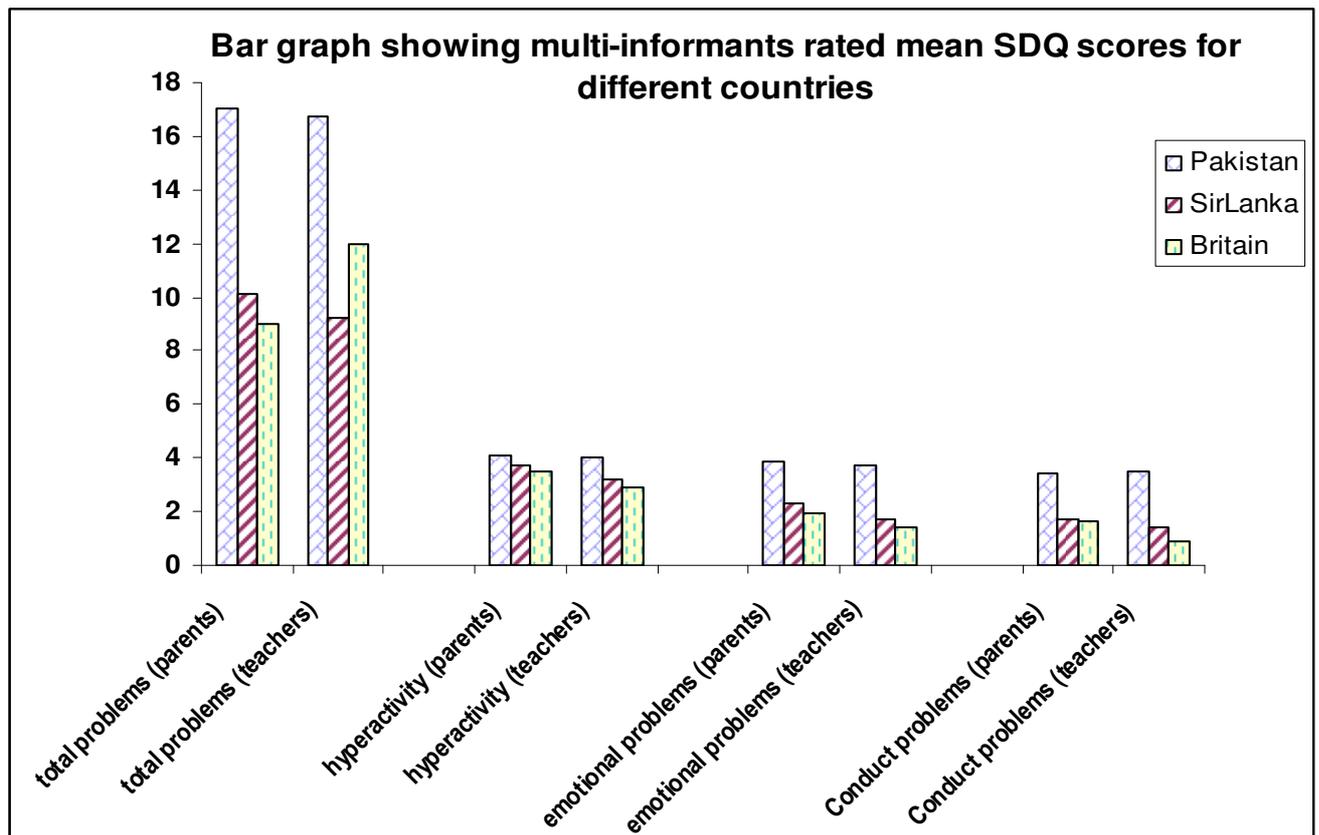


Table 4.18: SDQ Mean and standard deviation scores reported in different countries

SDQ scores	Pakistan Mean (SD)	Britain Mean (SD)	Sri Lanka Mean (SD)
Total problems			
Parent SDQ	17.0 (7.3)	9.0 (5.8)	10.1(5.1)
Teacher SDQ	16.7 (8.9)	12.0(6.0)	9.2 (6.2)
Hyperactivity problems			
Parent SDQ	4.1 (2.5)	3.5 (2.6)	3.7(2.2)
Teacher SDQ	4.0 (2.4)	2.9 (2.8)	3.3(2.1)
Emotional problems			
Parent SDQ	3.9 (2.4)	1.9 (2.0)	2.3 (2.0)
Teacher SDQ	3.7 (2.8)	1.4 (1.9)	1.7 (2.1)
Conduct problems			
Parent SDQ	3.4 (2.5)	1.6 (1.7)	1.7 (1.6)
Teacher SDQ	3.5 (2.7)	0.9 (1.6)	1.4 (1.7)

Figure 4.9: Bar graph showing multi-informant means SDQ scores in different countries



CHAPTER FIVE

RESULTS II (Epidemiological survey) SCHEDULE OF AFFECTIVE DISORDERS AND SCHIZOPHRENIA FOR SCHOOL AGE CHILDREN (6-18 YEARS) PRESENT STATE (K-SADS-P-IVR)

This chapter presents the findings of the K-SADS-P-IVR. The chapter is structured into three sections. The first section explains the weighting process, critically evaluating the different weighting approaches, and explains the rationale of selecting the particular weighting style. The second part describes the application of the weighting technique to establish prevalence estimates. The final part of this chapter presents the prevalence of overall psychiatric disorders, as well as the three main disorder categories. Differences according to gender, school type and co-morbidity are also presented.

5.1-What is weighting and why is it important?

Almost all the major social surveys require weighting. If data is not weighted, the resulting estimates may be biased, if they are interpreted for the wider population as opposed to estimates relating to the obtained sample. In almost all social science analyses, one is interested in the characteristics of the wider population (typically, this being the population of a country) rather than the selected sample. For example, the British Social Attitudes Survey (BSAS) (Park et al, 2008) is designed to provide estimates of attitudinal data for the adult British population, but due to both differential selection probabilities (interviewing one dwelling per

address, one household per dwelling, and one adult per household), one cannot interpret the sample of the BSA as providing unbiased estimates of the social attitudes of the adult British population. In order to generate unbiased estimates of the British adult population, one has to weight the BSAS data (Barton, 2001; Crockett, 2008).

5.2-Types of weighting techniques

To understand more fully what weighted analysis entails, one needs to distinguish the three primary types of weight that can exist in a given social survey dataset. These are sample design weights, non-response weights, and post-stratification weights. These three types of weights are explained in the following sub-sections.

5.2a-Sample design or probability weights

Sample design or probability weights correct for cases having unequal probabilities of selection that result from sample design. To illustrate how a sample design weight is calculated, the reader can consider a survey design that interviews one dwelling per address, one household per dwelling and one adult per household. Provided information concerning dwellings per address, households per dwelling and adults per household is enumerated by the interviewer, and subsequently the sample design weights can be calculated that correct for the lower selection probabilities of adults in multi-adult (and household/dwelling) households (Crockett, 2008).

5.2b-Non-response weights

Non-response weights are typically obtained by defining weighting classes, which are based on information available for both responding and non-responding households. Such information typically relates to geographical location, primary sampling unit (PSU) characteristics (which are derived from other data sources, usually the Census) and often household and dwelling type (which need to be recorded by the interviewer). Respondents in each class are weighted to compensate for the proportion of non-respondents (Crockett, 2008).

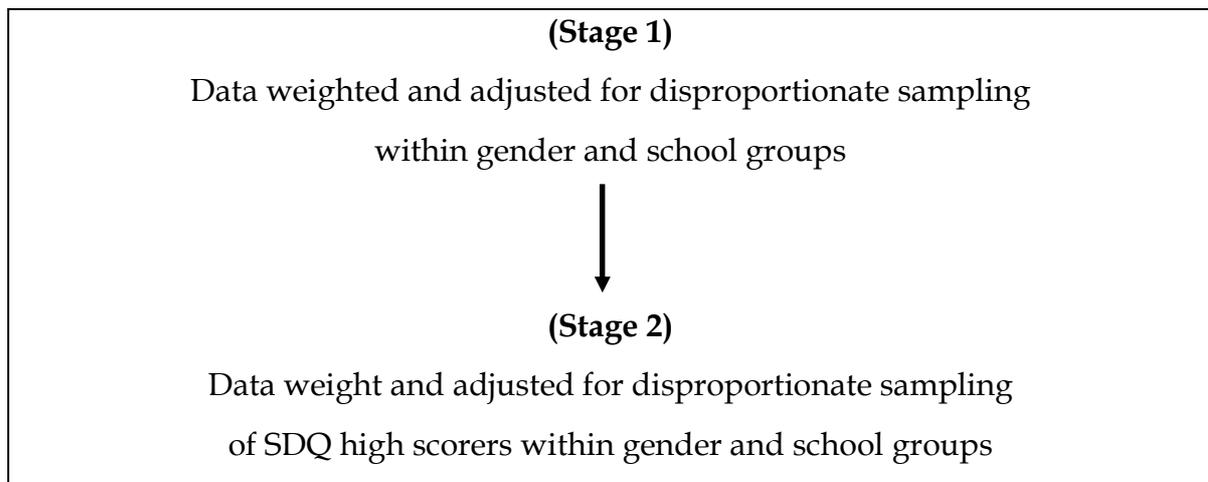
5.2c-Post-stratification weights

Post-stratification weights (also known as population or calibration weights) are constructed after the other types of weights have been applied to the data. These are applied to make the data even more representative of the population. These weights allow for more accurate population estimates, further reduce non-response bias (over and above non-response weights), and improve precision. This procedure is called 'raking', and requires specialist software (Crockett, 2008).

5.3-Adjusting disproportionate sampling using weighting technique

On the basis of the above discussed weighting techniques, the data needed to be weighted at two stages, firstly taking into account disproportionate sampling from within gender and school groups (stage 1 weights), and subsequently, calculation of weights taking into account disproportionate sampling of SDQ scores within each gender/school group strata (stage 2).

Figure 5.1: Data adjusting for disproportionate sampling using two stage weighting technique



As described earlier in the methods and SDQ results chapters, at the first stage of the study 986 children were non-randomly selected from a total population of 5.8 million children in Karachi. Sampling was based partly on convenience, but it was intended that the three main types of schools (Public, Private, and NGO) and both genders were all represented.

On the basis of the screening phase SDQ results, 100 children out of a total of 968 from two genders and three school types were selected, resulting in six strata (according to gender and school type). Sampling from these strata, however, was not carried out randomly; therefore, it was important to weight the data taking into account disproportionate sampling. High scorers on the SDQ were over-sampled to ensure that more clinical cases were interviewed to establish prevalence estimates. At phase one, approximately 50% of the children scored 18 or over on the SDQ (18 was used as a cut-off for clinical screening), and 50% scored <18. In the second phase sample, however, approximately 68% of the

selected respondents scored over 18 on the SDQ, so the data was over-sampled for SDQ high scorers (children who are likely to be clinical cases). Therefore, data was adjusted (weight) for the disproportionate sampling of the 100 cases from the six different strata. It was also adjusted for the fact that within each of these six strata, there were two further sub-strata (SDQ18+ and SDQ18-), and sampling from within these sub-strata was not random, but rather it was purposive and disproportionate.

There are a number of techniques to weight the data and derive unbiased prevalence rates for the target population. The next section describes two different techniques applied for the present data, and evaluates the pros and cons of these approaches.

5.3a-Weighted prevalence of mental health problems in Pakistani school children

As discussed earlier, the data was disproportionately sampled at two stages. The first stage consisted of over or under sampling, according to school group and gender. At the second stage, SDQ high scores were deliberately over sampled. Consequently, data had to be weighted for these two stages of disproportionate sampling. Due to the disproportionate sampling by school, first stage weights were created taking into account the disproportionate sampling of children within the six strata defined by school and gender. On the basis of information such as the number of children sampled from each stratum (Sample) and the number of children present in each population stratum (Population), the sampling

proportion for each stratum (Sample/Population), and the weight of each stratum (1/SP) was calculated. Finally, the percent weight for each stratum was calculated by dividing each weight by the total of the weights. So, for example, for private school males, $1258.19/428849.25=0.14284$. This represents the proportional weight for this particular stratum. The proportional weights for the proportional 6 strata add up to 1 (Table 5.1).

Table 5.1: Weighted K-SADS prevalence, ignoring disproportionate SDQ 18+ sampling

Schools	Sample	Population	SP	Weight	Percent Weight	K-SADS Prevalence	Product
PM	11	1644978	0.000006687	149543.45	0.34871	0.5454	0.0779
PF	11	1422419	0.000007733	129310.82	0.30153	0.2727	0.04859
GM	21	1286422	0.000016324	61258.19	0.14284	0.1429	0.04983
GF	16	1222728	0.000013085	76420.5	0.17820	0.2500	0.07538
CM	18	100150	0.000179730	5563.89	0.01297	0.3333	0.004323
CF	15	101286	0.000148095	6752.4	0.01575	0.2	0.00315

PM=Private school males, PF=Private school females, GM=Government school males, GF= Government school females, CM=Community school males, CF=Community school females

To calculate the weighted K-SADS prevalence of disorders, the prevalence of disorders within each stratum was multiplied by its percent weight, to obtain six products, which were summed to estimate the final prevalence. The sum of the product column gives the prevalence estimate: 0.25917, or around 26%. However,

there is a further complication, as the data were deliberately over-sampled by selecting children who were more likely to have mental health problems; hence, there was a need to adjust for this factor. The next Table 5.2 takes into account the disproportionate SDQ sampling.

Table 5.2: Disproportionate sampling of SDQ+ (18+)

School type	Population of 968		Population of 100		% RATE of 968	% RATE of 100
	SDQ+	SDQ-	SDQ+	SDQ-		
PM	34	83	10	1	34/117=29.06	10/11=90.91
PF	26	88	7	4	26/114=22.81	7/11 =63.64
GM	128	40	15	6	128/168=76.19	15/21=71.43
GF	106	34	11	5	106/140=75.71	11/16=68.75
CM	79	96	9	9	79/175=45.14	9/18 =50.00
CF	48	104	11	4	48/152=31.58	11/15=73.33

PM=Private school males, PF=Private school females, GM=Government school males, GF=Government school females, CM=Community school males, CF=Community school females

Since the SDQ high scorers were over sampled, there was a need to take this disproportionate sampling into account when calculating the prevalence. This was achieved by creating coefficients which reflected the over-sampling, in order to create new stage 2 survey weights. For example, in the larger sample of 968, 29% of private males had SDQ 18+, so the smaller sample of around 100 should have included this proportion of private males who had SDQ of 18+ (rather than the 91% that was actually sampled).

Likewise:

- 71% of private school males had SDQ-, so we should have sampled 71%, rather than 29%.
- 23% of private school females had SDQ 18+, so we should have sampled 23%, rather than 64%.
- 76% of public school males had SDQ 18+, so we should have sampled 76%, rather than 71%.
- 76% of public school females had SDQ 18+, so we should have sampled 76%, rather than 69%.
- 45% of NGO school males had SDQ 18+, so we should have sampled 45%, rather than 50%.
- 32% of NGO school females had SDQ 18+, so we should have sampled 32%, rather than 73%.

If it is assumed that the proportion of SDQ18+ for private school males in the population in general is 29%, the adjusted population size for private school males SDQ18+ is thus 29% of 1644978 = 47,7043.62. Likewise, the new population size for private school males SDQ18- is 71% of 1644978 = 1167934.38. The overall population size for private school males is calculated by summing the two new adjusted population sizes (1167934.38 + 477043.62 = 1644978).

Hence, to estimate the new adjusted population size with respect to disproportionate sampling for each SDQ sub group, the following steps were carried out (Table 5.3):

- The proportion in the old population X number in the old population was computed. These should add up to the old population size.
- The small sample selected within each stratum was then divided by the new population size to get the SP.
- The Sample/Population was divided by 1 to estimate the weight (WT).
- Then, within each school/gender stratum (e.g. private school males), the WT was added, to establish the total weight for this stratum.
- Each SDQ sub-stratum was then divided by this weight to calculate the % weight for each sub-stratum.

Table 5.3 Calculation of the new population size and weights for each SDQ sub group

STRATUM	Sample	Prop. * Old Pop	SP	1/SP	Wt (%)
PM SDQ18+	10	.29 *1644978 (477043.62)	0.000020962	44705.37	(0.0369)
PM SDQ18-	1	.71*1644978 (1167934.38)	0.0000008562	1168224.3	(0.9631)
PF SDQ18+	7	.23 *1422419 (327156.37)	0.0000213965	46737.71	(0.299)
PF SDQ18-	4	.77 *1422419 (109526.63)	0.0000365208	109526	(0.701)
GM SDQ18+	15	.76 *1286422 (977680.72)	0.000153424	6517.89	(0.625)
GM SDQ18-	6	.24 *1286422 (234643.37)	0.000255707	3910.73	(0.375)
GF SDQ18+	11	.76 *1222728 (929273.28)	0.000011837	84480.9	(0.591)
GF SDQ18-	5	.24 *1222728 (293454.72)	0.0000170384	58692.3	(0.409)
CM SDQ18+	9	.45 *100150 (45067.5)	0.000022189	45067.4	(0.455)
CM SDQ18-	9	.55 *100150 (55082.5)	0.0000181546	53919.98	(0.545)
CF SDQ18+	11	.32 *101286 (32411.52)	0.0000308532	32411.76	(0.32)
CF SDQ18-	4	.68 *101286 (68874.48)	0.000014519	68875.27	(0.68)

Each stratum was thus associated with a percent weight (Table 5.3). The next step was to take into account the disproportionate SDQ sampling. The SDQ sub-strata within each of the existing school/gender strata were awarded a proportion of this weight. Hence, private school male SDQ+s were awarded a within stratum weight of 0.0369, since these were over-sampled by a factor of about 30. Likewise, the private school male SDQ-s were awarded a within stratum weight of 0.9631, since they were under-sampled by the same amount. The within stratum weight

was then multiplied by the stratum weight, to achieve the final weight for each sub-stratum. So the private school male SDQ+s received a final weight of 0.00527, which was multiplied by the K-SADS prevalence (0.6) to get a product of 0.003162, which is the proportion of prevalence contributed by this stratum. All these final products were added up to arrive at the total prevalence.

Table 5.4: Weighted overall prevalence of any psychiatric disorder K-SADS

	Prev	Pct Wt	Product	Wt
PM SDQ18+	0.6	0.0369*0.14284(0.00527)	0.6 *0.00527	= 0.003162
PM SDQ18-	0.0	0.9631*0.14284(0.137569)	0	
PF SDQ18+	0.43	0.299*0.1782(0.0532818)	0.43*0.0532818	= 0.02291
PF SDQ18-	0.0	0.701*0.1782(0.1249182)	0	
GM SDQ18+	0.2	0.625*0.34871(0.21794375)	0.2*0.21794375	= 0.043589
GM SDQ18-	0.0	0.375*0.34871(0.13076625)	0	
GF SDQ18+	0.36	0.591*0.30153(0.1782042)	0.36*0.1782042	= 0.0641535
GF SDQ18-	0.0	0.409*0.30153(0.01959945)	0	
CM SDQ18+	0.67	0.455*0.01297(0.00590135)	0.67*0.00590135	= 0.0039539
CM SDQ18-	0.0	0.545*0.01297(0.00706865)	0	
CF SDQ18+	0.27	0.320*0.01575(0.00504)	0.27*0.00504	= 0.013608
CF SDQ18-	0.0	0.680*0.01575(0.01071)	0	
Total				15.1376 %

PM=Private school males, PF=Private school females, GM=Government school males, GF=Government school females, CM=Community school males, CF=Community school females

The above approach produces two stages of weights, adjusting for disproportionate sampling according to school group and gender, as well as the over sampling of SDQ high scores (Table 5.3) to arrive at prevalence estimates

(Table 5.4). A second, more widely used technique, applies a more condensed approach and simultaneously takes into account the disproportionate sampling at both stages, i.e. over sampling according to gender and school type as well as selection of SDQ abnormal cases.

5.3b- Estimation of the prevalence of mental health problems in Pakistani school children: second approach

Researchers often use sample survey methods to obtain information about a large aggregate or population, by selecting and measuring a sample from that population. Due to the variability of characteristics among items in the population, researchers apply scientific sample designs in the sample selection process to reduce the risk of a distorted view of the population, and they make inferences about the population, based on the information from the sample survey data. In order to make statistically valid inferences, they must incorporate the sample design in the data analysis.

Traditional *Statistical Analysis System* (SAS) procedures, such as the MEANS and the GLM procedure, compute statistics under the assumption that the sample is drawn from an infinite population by simple random sampling. These procedures generally do not correctly estimate the variance of an estimator if they are applied to a sample drawn by a complex sample design. To analyze sample survey data, the SURVEYFREQ procedure in the SAS software is used, which incorporates the sample design into the analysis (SAS, 2008).

The SURVEYFREQ procedure

The PROC SURVEYFREQ command for the SAS is used to estimate descriptive statistics and their standard errors (Agresti, 2007; SAS, 2008). The Taylor series linearization method is used for sampling error estimation. SAS procedures allow only estimations at the first stage of the sample design. The SURVEYFREQ procedure produces one-way to n-way frequencies and cross tabulation tables from sample survey data. These tables include estimates of population totals, population proportions (overall proportions, and also row and column proportions), and corresponding standard errors. Confidence limits, coefficients of variation, and design effects are also available (SAS, 2008).

Using the SURVEYFREQ procedure on the present study data, the following steps were applied:

1. Stage 1 split between SDQ18+ and SDQ<18 was used to estimate the population distribution by school type, gender and SDQ. For instance in the private male stratum, 29% of the stage 1 sample was found to be SDQ18+, so it is reasonable to assume that 29% of the population of 1644978 are SDQ18+ (Table 5.2).
2. The estimated population number was converted to a percentage. This gave the distribution that the sample should follow if they were to be representative of the population.
3. A percentage distribution for the Stage 2 sample was generated.

4. A set of survey weights equal to the ratio of the population percentage in a stratum and the Stage 2 survey percentage in the stratum were calculated. The weights were applied to all the Stage 2 cases in the stratum (Table 5.5, Table 5.6).

Table 5.5: Description of sample population for SDQ 18+ and SDQ <18 at stage one and two

A	B	C1	C2	C3	D1	D2	D3
School/ Gender Stratum	Population Size (n, p)	Stage 1 Sample (n, p)	SDQ 18+ Stage 1	SDQ <18 Stage 1	Stage 2 Sample n, p)	SDQ 18+ Stage 2	SDQ <18 Stage 2
PM	1,644,978 (28.5%)	117 (14%)	34 (29%)	83 (71%)	11 (12%)	10 (91%)	1 (9%)
PF	1,422,419 (24.6%)	114 (13%)	26 (23%)	88 (77%)	11 (12%)	7 (64%)	4 (36%)
GM	1,286,422 (22.3%)	168 (19%)	128 (76%)	40 (24%)	21 (23%)	15 (71%)	6 (29%)
GF	1,222,728 (21.2%)	140 (16%)	106 (76%)	34 (24%)	16 (17%)	11 (69%)	5 (31%)
CM	100,150 (1.7%)	175 (20%)	79 (45%)	96 (55%)	18 (20%)	9 (50%)	9 (50%)
CF	101,286 (1.8%)	152 (18%)	48 (32%)	104 (68%)	15 (16%)	11 (73%)	4 (27%)
TOTAL	5,777,983	866	421 (49%)	445 (51%)	92*	63 (68%)	29 (32%)

PM=Private school males, PF=Private school females, GM=Government school males, GF=Government school females, CM=Community school males, CF=Community school females

(*Data from rural areas was excluded because of small number of cases, n=8. Total second stage sample n=92).

Column definitions:

- A is school / gender stratum.
- B is the population size in Karachi for this stratum (n, prop of total population).
- C1 is the Stage 1 sample per stratum (n, prop of stage 1 sample).
- C2 is the number and proportion of stage 1 children scoring 18+ on the SDQ per stratum.
- C3 is the number and proportion of stage 1 children scoring <18 on the SDQ per stratum.
- D1 is the stage 2 sample per stratum (n, prop of stage 2 sample).
- D2 is the number and proportion of stage 2 children scoring 18+ on the SDQ per stratum.
- D3 is the number and proportion of stage 2 children scoring <18 on the SDQ per stratum.

Table 5.6: Calculation of survey weights for stage two sampling

	Population	Stage 1 sample	SDQ18+	SDQ<18	%SDQ18+
PM	1,644,978	117	34	83	29.05983
PF	1,422,419	114	26	88	22.80702
GM	1,286,422	168	128	40	76.19048
GF	1,222,728	140	106	34	75.71429
CM	1,001,50	175	79	96	45.14286
CF	1,012,86	152	48	104	31.57895
	Estimated population with SDQ split	%	Stage 2 sample numbers	%	Weight
PM, SDQ 18+	478028	8.27	10	10.87	0.76
PM, SDQ <18	1166950	20.20	1	1.09	18.58
PF, SDQ 18+	324411	5.61	7	7.61	0.74
PF, SDQ <18	1098008	19.00	4	4.35	4.37
GM, SDQ 18+	980131	16.96	15	16.30	1.04
GM, SDQ <18	306291	5.30	6	6.52	0.81
GF, SDQ 18+	925780	16.02	11	11.96	1.34
GF, SDQ <18	296948	5.14	5	5.43	0.95
CM, SDQ 18+	45211	0.78	9	9.78	0.08
CM, SDQ <18	54939	0.95	9	9.78	0.10
CF, SDQ 18+	31985	0.55	11	11.96	0.05
CF, SDQ <18	69301	1.20	4	4.35	0.28
TOTAL	5,777,983		92		

PM=Private school males, PF=Private school females, GM=Government school males, GF=Government school females, CM=Community school males, CF=Community school females

Using this approach, the weighted sample matched the estimated population distribution. There was a problem, however, with the fact that approximately 20% of the population lies in the private male SDQ<18 stratum, because this 20% represented one stage 2 respondent. Although the 'standard' method would be to trim down any weights that are extreme outliers, if this method were to be applied here, this would result in a survey estimate of prevalence that severely under-represented the largest stratum in the population.

The next section describes the prevalence rates of child psychiatric disorders using the obtained weights.

5.4a-Weighted DSM-IV prevalence of common child psychiatric disorders

The prevalence rates of specific diagnoses were determined by estimating the number of screened children with that particular diagnosis in each of the screen score strata. Thus a weighted prevalence for each stratum was produced, and these figures were added to give the prevalence estimates for each diagnosis (Table 5.6, 5.7). In cases where more than one diagnosis was applicable, only the primary diagnosis was selected. Thus the reported prevalence rates do not preclude the possibility of a child having more than one diagnosis.

Table 5.7 presents the weighted prevalence of individual diagnoses and diagnostic groupings. Of the hundred (N=100) children interviewed at the second stage, at least one DSM-IV diagnosis was present in 26 children, 16 males and 10 females, representing a prevalence rate of 17.3% (95% CI = 6.2-28.3) for Karachi as a whole,

after adjusting for the over sampling of SDQ high scores and schools, and weighting them back to the general population.

Of the broad categories, behavioural disorders were the most common (10.2%, N=10, males=9, female=1), followed by anxiety disorders (4.2%, N=8, males=3, females=5) and mood disorders (2.9%, N=2, males=0, females=2). Among the individual disorders, ADHD was the most common diagnosis (5.5%), followed by oppositional defiant disorder (ODD) (4.7%), and of the emotional disorders generalized anxiety disorder (3.5%) was the most common diagnoses.

Table 5.7: DSM-IV prevalence of disorders using the K-SADS diagnostic interview, with CGAS impairment

Disorders	Prevalence rates	95% CI
Any Disorder	17.3%	(6.2- 28.3)
Anxiety Disorders	4.2%	(0.0 - 8.7)
Generalized	3.5%	(1.0 - 5.3)
Avoidant	0.2%	(0.1 - 0.4)
Separation	0.1%	(0.0 - 0.2)
Phobia	0.1%	(0.0 - 0.2)
Over anxious	0.3%	(0.0 - 0.6)
OCD	0%	-
PTSD	0%	-
Behavioural Disorders	10.2%	(6.3-15.4)
ADHD	5.5%	(0.3 -10.7)
ODD	4.7%	(0.0 -9.5)
Mood Disorders	2.9%	(0.0 -7.0)

The prevalence of common emotional and behavioural disorders according to gender and school type will be discussed next.

Figure 5.2: Pie chart displaying prevalence of child psychiatric disorders in Karachi

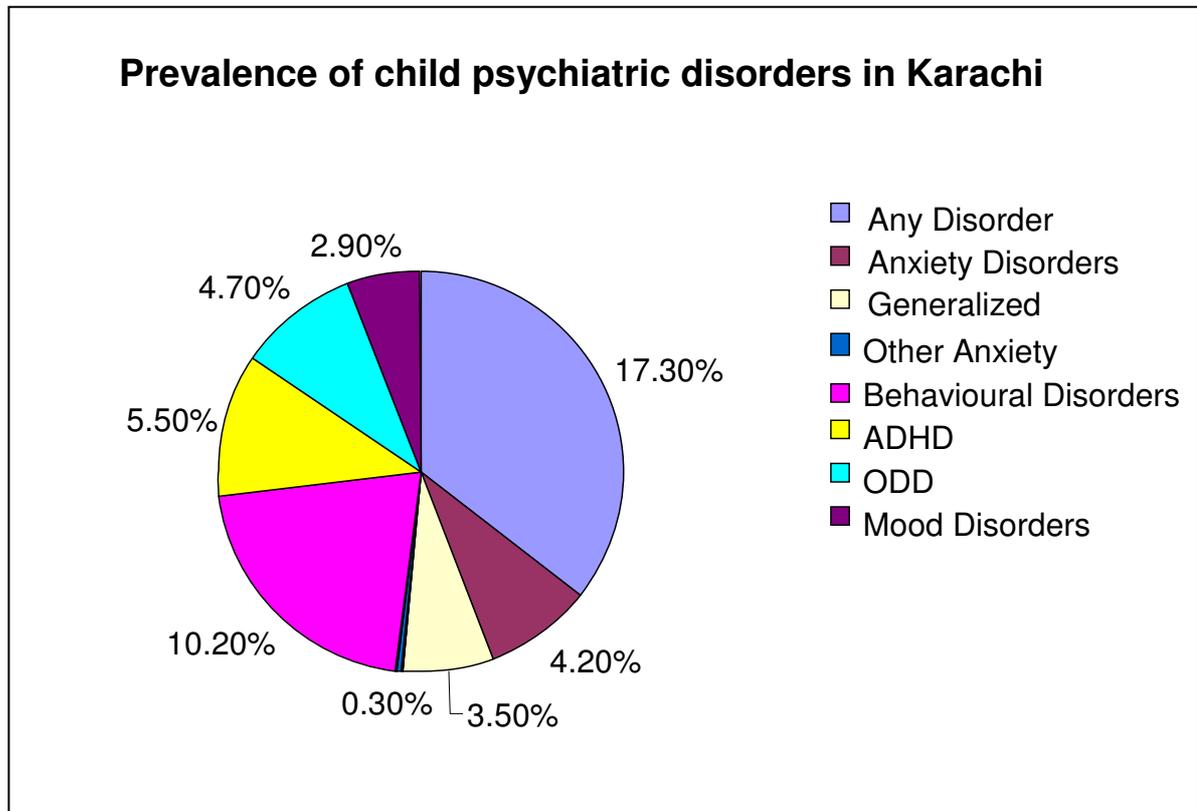
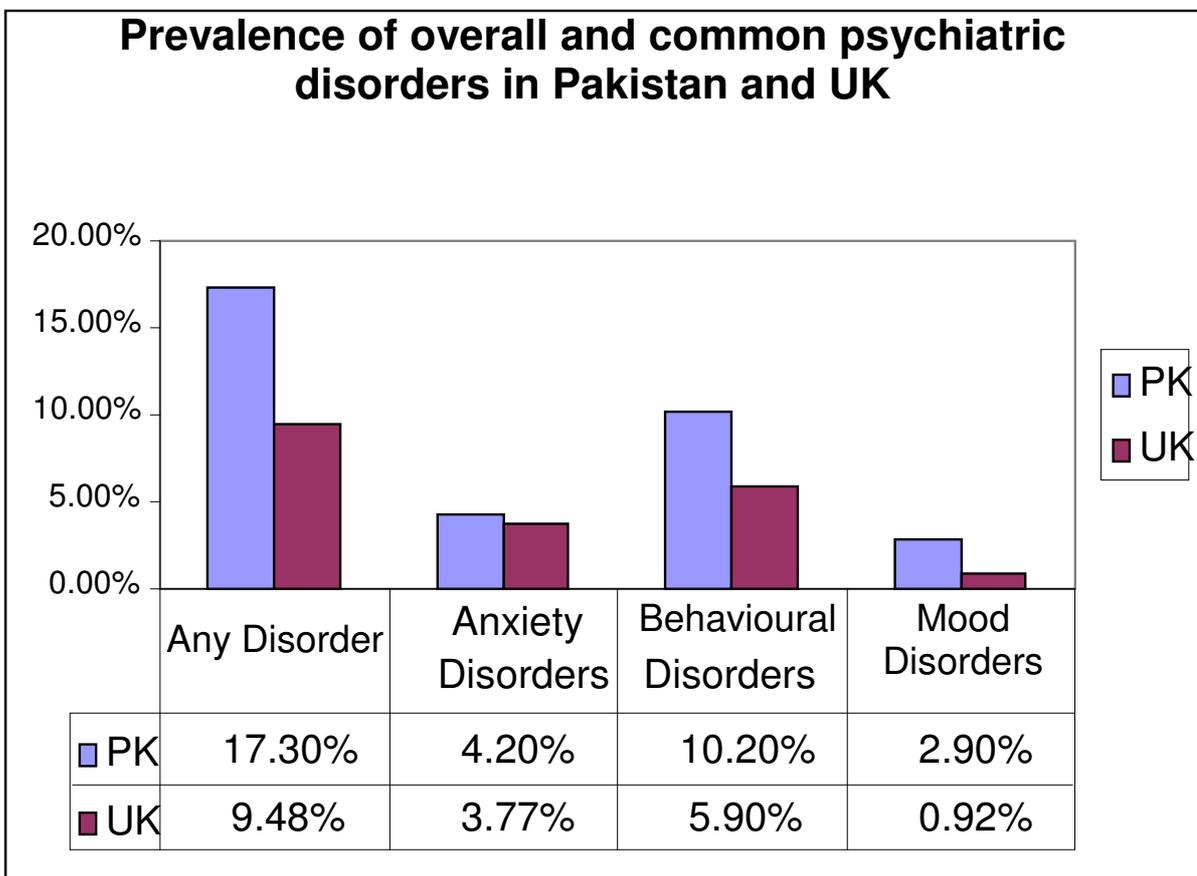


Figure 5.3: Bar graph contrasting the prevalence of common psychiatric disorders in Pakistan and UK



5.4b-Weighted DSM-IV prevalence of common child psychiatric disorders according to gender and school type

Table 5.8 shows the weighted prevalence for the main diagnostic groups by gender and school type. Overall, the prevalence was slightly higher in females (17.6%, 95%CI=3.6-31.6) compared to males (16.9%, 95%CI=0.0-33.8). The prevalence of behavioural disorders, including ODD and ADHD, was markedly higher in males rather the females. In contrast anxiety and mood disorders were higher in females.

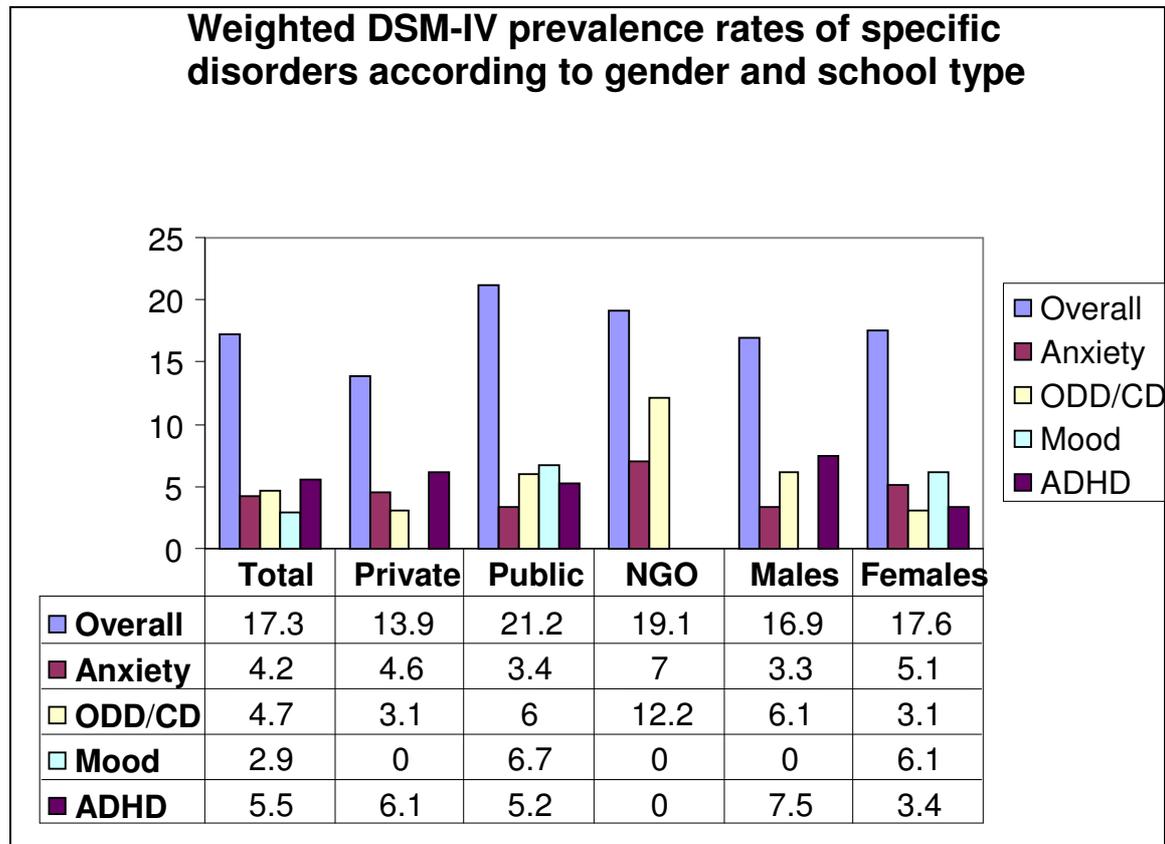
Children attending public (government) schools had the highest prevalence of any disorder (21.2%, 95%CI=6.5-35.9), followed by community (NGO) schools (19.1%, 95%CI 5.9-32.4), and private school children (13.9%, 95%CI=0.0-29.3). Among children attending private schools, ADHD (6.1%, 95%CI=0.1-14.7), was the most common diagnosis, followed by anxiety (4.6%, 95%CI=0.0-11.7), and ODD (3.1%, 95%CI=0.0-8.5). No cases of mood disorders were reported among private school children.

ODD was the most frequent diagnosis for children attending community schools (12.2%, 95%CI=1.7-27.6), followed by anxiety disorders (7.0%, 95%CI=0.0-14.7). None of the children received a diagnosis of ADHD or mood disorders. Most of the government school children received a diagnosis of ODD (6.0%, 95%CI=0.0-14.6) or mood disorder (6.7%, 95%CI=0.0-16.0), followed by ADHD (5.2%, 95%CI=0.1-12.5), and anxiety disorder (3.4%, 95%CI=0.1-10.2).

Table 5.8: Weighted DSM-IV prevalence rates of specific disorders according to gender and school type

N	Total	Male	Female	Private	Public	NGO
	968	515	453	272	328	368
Any	17.3%	16.9%	17.6%	13.9%	21.2%	19.1%
CI	(6.2- 28.3)	(0.0- 33.8)	(3.6-31.6)	(0.0-29.3)	(6.5-35.9)	(5.9-32.4)
SE	5.53	8.40	6.90	7.39	7.22	6.48
ODD/CD	4.7%	6.1%	3.1%	3.1%	6.0%	12.2%
CI	(0.0-9.5)	(0.0-14.4)	(0.0-9.3)	(0.0-8.5)	(0.0-14.6)	(1.7-27.6)
SE	2.42	3.97	3.08	2.55	4.23	5.09
ADHD	5.5%	7.5%	3.4%	6.1%	5.2%	0
CI	(0.3-10.7)	(0.0-17.0)	(0.0-8.4)	(0.1-14.7)	(0.1-12.5)	-
SE	2.59	4.75	2.47	4.07	3.58	-
Anxiety	4.2%	3.3%	5.1%	4.6%	3.4%	7.0%
CI	(0.0-8.7)	(0.0-8.5)	(0.0-12.5)	(0.0- 11.7)	(0.1-10.2)	(0.0-14.7)
SE	2.42	2.60	3.64	3.36	3.34	3.74
Mood	2.9%	0	6.1%	0	6.7%	0
CI	(0.0-7.0)	-	(0.0-14.7)	-	(0.0-16.0)	-
SE	2.07	-	4.24	-	4.55	-

Figure 5.4: Bar graph displaying DSM-IV weighted prevalence of disorders according to gender and school type



5.5-Characteristics of clinical cases of common child psychiatric disorders

Table 5.9: Frequencies of cases according to gender and school type

Disorder	Total	Male	Female	Private	Public	NGO
N	26	16	10	9	8	9
Anxiety	8 30%	3 18%	5 50%	3 33%	1 12%	4 44%
Mood	2 7%	0 -	2 20%	0 -	2 25%	0 -
ODD/CD	10 38%	9 56%	1 10%	2 22%	3 37%	5 55%
ADHD	6 23%	4 25%	2 20%	4 44%	2 25%	0 -

Figure 5.5: Bar chart displaying numbers of clinical cases according to gender

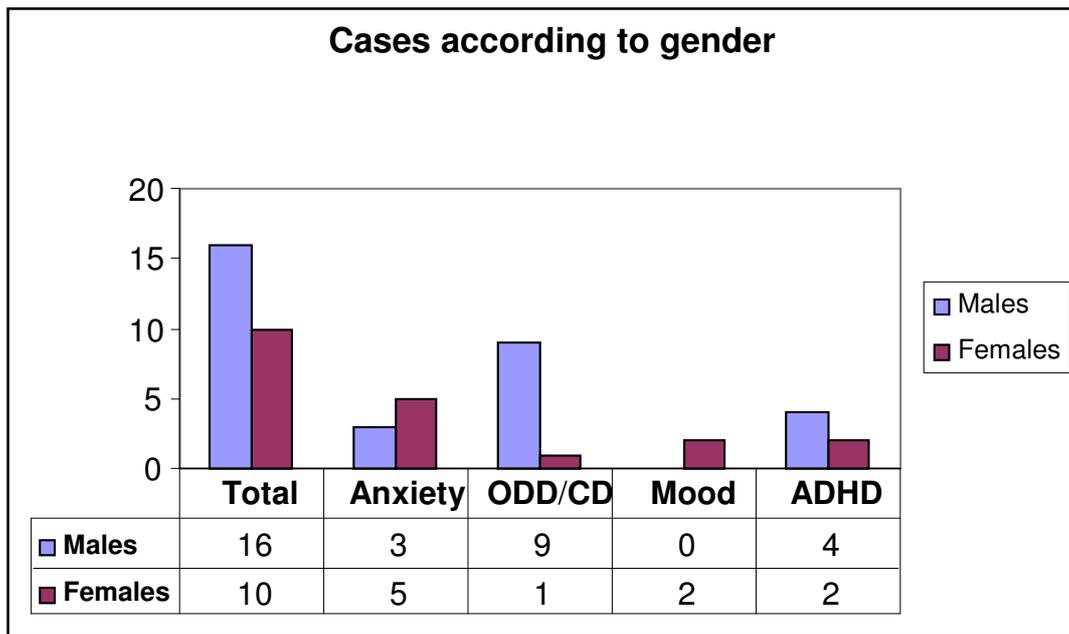
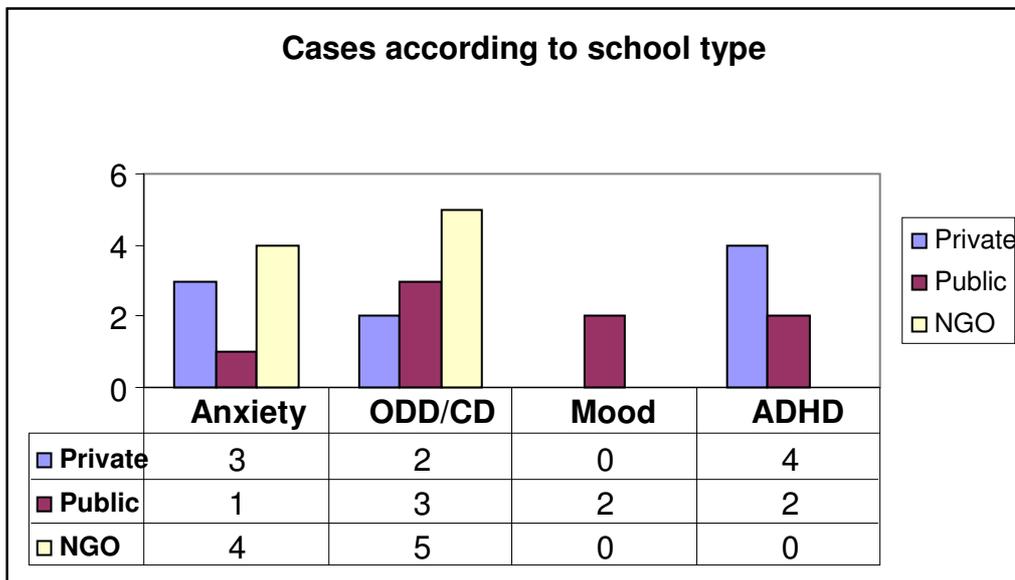


Figure 5.6: Bar chart displaying numbers of clinical cases according to school type



5.5.1-Diagnosis of oppositional defiant and conduct disorder

This diagnostic group was the most prevalent. More than one-third (38.5%, N=10) of the children fulfilled diagnostic criteria for behaviour disorders. Of those, 80% (N=8) fulfilled diagnostic criteria for oppositional defiant disorder and 20% (N=2) children had a diagnosis of conduct disorder.

Socio-demographic characteristics of children with a diagnosis of ODD/CD

Of the 10 children with this diagnosis, 9 (56%) were male and only one (10%) female. The Fisher Exact test confirmed a statistically significant difference between the two genders ($p=0.036$). The mean age of children with ODD/CD was 8.3 years (SD=1.49). Most of the children with ODD/CD were attending community (NGO) schools (50%), 30% attended government schools and 20% attended private schools. More than half of the children with the diagnosis (N=5, 50%) had a family history of psychiatric illness. About 80% of the children diagnosed with ODD/CD were of lower social economic status and 20% of middle SES. None of the upper class children were identified with ODD/CD. Half of these children lived in urban areas (50%), and 40% in slums, compared to only 10% in rural areas.

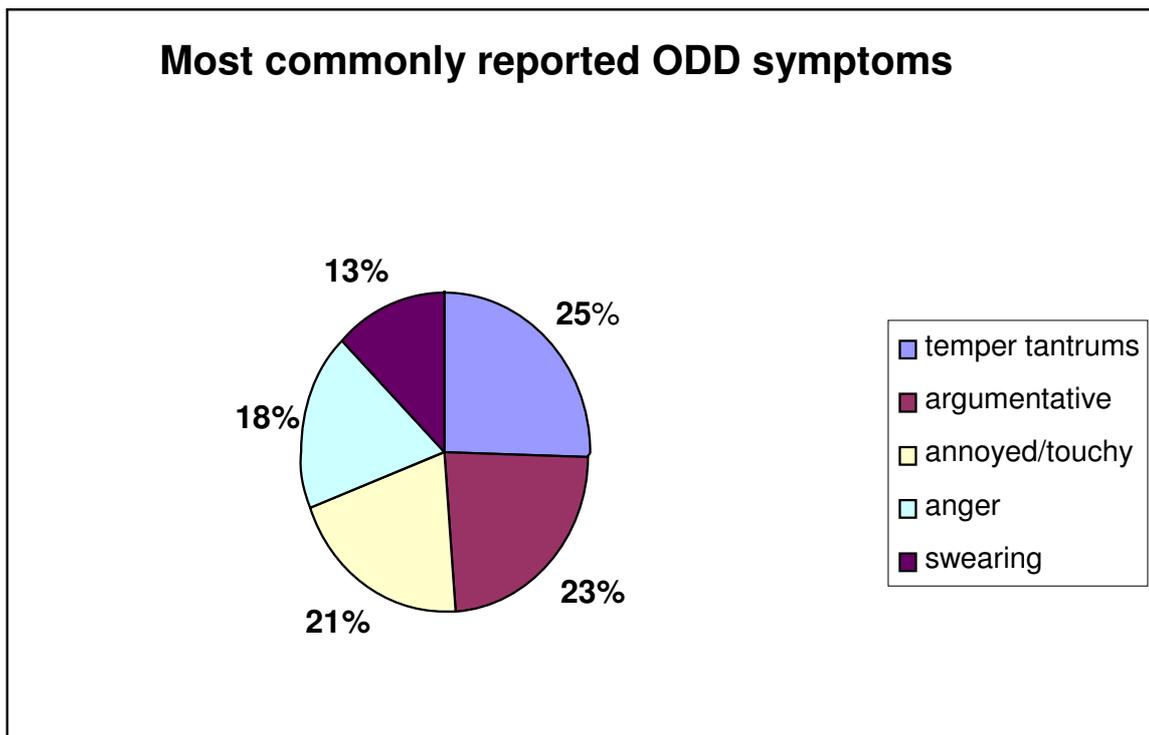
Symptoms of oppositional defiant disorder

The most common symptom reported for these children was temper tantrums (N=10). Other common symptoms were being argumentative (N=9), easily annoyed/touchy (N=7), anger (N=8) and swearing (N=5). Children with ODD also presented with symptoms of other disorders, particularly ADHD and emotional disorders.

Symptoms of conduct disorder

Only two of the 100 children fulfilled the diagnostic criteria of conduct disorder. The main symptoms these children displayed were truancy, non confrontational stealing, bullying, fighting, pathological lying and running away (Figure 5.6).

Figure 5.7: Pie chart displaying most commonly reported ODD symptoms



5.5.2-Diagnosis of anxiety disorder

Most of the children fulfilled a diagnosis of generalized anxiety disorder (3.5%, N=9). Three cases of over anxious anxiety disorders (0.3%, N=3), two cases of separation anxiety and (0.2%, N=2), one case each of avoidant anxiety disorder (0.1%, N=1) and phobia (0.1%, N=1) were identified. No case of PTSD and OCD were identified in this sample.

Socio demographic characteristics of children with a diagnosis of anxiety disorder

Anxiety disorders were more common among females (62.5%, N=5) compared to males (37.5%, N=3). However, the Fisher Exact test did not report a statistically significant difference between the two genders ($p=0.189$). Like ODD/CD, anxiety disorders were most prevalent among community (NGO) school children (50%), followed by private (37%) and government school children (12%). One-third of the children with anxiety disorders (37.5%) had a family history of psychiatric illness. More than half (87.5%) of the children belonged to lower social status, and 62.5% lived in joint or extended family settings. All these children were residing in urban neighbourhoods.

Symptoms of generalized anxiety disorder

Generalized anxiety disorder was the most commonly diagnosed within this category. The most common symptoms among children with this diagnosis were worries about the future (N=5) and irritability (N=6). Children with anxiety disorder also presented with symptoms of other disorders, particularly of mood and oppositional defiant disorder.

5.5.3-Diagnosis of mood disorder

Of the 100 children, 2 (2.0%) had a diagnosis of mood disorder; both were females attending public schools. Neither of the two children had a family history of psychiatric illness. Both children belonged to lower social class and lived in joint or extended families, in urban and slum neighbourhoods respectively.

Symptoms of mood disorder

The most common symptoms in these children were irritability and depressed mood. Children with mood disorder also presented with symptoms of other psychiatric disorders, particularly generalized anxiety and oppositional defiant disorder.

5.5.4-Diagnosis of attention deficit-hyperactivity disorder (ADHD)

Six children fulfilled the diagnostic criteria for attention deficit-hyperactivity.

Socio demographic characteristics of children with a diagnosis of ADHD

Of the six children with this diagnosis, four (66.7%) were male and two (33.3%) female. However, the Fisher Exact test did not report a statistically significant difference between the two genders ($p=1.000$) None of the community (NGO) school children but four of the private school children (66.7%), and two attending government schools were identified with ADHD (33.3%). More than half of the children with the diagnosis (66.7%) had a family history of psychiatric illness. The majority (83.3%) belonged to lower social class, and lived in joint or extended families (66.7%), and resided in urban areas (66.7%) or slums (33.3%).

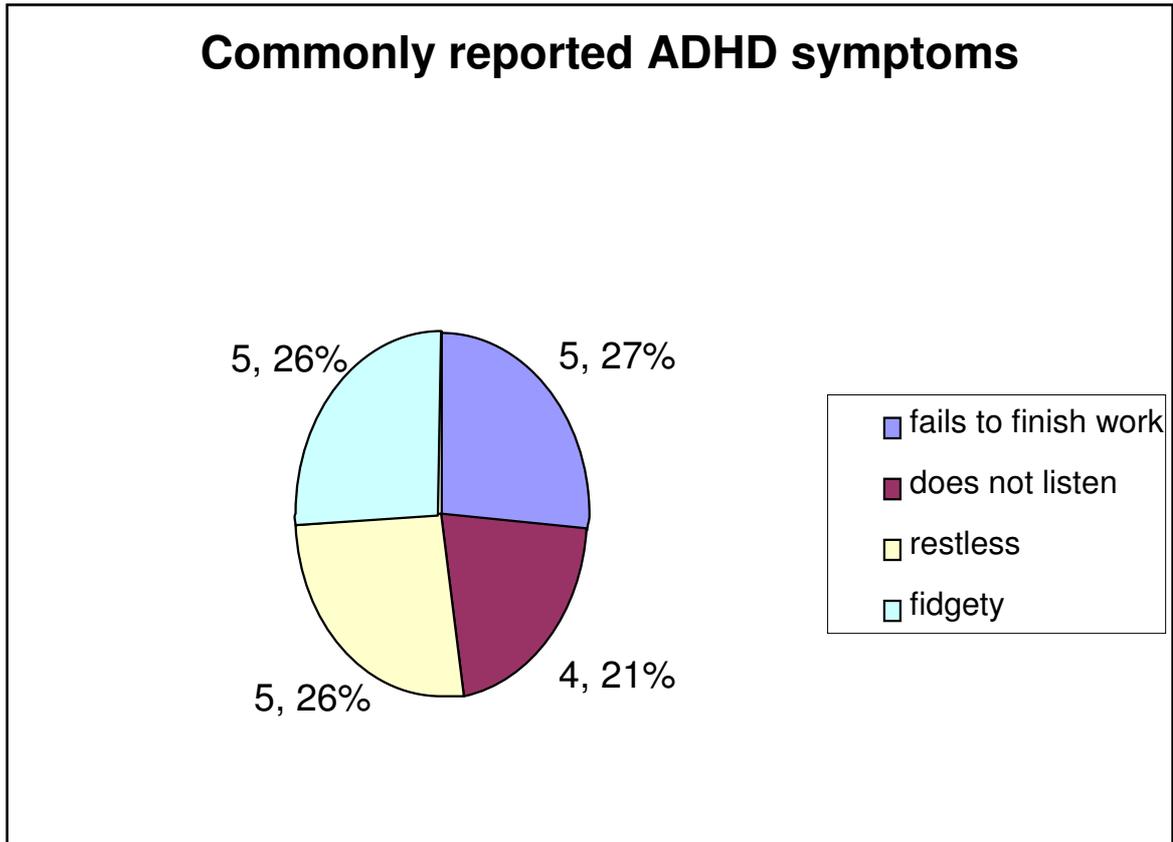
Symptoms of ADHD

The inattention subtype of ADHD was the most prevalent. The most common symptoms among children with a diagnosis of ADHD (inattention type) were “fails to finish or follow through” (N=5) and “often doesn’t listen” (N=4). Restlessness and fidgetiness (N=5) were the most common symptoms among

children identified with the ADHD (hyperactive-impulsive) sub type (Figure 5.7).

Children with ADHD also often presented with symptoms of ODD.

Figure 5.8: Pie chart displaying showing commonly reported symptoms of ADHD



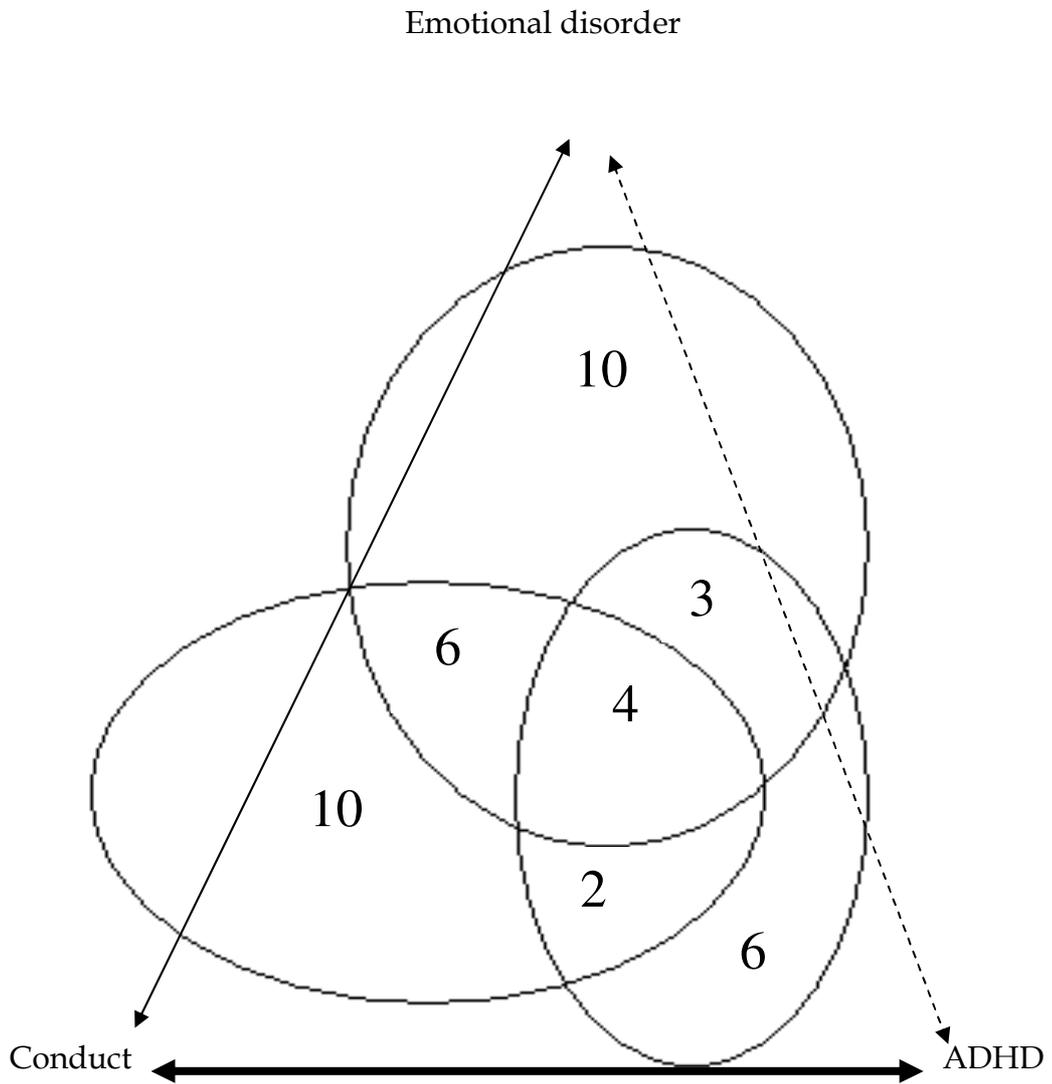
5.6-Comorbidity of common child psychiatric disorders

Of the 100 children interviewed, 20 (20%) had a diagnosis of more than one of the broad diagnostic categories (emotional, behavioural, or ADHD), while 16 (16.0%) had two types of disorders and, four (4%) had three types of disorders.

Figure 5.8 shows a venn diagram on the overlap between the three broad categories. Arrows indicate the strength of association between two groups, adjusted for gender, school type and for association with the third group.

Regression analysis was conducted to determine the association between the disorders. However, since the sample size was relatively small these results should be interpreted with caution. There was a significant association between behavioural disorders and ADHD (OR=5.6, 95%CI=1.65-21.46) after adjusting for gender and school type, an indirect link mediated via emotional disorders. Similarly, there was a significant direct link between behavioural and emotional disorders (OR=3.0, 95% CI=1.70-8.75) after adjusting for gender and school type, an indirect link mediated by ADHD. In contrast, there was no a significant direct link between emotional disorders and ADHD (OR=0.7, 95%CI=0.07-4.58) after adjusting for gender and school type, an indirect link mediated by behavioural disorders.

Figure 5.9: Co-morbidity between the three main diagnostic groups



CHAPTER SIX

DISCUSSION I: METHODOLOGICAL IMPLICATION

6.1-Chapter outline

The next two chapters will present the discussion of the research findings. Chapter six will present the overview of the research findings, and discuss the limitations of the study as well the methodological issues. I will end this chapter with a reflective account, sharing my experience of the journey through this research. Chapter seven will discuss the service implications of these findings, primarily focusing on policy and service planning.

6.2-Overview of findings (SDQ and K-SADS)

This study generated both methodological and substantive findings of interest. Methodologically, the study confirmed and extended the previous validation of the Strengths and Difficulties Questionnaire (SDQ) (Samad et al, 2005), and established cut-offs for the SDQ using the K-SADS diagnostic interview as a gold standard. This study also adapted and translated the widely used K-SADS diagnostic interview into Urdu, the official language of Pakistan.

The findings suggest that around 17% of Pakistani 5-11 year-olds have emotional and behavioural problems that are severe enough to result in significant distress or social impairment, thereby warranting a clinical assessment and possible intervention. Previous epidemiological studies of mental health in developing countries have reported overall prevalence ranging from 7% in Brazil (Des Santos et al, 2003) to as high as 17% in Puerto-Rico (Canion et al, 2004). Thus, our estimates of 17%, although slightly higher, fall within the range of previous studies in this region. The pattern of psychiatric disorders found in Karachi resembles those identified in other parts of the world in both developed and developing countries, with a preponderance of behavioural disorders, followed by anxiety and mood disorders (Goodman et al, 2003; Mullick, 2005).

6.3-Variation in prevalence of disorders

Children attending public (Government) schools had the highest prevalence of any disorder, followed by community (NGO), and private school children. Among children attending private schools, ADHD was the most common diagnosis. Conduct disorder was the most frequent diagnosis for children attending community and government schools. None of the children received a diagnosis of ADHD or mood disorders in community schools, and of mood disorder in private schools. Both cases of mood disorders were reported among females attending government schools. Within the individual disorders, perhaps the most unexpected finding of the study was the high rate of ADHD, which was the most common diagnosis, followed by oppositional

defiant disorder. Of the emotional disorders, generalized anxiety disorder was the commonest diagnosis.

6.3.1-Prevalence of conduct problems

Conduct disorder was the most frequent diagnosis for children attending community and government schools. Males were at a higher risk of conduct problems compared to females. These findings are consistent with studies from other countries (Fleitlich et al, 2004; Green et al, 2004), including Pakistan. A clinical population study in Pakistan found that the most common reason for referral to a psychiatric clinic was aggressive and oppositional behaviour amongst males (Syed et al, 2007a). A previous school-based survey of emotional and behavioural problems amongst school children using the Rutter screening questionnaire also reported that aggressive behaviour problems were the most common in this population (Javad et al, 1992).

6.3.2-Prevalence of anxiety and mood disorders

This study found higher rates of emotional disorders, including both anxiety and mood, compared to rates in other countries. In line with previous findings rates, were higher amongst females compared to males. Although there are no previous reported studies of anxiety and mood disorders amongst Pakistani children, previous studies in adult populations found a higher prevalence than from other countries. In a review conducted by Mirza and Jenkins (2004), they reported that socioeconomic adversity and relationships problems were major risk factors for anxiety and depressive disorders in Pakistan, whereas supportive family and friends may protect

against the development of these disorders. It is thus essential to investigate these risk and protective factors in more detail amongst Pakistan children.

6.3.3-Prevalence of ADHD

The prevalence of ADHD among this sample of Pakistani 5-11 year-old school children was 5%, which is higher than previous report. There could be several reasons for the higher rates of ADHD in this sample. Studies have reported that prevalence estimates for ADHD/HD are highly dependent on three main factors: the population sampled, the method of ascertainment, and the diagnostic criteria applied (Bird, 2002; Faraone et al, 2003).

The reported prevalence of ADHD in school-age children shows great variation. Over the past two decades there have been many community-based studies offering estimates of prevalence ranging from 5% to 10% in school-aged children (Scahill et al, 2000). More recent community based epidemiological studies of common child mental health disorders have reported much lower prevalence figures (Green et al, 2005).

One reason for the high rates of ADHD in our present study could be the use of DSM-IV criteria as opposed to the more narrow criteria used by the ICD-10. Previous studies using ICD-10 criteria have indeed established significantly lower prevalence rates than those using DSM-IV criteria (Polanczyk et al, 2007). Another possible reason for the high ADHD rates could be that this study relied only on parents' reports to determine caseness. The meta-analysis

of ADHD/HD reported that studies that relied on information provided by parents, teachers, and 'or rule', respectively, were associated with significantly higher ADHD/HD prevalence rates than those relying on a best-estimate procedure, whereas those relying on information provided using the 'and rule' criterion were associated with significantly lower ADHD/HD prevalence estimates (Polanczyk et al, 2007).

Further variations in the apparent prevalence rate arise from age differences in the population surveyed (Faraone et al, 2003; 2006). For instance, the NIMH-funded Multimodal Treatment Study of ADHD (MTA) found that ADHD symptoms, especially hyperactivity and impulsivity, tend to decline during adolescence (Langberg et al, 2008). A final possible reason for higher ADHD ratings among Pakistani school children could be related to how behaviour is understood and perceived within the society. Earlier studies suggested that the prevalence of hyperactivity symptoms is similar across countries, and that the apparent differences in the prevalence reflect differences in the definition of the condition. For example, children with hyperactivity symptoms may be more likely to be diagnosed as having conduct disorder in the UK and ADHD in the USA (Faraone, 2003).

6.4-Risk factors and possible mechanisms

Since there is a lack of child mental health research in Pakistan, studies with children from other countries as well as adult literature in Pakistan were reviewed to determine likely risk factors for psychopathology. Such evidence

was considered in the context of the findings of this study. The multivariable analysis revealed that physical illness, male gender, government and community school type, urban residential neighbourhood, and head of family other than father figure remained significant predictors of parent SDQ total scores; whereas male gender, lack of teaching experience and qualification, poor school attendance and performance, remained significant predictors for teacher SDQ scores. The next section briefly discusses each the potential mechanisms and their impact on child mental health problems in the light of previous studies.

Family characteristics

6.4.1-Gender differences

Epidemiological and clinical studies consistently show major differences between males and females in the rates of many forms of psychopathology (Rutter et al, 2003). The gender patterns of individual disorders in this study were consistent with other studies, with the prevalence of ADHD and behavioural disorders being markedly higher in males (Moffitt et al, 2001). In contrast, emotional and mood disorders were higher in females (Wade et al, 2002). Similar findings have been reported in both developing and developed countries (Goodman et al, 2003; Fleitlich et al, 2004). Overall, the prevalence was slightly higher in females compared to males. It is possible that parents may have under reported behavioural and other problems in boys, owing to a culturally shared higher tolerance threshold for such behaviours among males. A similar trend was noted in a study in the UAE, where overall

prevalence suggested an under reporting of symptoms for males compared to females (Eapen et al, 2003). It is equally plausible that higher rates of anxiety and depression among females may be due to the Pakistani culture that favours inhibition, compliance and obedience amongst females, which may serve to increase internalizing behaviours such as fear, anxiety and depression (Mohammed et al, 2001).

6.4.2- Head of family

Previous research has identified that extended families have a range of potentially protective characteristics, in particular the role of grandparents (Edward et al, 2006; Jessel et al, 2004; Lussier et al, 2002). In contrast to this generally positive picture, some authors have suggested that the traditional extended family is not always of benefit to its members and may, under certain circumstances, also constitute a risk to mental health (Patel, 2000a; Sonuga-Barke et al, 2000). In situations where the grandmother's involvement is, or is perceived by the mother to be, over intrusive and overbearing, resulting conflicts can have a detrimental effect on the children's development (Caputo, 2000; Gordon et al, 2002). Such patterns of involvement can lead to conflict, thus affect the dynamics of family life, the mothers' well-being, and in turn the children's adjustment.

This study found that grandparental involvement did not serve as a protective factor. Interestingly, in families where fathers were the head of the family unit, children were better protected against mental health problems. Other studies have also reported that the total or relative absence of a father figure during childhood has been associated with emotional problems, lower levels of cognitive development or drug abuse (Flouri & Buchanan, 2003). Studies have shown several benefits of father's involvement for children, including greater social competence, lower behavioural disorder indices and better mental health (Aldous & Mulligan, 2002). In families where the fathers are involved, the overall family context in which children are raised is positive, which is an important factor contributing to healthy child outcomes (Kell, 2000; NICHD Early Child Care Research Network, 2000). Finally, involved fathers are likely to financially support their children. Given the adverse child outcomes associated with poverty, fathers' involvement can indirectly influence their children's positive physical and psychological well-being (Cabrera et al, 2000).

The results have strong implications for Pakistani families where in most cases grandparents or other elders serve as the head of the family. Although in recent years the family setup in Pakistan has shown a vast change with more families living in nuclear set-up, nevertheless the authority of the family elders still remains strong. They have a great influence on the parenting style and child upbringing. The inconstancy between the parents and grandparent may cause further problems for the child. Studies from Pakistan have shown a

positive significant association between relational problems with in-laws and high rates of anxiety and depression in woman (Mirza & Jenkins, 2004). Risk factors for mental health problems among adult Pakistani males have not been studied and this needs to be explored. The finding also suggests that any parent training intervention should take into account the family setup, culture and expectations within the family as well as the role of grandparents and significant others.

6.4.3- Physical illness

Children with physical illness have an increased risk of emotional and behavioural problems (Royal College of Psychiatrists, 2004). This risk has been documented in epidemiological studies (Green et al, 2005; Hysing et al, 2007), as well as in studies with clinic samples (Glazebrook et al, 2003). Children with a long lasting physical illness are twice as likely to suffer from mental health problems. This is especially true of physical illnesses that involve the brain such as epilepsy and cerebral palsy (Royal College of Psychiatrists, 2004). Children with chronic illness may show various emotional problems, such as low mood or withdrawal. Other problems may include non-adherence to treatment, under achievement in school and regressive behaviours, for example bed-wetting and temper tantrums (Taylor, 1999).

Detection and treatment of emotional and behavioural problems is an essential part of treating children with chronic illness. It has been suggested that paediatricians only recognize 25% of psychosocial problems among their chronically ill patients (Glazebrook et al, 2003), which probably contribute to the discrepancy between the high rate of psychiatric diagnoses and the low rate of mental health service use in this group of children. Since there are limited services available and a lack of liaison between paediatricians and mental health professionals, using a common assessment framework between mental health professionals and practitioners is important in the effective development of service (Briggs-Gowan et al, 2000).

6.4.4- Neighbourhood and communities

This study found that children living in urban neighbourhoods were at a higher risk of mental health problems compared to children residing in other areas. This finding is consistent with previous studies, which reported that children's neighbourhood of residence may impact on mental health above and beyond individual and family attributes (Blue, 2000; Capsi et al, 2000; Leventhal et al, 2000). The association between neighbourhood socioeconomic composition and child mental health problems has been widely established across different countries (Costello et al, 2001; Kalff et al, 2001; Boyle et al, 2002).

The early epidemiological UK study by Rutter in the 1970s, demonstrated an excess of child psychiatric disorders in cities, which was largely explained by a concentration of disadvantaged families (Rutter et al, 1976b). Similar trends were subsequently established in other studies from developed countries (Offord et al, 1989; Fombonne 1994; Costello et al, 1996). The British surveys (Meltzer et al 1999; Green et al, 2005) also demonstrated that children in deprived conditions were at a higher risk. Recent epidemiological studies in developing countries have also established higher rates of disorders in urban and slums areas compared to children living in rural settings (Des Santos et al, 2005). Rapid urbanization is known to have a negative effect on child mental health. This may increase stressful life events and fragment social networks, factors which may negatively affect mental health (Turan, 2008). Inconsistent with the findings of studies from developing and developed countries, this present study did not find social class to be a risk factor for child mental health. However, a high co-linearity between social class and school type, which may suggest that school type, serves as a confounder for social class. It is essential that future studies consider other aspects of social capital. Two British studies found that children' perceptions of their neighbourhood rather than the residential areas per se can serves as an essential risk factor for child mental health (Meltzer et al, 2007; Pearson & Oyebode, 2009), this aspect needs to be further explored in Pakistan.

School characteristics

6.4.5-School type

In this study, parents of children attending government schools reported higher rates of mental health problems compared to children attending private schools. The same trend was established by a Brazilian study, where children attending public schools had a higher prevalence of conduct disorders (Fleitlich et al, 2004). In the Pakistani system, government and community schools are generally over-crowded and under-funded, thus leading to poor quality education and lack of discipline, which may result in a higher expression of behavioural problems (Rahman, 2005).

Lupton (2004 & 2005) found a strong relationship between levels of deprivation and the 'quality' of schools in an area. This is especially important in developing countries, where educational systems are already challenged by inadequate resources, crowded classrooms and inconsistent quality. Previous research has indicated that the quality of the school environment can serve as a risk factor for learning and emotional problems, thus increase the risk for early drop-outs from education (Patel & De Souza, 2000).

6.4.6-School attendance

School drop-out is a complex phenomenon that needs to be understood in the context of socio-economic problems and inadequacies of the educational system. In developing countries it is not uncommon for adolescents to leave

school to work, and for school-age children to stay home to take care of their younger siblings (Khan et al, 2007). Previous studies have suggested that behavioural problems are strong predictors of school drop-out (Mattison, 2000). Other studies examining the causes of school failure have found that behavioural, emotional and learning difficulties constitute prominent risk factors for children, therefore, both sets of factors can act as cause and effect. For example, an Indian study found that mental health problems were independent risk factors for later school drop-outs (Patel et al, 2007a). Another case control study from Brazil reported a strong association between school drop-out and conduct disorder (Tramontina et al, 2001).

6.4.7-Teacher qualifications

This study found that experienced and qualified teachers reported significantly higher rates of emotional and behavioural problems. It is plausible to hypothesise that more experienced teachers may also be more skilled in detecting pupils with mental health problems. Trained teachers have acquired skills and knowledge about child development, and are well placed to observe children to identify and remedy mental health difficulties in a classroom setting (Rothi & Leavey, 2008). Several studies have reported that with adequate knowledge, understanding and support, teachers are able to provide 'front-line' detection and referral to mental health services (Atkinson & Hornby, 2002). For instance, Goodman et al (2000b) found that teachers

were more sensitive at identifying children with hyperactivity than were their parents.

In developing countries like Pakistan, child mental health services are inadequate and mental health problems are often neglected because specialist resources are limited. Hence, teachers cannot wait for psychiatrists and psychologists to address all problems. A number of studies have emphasised the role of school teachers in the amelioration of social, behavioural and learning problems manifesting in children, and the need for teachers to be given adequate training in early identification and school-based management of common mental health problems (Mubbashar & Saeed, 2002).

6.5-Limitations

- The sampling unit for the present study consisted of schools, which was the most feasible method of recruiting and assessing children in Pakistan, similar to studies in other developing countries. Although all Pakistani 5-11 year-olds are legally obliged to attend school, official statistics from the Ministry of Education, report that only 79% of them are enrolled in mainstream schools in the province of Sindh, of which Karachi is the capital (PSLM, 2007). It is plausible that we underestimated the prevalence of disorders in Karachi by sampling from school registers, thus missing 21% of 5-11 year-olds who were not

attending schools, perhaps due to lack of facilities, learning difficulties or child labour (Khan et al, 2007).

- Because we sampled from mainstream schools, we did not include any children from the relatively small number of special schools (primarily for severe learning disability), thereby missing another high risk group.
- Ideally the sample should have been drawn from all Karachi districts, as well as from the rural population. Karachi has a cosmopolitan mix of several ethno-linguistic groups from all over Pakistan and refugees from neighbouring countries (CDGK, 2007). In this study, apart from people from the four main provinces of Pakistan, 16 different minority ethnic groups were identified that constituted the study sample. The actual numbers were small, therefore were grouped in one category, for the purpose of the analysis. However, it would be inappropriate to generate these figures as the basis for a precise estimate for Pakistan as a whole.
- A small number of children attended religious schools (madrassah), but despite repeated efforts it was not possible to get consent for data collection from these Islamic schools. Pre-school children and those aged 12 years and older were excluded from this study. Further studies should include these age groups, as well as religious and non-school attending children in the community. The latter is particularly

important, as children with psychiatric disorders are over represented among school drop-outs (Tramontina et al, 2001).

- During the screening phase, parents in private schools were able to complete the questionnaires, in contrast to many parents in community and government schools who were assisted by the researchers, and this could have resulted in rater bias, thus providing inappropriate prevalence estimates.
- Since no record was maintained for the characteristics of non respondents, it could be that the respondents were more motivated and aware regarding mental health issues; therefore, they could have over-estimated the symptoms.
- The response rate was 45.4%, which is much lower than studies for other countries that have used a similar design. However, it is essential to point out that the consent forms were sent to parents, and as the study data suggest most of the government and community schools parents were uneducated. It is likely that these parents may not have provided consent to participate because they were unable to read the information sheets provided. Since data on non-respondents was not collected it is possible that parents who refused to participate had low

levels of education which serves as a risk factor to child mental health.

Future studies need to take into account this essential information.

- The low response rate could be due to stigma, low literacy levels or lack of awareness amongst the general population. Despite reassurance, parents may have been apprehensive about the findings and how the results would be shared with the schools, and these factors could also have led to a lower response rate.
- Although in the screening stage we collected data from both parents and teachers, this was not the case in the second stage, where diagnostic interviews were conducted to derive prevalence estimates. In this way, we may have omitted some cases wherein the disturbance was predominantly school-related.
- The small sample size at the second stage reduced the statistical power and restricted the generalization of the findings. If a higher proportion of screen positive and negative children had been subject to the in-depth assessment, the prevalence estimates would have been more reliable and generalizable. As the study had limited statistical power to detect uncommon disorders, it would be wrong to draw any conclusions from the absence, for example, of any case of OCD and PTSD.

- The child psychologist who performed the diagnostic interview was not blind to the screening results, and the reliability and validity of the K-SDAS-U was not ascertained.
- The first phase of this study applied the screening questionnaire to almost 1,000 children from the three school groups, giving the study reasonable statistical power to detect socio-economic risk factors. In contrast, the second stage applied detailed psychiatric assessment to a small number of children; the restricted sample size thus reduced the power to detect significant risk factors based on interview data.

6.6-Methodological issues

The previous section discussed in detail the limitations of this study. I will now discuss some of the essential methodological issues and implications.

6.6.1-Research design

Cross-sectional vs. longitudinal research

This study used a cross-sectional design. An essential methodological consideration when conceptualising such a study is whether a cross-sectional or longitudinal design is preferable to determine prevalence. Since the goal of child psychiatric epidemiology is to establish patterns and to understand psychopathology and aetiology of psychiatric disorders, longitudinal research is generally considered to be preferable. However, there are a number of difficulties in using this method, in particular that of subject attrition. This

reduces statistical power, and can compromise both internal and external validity (Barry, 2005). It is for this reason that a cross-sectional design is more frequently used, although this cannot determine temporal order, hence causality (Susser, 2001). Many of the independent family factors associated with childhood psychiatric disorders could be accounted for by reverse causality. For instance, children's problems could undermine parental mental health or interfere with family functioning.

Since the aim of the present study was to determine the prevalence of child psychiatric disorders, rather than establish their aetiology, it was appropriate to use a cross-sectional design. There are, however, plans to follow-up a subsample of this cohort, thus collect longitudinal data to identify risk factors for child mental health. In addition, in order to examine the role of risk factors in aetiology, there is a need for further community based epidemiological studies aimed at understanding the factors affecting the duration and recurrence of child disorders, in particular, factors that affect help-seeking, including the use of mental health and general health services. This is an important task for the future.

6.6.2-Target population and settings

Ideally, epidemiological prevalence studies should be based on large and representative populations. The present study is rather small-scale in comparison with the most influential two-stage studies performed over the past 40 years (Robert et al, 1998). Admittedly, this reduces its power and

restricts the generalization of the results; however, its design and data quality may compensate for some of these limitations.

6.6.3-Sampling strategy and sample selection

Sampling procedures and representativeness are important issues in prevalence studies; in most circumstances, a probability sampling design would be ideal. However, only a small proportion of current epidemiological knowledge is based on this time consuming sampling method. Cluster sampling is less expensive, and using schools as a sampling unit offers an easy approach to children and parents. Consequently, such designs have been used in the majority of epidemiological studies (Verhulst, 1997; Bilenberg et al, 2005).

Sample size

A major relevant methodological challenge relates to the appropriate sample size. If a sample size is too low, the study will lack the precision to provide reliable findings, while if it is too large, time and resources will be wasted, often for minimal gain. This information can be crucial to the design of a study that is cost-effective and scientifically useful (Levy & Stanley, 1999; Lenth, 2001). The minimum acceptable sample size in establishing prevalence depends upon the expected, often estimated, prevalence of the disease in the population; the degree of precision/certainty wanted in that prevalence estimate; and whether or not it is the intention to monitor disease trends over

time. Generally, the more precise the required estimate, the larger the sample size needed.

The aim of power calculation is to determine an adequate sample size to estimate the population prevalence with a good precision (Naing et al, 2006). This can be calculated using a simple formula. A number of software programmes have also been developed to calculate sample size more effectively. However, the decision to select the appropriate values of parameters required in the formula is not simple in some situations. According to the epidemiological literature review discussed in chapter one, sample sizes ranged from 448 to 10,438 (mean=3,410) in developed countries. The sample size for this study consisted of nearly 1,000 children in the screening stage, but only 100 children in the diagnostic stage, which was insufficient to identify rare disorders. Further studies should be based on larger and more accurate sample sizes, from different populations groups.

Sampling bias

All sample surveys are subject to error, which can be broadly categorised as either sampling or non-sampling error. Sampling error occurs because only a small proportion is used to produce estimates that represent the whole population. This can be reliably measured, as it is calculated based on the scientific methods used to design surveys. Non-sampling error may occur in any data collection, whether it is based on a sample or a full count, and at any stage throughout the survey process (Sullivan, 2006). For example, subjects

selected for the survey may not respond; survey questions may not be clearly understood by the respondents; responses may be incorrectly recorded by the interviewers; or, there may be errors in coding or processing survey data (Brogan, 2003).

Non-response can also introduce systematic non-sampling error by creating a biased sample. The magnitude of bias depends on the level of non-response, and the extent of the difference between the characteristics of people who responded to the survey and those who did not (Hansen & Hurwitz, 2004). Despite its importance, unfortunately for this survey, analysis of non-response could not be undertaken. This is an important task for the future, as non-response may impact on population characteristics and prevalence estimates, since some studies have shown a higher prevalence of disorders or reduced mental capacity among non-respondents compared to respondents (Drivsholm et al, 2006).

6.6.4-Measures

Screening instrument

The present study used the Strengths and Difficulties Questionnaire (SDQ). This has been widely applied and evaluated in developed and developing countries as a screening tool for child mental health. Its structure, normative scoring and psychometric properties have been extensively investigated in samples across the globe (Goodman et al, 1999; Samad et al, 2005; Vostanis,

2006). The brevity of the SDQ and its minimal cost make it a particularly useful instrument for large scale epidemiological studies, as well as for screening large groups of low risk children. This is of particular importance to a developing country like Pakistan, where lack of resources and services make it difficult to conduct large scale epidemiological studies (Ahmer et al, 2007).

The SDQ and the CBCL serve somewhat different purposes, though both questionnaires seem equally valuable for most clinical and research applications (Goodman & Scott, 2002). The SDQ, however, has fewer subscales compared to other screening tools, like the Child Behavior Checklist (CBCL) (Achenbach, 1983), and does not measure less common symptoms such as compulsions, hallucinations or sexual problems. Consequently, the CBCL might be better suited for studies that require a more detailed assessment of a broader range of symptoms (Goodman et al, 1999; Syed, 2007). It is important to conduct more community and clinical based epidemiological studies among Pakistani population using both the SDQ and CBCL, findings of which will be useful in future service planning (Syed, 2007; Syed et al, 2009).

Clinical/diagnostic interview

In Pakistan, the lack of instruments limits researchers to two alternatives: developing a new instrument; or translating, adapting and validating an existing one. The first option has the disadvantages of high cost, prolonged research time and above all, limitations in terms of comparison with data

from other parts of the world. Thus, the second alternative is more economic, efficient and practical. Cultural adaptation of research instruments aims to achieve, as far as possible, research tools that are 'culture-free' or culturally equivalent (Ahmer, 2007).

In view of these constraints, and in order to arrive at an accurate diagnostic assessment, there was a need to translate and adapt an instrument that would identify the prevalence of child psychiatric disorders. There are two broad types of standardized interviews: structured such as the Diagnostic Interview Schedule for Children (Shaffer et al, 1996; Canino et al, 2004) and semi-structured such as the K-SADS (Eapen et al, 2003; Bilenberg et al, 2005). Semi-structured interviews have a less rigid format and allow the clinician to further probe the interviewer to get the complete picture (MC Clellan et al, 2000). It requires more clinical inference (and expertise), focus on specificity, and higher diagnostic thresholds; hence, fewer children meet diagnostic criteria (Miller, 2001). Since this study was the first of its kind in the country, it was essential to arrive at the best and most accurate estimates within the limited resources available.

For these reasons, a semi-structured interview was used in this study. The Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children (6-18 years) (KSADS-P-IV-R) was updated by Ambrosini and Dixon (1996) to its current version (K-SADS-P-IV-R), which is compatible with the

DSM-IV criteria. Although the translation and cultural adaptation of the K-SADS is an essential contribution to child psychiatric research in Pakistan, it also has some limitations. While a panel of experts were employed to ensure that the face and content validity of the instrument during the translation process was maintained, there are other methods that can further strengthen the process such as pilot studies, consultation with community agencies, and focus groups with young people and their carers, to establish which items are culturally inappropriate and require modification. This study did not employ such techniques, mainly due to lack of resources.

Another important limitation is the lack of any pre-testing, using either the 'probe technique' or the 'bilingual method'. The 'back translation' method appears to be the most commonly used (Tamanin et al, 2002). This procedure can, however, be costly and time consuming, especially for more detailed instruments like the K-SADS. An alternative to the use of back-translation includes a 'multiple-forward translation', which was used in this study (Maxwell, 1996). Also, the reliability and validity of the instrument were not established. If the K-SADS-P-IV-RU is to be used for diagnostic and research purposes in Pakistan, it is essential that future studies are conducted to establish its psychometric properties among Pakistani children.

Problems and limitations of culturally adapted instruments

The diagnostic instrument K-SADS was translated into Urdu by a panel of expert using the multiple-forward translation technique. Although studies have pointed out that back translation is the most suitable 'gold standard' approach when translating an instrument, this was not possible in the present study due to lack of funding and time constraints. It is therefore, essential to point out that the translation method may have resulted in some bias, the personal values and experiences of working with children in their respective areas may have influenced their understanding of the true meaning of the items under consideration. Although the author of K-SADS was actively involved in the translation process and clarification were sought when needed. It is nonetheless likely that bias may have occurred. It is therefore, essential that future studies use back translation method or focus groups to ensure that the true meanings of the items with respect to the social and cultural norms of the Pakistani population is achieved. It is equally essential that a psychometric property of the K-SDAS is established in Pakistani sample.

Apart from the cultural adaptation of measures, the use of surveys and interviews to obtain information about child mental health problems could have resulted in some bias. Studies have emphasised that cultural adaptation of research instruments should aim to achieve, as far as possible, research tools that are 'culture-free' or culturally equivalent. An instrument can be considered culturally equivalent when all forms of biases, or social norms

specific to the culture of origin, have been removed and items are re-phrased according to the norms of the target population taking into account the cultural expectations and social norms (Van Widenfelt et al, 2005). Grammatical differences and variations in the semantic range offered by each language, and the related idioms and cultural symbols, must all be considered, as each can contribute to the latent meanings within any communication. A major challenge is to ensure literal and conceptual equivalence and comparability at multiple levels of meaning. So translators must have sufficient experience. It is crucial that they understand both languages (original and target), and know about the cultural understanding of mental disorder and symptom presentation (Rahman et al, 2005).

In Pakistani culture parents and teachers are not used to survey questionnaire, for many of the informants this was their first experience completing questionnaires related to mental health problems of children. Most were unfamiliar with child development and the milestone normal behaviour pattern at each stage. Ratings could have been also affected by the respondent's personal expectations of the child, as well as the social norms and culture. For example, the higher parent-rated problem scores may reflect the parents' critical or anxious monitoring of their children's school performances, more so than reflecting any symptoms of psychopathology (Pumariega et al, 2009).

The school environment and teachers values can also have an influence of their ratings (Sava, 2002). In some schools mainly private schools there is a strict discipline environments, children are expected to sit still and pay attention during class and lesson which last on average about 50 minutes each. This is the normal school routine from kindergarten to secondary. In sharp contrast the classroom environment in the government and community schools does not place as much emphasis on discipline, personal observation revealed that children were often swearing and using abusive language, not completing their class work and teachers paid little notice to this disruptive behaviour if any action was taken it was often harsh. Discipline and rules were inconsistently applied and children often were uncertain of what is expected of them in the classroom setting. Keeping these issues in mind, and parental expectations the teacher's lack of qualification and training, there is likely to have a bias during rating child's problems since the expected behavior differs greatly between individuals as well as the school or home settings. Further studies could use case vignettes to obtain information about the respondent's views and expectations of child behavior to ensure an accurate diagnosis is obtained.

6.6.5-Ethical issues

The assurance of ethical conduct for research related to health care in developing countries has been the subject of recent discussion, particularly with the increase of research and the need to address their high burden of disease (Butta, 2002; Caballero, 2002). Since some developing countries like

Pakistan do not have an official research ethics committee, it is essential to obtain approval from other stakeholders, including parents, health and educational authorities, community elders and other professionals. Some factors that are generally accepted as essential include the relevance of the research to the local situation and to national and community priorities; and the understanding of and sensitivity to the local cultural context (Benatar & Singer, 2000).

A critical element of conducting research is the process of obtaining informed consent. Populations with limited resources are particularly vulnerable (Nuffield Council on Bioethics, 2003). The cultural context may limit truly independent consent and may be distorted by granting incentives to populations with limited economic capacity. A few studies have however, have proposed established guidelines for obtaining consent from research participants in developing countries (Staruss et al, 2001; Creed-Kanashiro et al, 2005). For example, a written consent form may not always be appropriate (Lynoe et al, 2001; Shapiro et al, 2001). In this study, verbal rather than written consent was more appropriate when dealing with parents of government and community school children, as most of them were uneducated, and presenting them with a written consent form may have been unethical in itself. Therefore, it was essential that the researcher verbally explained the study and the procedure, as well as reading the form and obtaining informed consent.

One of the main concerns of the participants was how the study outcomes would benefit their child. An essential aspect of the consent process was clarifying that the study did not involve preparing an individual report for each child by the researcher. Counselling was offered to those parents and children requiring immediate assistance, while those who needed more specialized interventions, were referred to specialist clinics. Acknowledging that this was the first survey of its kind in Pakistan and that both parents and schools needed some feedback in order to encourage participation and interest in future research, a brief report detailing the findings was shared with each school. A detailed report was also shared with the research funding organization (Sindh Education Foundation).

6.6.6-Research procedure (one / two stage design)

According to the epidemiological literature review discussed in chapter one, sample sizes ranged from 448 to 10,438 (mean=3,410) in developed countries. The sample size for this study consisted of nearly 1,000 children in the screening stage, but was reduced to only 100 children in the diagnostic stage. Only ten of the 30 studies used a one-stage design, which involved some type of psychiatric assessment; their sample size ranged from 528 to a large-scale UK based sample of 10,438 (mean=3,241). Twenty studies had a two-stage design, with a sample size ranging from 272 to 9,430 (mean=1,912) in the first stage, and 100 to 1,015 (mean=380) in the second stage.

The debate continues whether to use a one or two-stage design for epidemiological research in child mental health. It has recently been shown that for every two-stage multiple testing procedure there is a corresponding single-stage procedure that will identify a greater number of expected true positives for a fixed level of expected false positives (Rohlf's et al, 2007). However, a one-stage design, although expected to provide more precise prevalence estimates, tends to be more expensive and time consuming, therefore, not always realistic for community studies (Canino et al, 2004; Green et al, 2005; Pillai et al, 2008).

A number of researchers have argued that estimates of prevalence can be obtained with higher accuracy and lower cost by using a multi-stage design. A two-phase survey may seem an economic alternative; firstly, a random sample of the population is identified and the population is screened; in the second phase a (stratified) random sample of the first phase subjects undergoes the 'gold standard' diagnostic procedure. Two-phase studies for prevalence estimation are popular in psychiatric research (Fleitlich et al, 2004; Alyahri et al, 2005; Mullick et al, 2005). A two-phase study might be considered for several reasons besides cost. For example, in the second phase it is possible to target people who are more likely to have the disease; hence such studies may seem to make better use of clinical time (Mc Namee et al, 2002) and/or to be more ethical (Mc Namee et al, 2003). It is for these reasons that a two-stage design was used in the present study.

Despite the apparent advantages of a two-stage design, there are also several important pitfalls. Firstly, data analysis based on two-phase designs is complex. Prevalence estimates need to be weighted back to the composition of the base population, taking account of the sampling fractions. Secondly, more potential problems arise from the non-response in the burdensome second phase (Prince, 2003). Gao et al (2002) propose using complex methods such as adjusted weighting, modelling, or regression estimators as partial remedies, and these can only be achieved using more specialized statistical software packages (e.g. STATA).

In any mental health research, in particular involving children, it is important to obtain information from different sources. For example, the school professionals may be aware of meaningful and significant problems of which the parents have no knowledge, and vice versa. Earlier studies noted poor agreement between parents and teachers on children's behaviour (Eapen et al, 1998, Green et al, 2005). Most interview schedules, like the K-SADS-IVR, are designed to collect data on child psychopathology from multi-informants, including the parent, child and school (Ambrosini, 2000); however, the teacher and self-report K-SADS were not included in this study because of resource constraints. It may be that psychiatric disorders in some children were missed for this reason. This is an important task for the future.

6.6.7-Statistical analysis

As discussed in the earlier section, one of the main issues in a two-stage design concerns the statistical analysis and the problems that arise from non-

response. Survey non-response may impact on population characteristics, as well as across data items (Korkeila et al, 2001). It can also introduce systematic non-sampling error by creating a biased sample (Rupp et al, 2002). The magnitude of bias depends on the level of non-response; on the extent of differences between the characteristics of those people who responded to the survey and those who did not; and on the extent to which non-response adjustments can be made through the use of weighting techniques (Perneger et al, 2005). Although studies have pointed out the importance of collecting information and analysing non-respondents' characteristics, this was not possible in this study, but should be taken into consideration in planning future research.

The first phase of this study applied the screening questionnaire to almost 1,000 children. By contrast, the second stage applied a detailed psychiatric assessment to a small number of children. The restricted sample size thus reduced the power to detect significant risk factors. Further studies should include a larger sample size in the diagnostic phase, and should collect data on non-respondents, to arrive at more accurate estimates of prevalence.

6.7-Personal reflective account

6.7.1-Background and personal experience

My interest in child psychology began more than a decade ago, in 1995, when our local mosque in Karachi was struck by a tragic terrorist attack. On this very sad day, people were gathering to offer their morning prayer, when five

terrorists attacked, shot and killed all those present. The entire community was shocked by this incident, however, what troubled me most, were the coping mechanisms adopted by the community members, as men and women chose to remain silent, repressing their fears and horror. I vividly remember a number of occasions when I tried to discuss the issues with my friends, as we all shared a deep fear. The mosque was considered to be the safest place, and now that the house of God had been targeted, no one felt safe anywhere. At the time I felt helpless, but also determined that these repressed feelings and trauma within the community should be addressed.

During the same period, the world was faced with the news of a mass genocide in Rwanda. Although based in Pakistan, my parents originally migrated from East Africa in the mid 60's, and have always cherished their African heritage. As a large part of our family traditions still have roots in the African cultures, including dressing, food and language, I have personally felt a part of me closely linked to the dark continent, therefore I was deeply effected by the Rwandan crisis. I remember watching a documentary on the BBC, where a French art therapist had travelled to Rwanda to help children overcome their trauma, after they had witnessed the barbaric act of violent deaths of their parents or entire family members, and had survived to tell the tale. I watched in amazement how this French therapist who did not speak the language, used art as a means to helps children deal with their trauma. These two major events inspired me and channelled my interest towards child psychology.

6.7.2-From trainee psychologist to PhD researcher

Now with my career path cleared, I set out to search for the best Universities in Karachi that would provide me with the appropriate skills and knowledge. I opted for clinical psychology and by 2003 I had completed my training. I soon realized I enjoyed working with children, and that I needed more specialized training. In 2004, I arrived in the UK, to join the MSc course at the Institute of Psychiatry in London, before pursuing my PhD. The Sindh Education Foundation (SEF) agreed to fund the project, which was a major relief, since the SEF is a semi-government organization, with collaborative links with the local Ministry of Education, and this would facilitate the project.

6.7.3-Bringing the study to Pakistan: initial phase

In January 2006, I travelled to Pakistan to start data collection. Although I was very enthusiastic, I was soon faced with the lack of resources and disorganization. The first hurdle was to obtain an official list of all schools in Karachi. I was eventually able to get hold of an unofficial list of registered schools in Karachi with the assistance from the SEF director. This list allowed me access to private and community but not to government schools, for which I needed official permission from the Education Director Office (EDO). After writing numerous letters and making phone calls requesting for a meeting with the EDO, we were finally granted permission, but this entire frustrating procedure took a whole year (Appendix P).

Working with schools

In all three school groups, teacher data was the hardest to collect, because of school exams and unscheduled holidays. For these reasons, teachers were only asked to fill in questionnaire corresponding to the parent questionnaire, therefore, it was not possible to collect data on non-respondents. Data collection required repeated phone calls, and personal visits requesting school authorities to enable teachers to complete the questionnaires. Although the screening tool was brief and required 5-10 minutes, each teacher had to fill in on average ten questionnaires. For similar reasons, as well as the lack of time and funding, teacher data was not collected at the second stage.

Working with parents

One of the most interesting aspects of the study occurred during discussions with parents. Some parents were initially suspicious of the motives of the research. They felt that there was something 'wrong' or 'bad' about their child, and why they had been selected to participate in the study. In particular, they felt that the school or class teacher had identified the child as 'crazy' or 'mad', since these are the terms most commonly associated with mental health in the Pakistani culture. However, with reassurance that children had been randomly selected from the register, and that the school authorities were not part of the sample selection process, the parents felt secure.

At the second stage, parents were given the option to select the most appropriate place for them to be interviewed, and most opted for schools. However, in some cases, mainly from government and community schools, parents preferred to be visited at home for the interview. It is important to appreciate the poor living conditions of some of these families. Most lived in a one room hut made of bricks, but some were so poor their houses were made of straw huts and mats. On average, more than five people would live in one such house/room, hygiene was poor, sewerage water was running in the lane leading up to the house, which made them flies and mosquitoes breeding grounds.... As life was just about survival, I often felt it was unethical for me to diagnose children as depressed, because their behaviour and hopelessness was justified in the context of their life circumstances. Parents would pay little attention to the children, most of whom would spend their days playing out on these filthy roads, in absolutely unhygienic conditions.

I spent time observing their games and interaction. Their communication was filled with abusive language and street slang, and I was informed of the use of drugs which were common amongst these children. When I asked parents and children they denied it, however, when I talked to the local shopkeepers, they were quick to show me the kind of additive beetle nuts, or chewing tobaccos, that are favourites among the children. I found myself confused when it came to diagnosing oppositional defiant behaviours, because much of the abusive language, argumentativeness, and aggression that constitute the

key features of ODD, were common among these children, but where does one draw the line? If I were measuring prevalence without including the impairment of the child's functioning, the estimates for ODD may have been considerably higher. On numerous occasions I was left thinking that was it actually the parents' own stressors that resulted in higher problems ratings for the child. There is so much more that needs to be explored in the future.

Analysing the data

Before I could master the appropriate statistical techniques needed to disseminate the findings, I had to attend a number of short day courses covering various regression models; thankfully, the Trent Institute at the Department of Health Sciences, University of Leicester, offers some great courses. Throughout my statistical work, one of the greatest help I received was the constant support and guidance from Dr John Bankart. Even when I was away in Pakistan and would send him frantic e-mails requesting urgent help, he was available, and would not rest until he was certain I had understood what I wanted. Dr Bankart's support for the second stage analysis and weighting of the data was remarkable. He also arranged a meeting with Dr Howard Meltzer, one of the leading researchers in child psychiatric epidemiology, who also gave his valuable insight into the analysis and suggested the best possible means of handling the data. The challenging part was the small number of cases at the second stage. Dr Bankart contacted Dr Susan Purdon from the National Centre for Social Research (NatCen) for her expert advice on the most suitable approach to weight the data. It was only

after her valuable feedback and a year long struggle that we finally decided on the best approach to analyzing and weighting the survey data. The hard work proved worth in the end, the experience of statistical handling of the data was perhaps the most frustrating, but certainly the most gratifying in the end.

During the year of struggle to get permission for access to government schools, I was able to use this time in a constructive manner and managed to get a travel grant to present preliminary findings at the SCAARC summit conference in Nepal. This was a great opportunity both for the research as well as for a personal experience. I enjoyed the warm and hospitable, welcoming and friendly culture of the Nepalese and had some good sight seeing tours! During this time I was able to publish three papers, sharing part of the result (see Appendix Q for published papers, Syed et al, 2007c; Hussein & Vostanis, 2008; Syed et al, 2009b), and also had the opportunity to conduct a brief five-day teacher training programme for children with behavioural problems at the schools that were part of the study. Teachers and school authorities highly appreciated this pilot project (Syed et al, 2009b). It is unfortunate that I had to come back to UK, therefore could not follow this up with the schools. This is an important task for the future.

My journey through this PhD would not be complete without appreciating the constant support of my supervisor. It was right from day one, even before I had formally enrolled and completed all the formalities with the University, that my supervisor was offering me guidance and support. Whether I was in the department or back home in Pakistan, miles away, I knew whenever I would reach out to my supervisor for an urgent enquiry, he would be there, whether on a Sunday or on holiday, would not make any difference, he was always there, in his most positive and supportive ways possible. Many times he would go out of his way to make things comfortable, and has a huge contribution in making this study possible and guiding me on how best to disseminate the findings in the most suitable manner, ensuring effective outcomes for child mental health problems and their management in a developing country like Pakistan. I am ever grateful for his constant support and supervision.

CHAPTER SEVEN

DISCUSSION II: POLICY AND SERVICE PLANNING

7.1-Chapter outline

The previous chapter six discussed the limitations and methodological implications of the study. The findings of the study establish levels of needs and risk factors in Pakistan and pointed out the necessity of planning and developing service networks to meet children's mental health needs. The present chapter provides a detailed discussion on the service implications of the findings, primarily focusing on policy and service issues.

7.2-Policy: Health, Education and Welfare

The World Mental Health Atlas (2004c) reports that the development of child mental health services in a country is demonstrated through their commitment to provide appropriate needed facilities and resources. Such commitment should be verified through consistent policy, legislation and governance. An important stimulus for child mental health services in many parts of the world has been the United Nations Convention on the Rights of the Child (CRC, 1989), which advocates the promotion of services for children and their families, and points out the need for children to serve as primary users rather than through adults.

The World Health Organization, through the Atlas project, has developed the first profile of child mental health services resources (WHO Atlas, 2004c). The findings of the Atlas project suggest high levels of unmet needs and substantial worldwide service gaps. These gaps exist in both resource poor and resource rich countries. The lack of services is tied to insufficient and unstable financing, lack of trained professionals, and lack of policy to support the development of child mental health services (Belfer, 2006; Eisenberg & Belfare, 2009).

The WHO Atlas (2004c) highlights the need to focus on the development of service delivery through the integration and improvement of existing resources and services within a country. All systems of care (education, welfare and health) need to work in partnership to ensure high quality services (WHO, 2005). Many young people have particularly high and complex need, which require high levels of input from various agencies (Clark et al, 2005; Hunter, 2008). The over-arching challenge is the concept of a 'comprehensive service' where different multi-agencies work hand in hand to meet the needs of young people and their families (Vostanis, 2005).

All agencies have an important role to play in minimising the impact of mental health to the individual and to society, through universal and targeted interventions (Jenkins, 2001). As a large number of service providers are outside the traditional health system, opportunities for the provision of a

comprehensive service will be enhanced if these providers are jointly involved in its development and implementation, at policy and operational level. Incentives can be developed to empower these agencies and their workers. For a majority of children and their families, mental health services are most likely to be provided by education, social care, other health, and non-governmental agencies and organizations (Remschmidt & Belfer, 2005). The latter have a particularly prominent role in developing countries (Olatawura, 2005; Omigbodun et al, 2007), building on the strengths of their communities and support systems. For example, teachers have been successfully trained to provide school-based interventions for mental health problems in rural Pakistan (Rehman et al, 1998). Other providers include health practitioners, aid groups, NGOs/voluntary organizations and mental health consumers, community elders and faith leaders, who are of particular importance in developing countries like Pakistan (Saeed et al, 2000; Mirza et al, 2006).

A UK study found that mental health problems lead to a substantial but often un-coordinated number of contacts with all public sector services, clearly illustrating that mental health really is everybody's business. The findings underlined the importance of all professionals working with children, particularly primary health care professionals and teachers, having basic skills in the identification and management of minor difficulties, and knowledge about how to access specialist services for children with more severe and

complex presentations (Department of Health, 2004; Ford et al, 2007). Inter-agency collaboration among three primary sectors, including education, specialist mental health services and general medicine is, therefore, critical in ensuring that children who are in need of mental health care receive appropriate services (Elizabeth et al, 2003; Ford et al, 2007).

In contrast with adult services, the design of child mental health policies and plans should take into consideration children's developmental (emotional, cognitive and social) needs. For example, a plan to prevent or treat conduct disorders in adolescents should devote particular attention to the influence of peers, moreover, when planning intervention programmes it is essential to recognize cultural differences and the role of the family environment, especially in developing countries. Another essential factor in successful service planning is to understand and respect cultural values. For example, certain developmental stages such as early language development and social reciprocity are universally applicable, while others are more culture-specific (WHO, 2005). For instance, the concept of adolescence is not universally recognized. In many cultures such as in Bangladesh, a child who goes to school and has no economic or social responsibilities will be regarded as a child up to the age of puberty. However, boys or girls who are employed will no longer be regarded as children, even if they start working at the age of six years (WHO, 2005). Such differences can have a profound effect on how policies, plans and specific interventions are formulated and implemented.

For example, interventions designed for societies that view adolescence as a period of continued dependence on parents will need to consider the important role that parents may play in seeking out, evaluating and consenting to services. This is especially important in developing countries like Pakistan.

Currently, policy makers in Pakistan and other developing countries lack a systematic evidence-base to underpin recommendations regarding child mental health needs, and child mental health is not as yet high on the service priority agenda (Ahmed, 2007). Policy and practice designed for children and adolescents should be evidence-based, and should maximize a wide range of research sources (Sloper & Statham, 2004). It is essential that policy-makers in Pakistan should hold consultations with colleagues and non-governmental organizations (NGOs) from other districts, provinces, countries or regions, parent groups, educational authorities, community elders and faith leaders when deciding upon the appropriateness and effectiveness of service models for incorporation into policy and implementation (WHO, 2005).

There are three reasons why it is important to hold consultation with a wide range of stakeholders:

- (i) the social ecology of children and adolescents is such that their interests and needs should be met in a range of settings;
- (ii) a consultation process can increase the engagement of crucial stakeholders; and
- (iii) involvement in a policy development process may increase stakeholders' insights into the potential contributions of their sector to children's mental health well-being.

7.3-Services

The development of appropriate child mental health services is a challenge even in western countries. However, the extent to which this challenge is met depends not only on the resources available within the country, but also on the creativity and will to enhance local strengths, pool resources and emphasize a commitment to the effective integration of children with mental health problems into community settings (WHO, 2005b). The WHO recommends the concept of an organized system of care with a 'continuum of services'. This system links services between the programmes offered by different agencies in various settings, from the least restrictive community-based services (such as out-patient clinics) to the most restrictive (such as in-patient care). In the absence of an organized system of care, there is likely to be poor communication, fragmentation, and inefficient utilization of resources (WHO, 2003a). Collaborative practices are now recognized as the most efficient way of delivering high quality services which are responsive to service user needs (Miller & Ahmad, 2000; Grimes et al, 2006). Community-

based systems of care facilitate access and allow children to be treated in the context of their families, schools and local communities. This is of particular relevance to developing countries like Pakistan (Fayyad et al, 2001; Tareen et al, 2009).

The next section will discuss the role of different service providers in more detail, namely schools, frontline agencies and specialist CAMHS, and will explore ways in which these services can be setup in Pakistan.

7.3.1-Schools

The present study found differences in the nature and severity of child mental health problems across the three types of school groups. This emphasises the need for different types of services required for different educational institutions. Mental health is directly related to children's learning and development. It encompasses or intersects with interpersonal relationships, social-emotional skills, behaviour, learning, academic motivation, certain disabilities and school safety. Each of these issues affects not only the academic success and well-being of the individual pupil, but also the school climate and children's outcomes (DfEE, 2001; Gott, 2003).

Schools, in particular, have a huge role to play in the promotion of mental health and are an obvious vehicle through which to deliver universal programmes aimed at promoting important coping skills and enhancing access to social support (Jenkins, 2001). Schools have a number of unique advantages as both preventative and curative agents in the mental health

discourse (Finney, 2006). Rutter states that “there have been significant increases in many psychosocial disorders among young people” in the last 50 years (Rutter et al, 1998, p. 89). Given the evidence from recent UK national surveys, one in ten children/adolescents are likely to present with significant mental health problems (Green et al, 2005), which means that classrooms should contain an average of three pupils with clinically significant problems, and in certain areas (inner city schools) that number could be much higher (Finney, 2006).

Although the frameworks and cultures underpinning educational, welfare and health ideologies are different, they are not mutually exclusive. The aim of schools is to educate and to promote well-being, while the mental health agenda is to prevent or treat mental disorders. Without the benefit of a healthy mental state, a child cannot achieve academic potential or become an informed, well-balanced citizen. The one is, therefore, a prerequisite of the other (Attwood, 2005; Finney, 2006).

School-based mental health services include a broad spectrum of assessment, prevention, intervention, counselling, consultation, and referral activities and services (Rones & Hoagwood, 2000). These services are essential to a school’s ability to ensure a safe and healthy learning environment for all pupils, address classroom behaviour and discipline, promote academic success, prevent and respond to crises, meet children’s social and emotional needs,

identify and respond to serious mental health problems, and work collaboratively with at risk families. Ideally, school-based services dovetail with community-based services, so that children and youth receive the support they need in a seamless, co-ordinated, and comprehensive system of care.

The vast majority of school-based services are provided by school-employed counsellors, psychologists or social workers. They should be trained in school system functioning and learning, as well as mental health, and focus on how students' behaviour and mental health impact on their ability to learn and be successful in school (Taras, 2004). In developed countries, there has been an increased demand for school-based mental health services in the past decade. This is due both to the increased mental health needs of pupils and their families, and to an improved understanding of the role of mental health in children's functioning (Wells et al, 2003).

Research evidence suggests that child mental health services in low-income countries can operate effectively if they integrate and adapt international experiences to the context of national, socio-cultural and local realities (Vostanis, 2005 & 2007). For example, in a survey of 66 countries, while only seven of those provided child mental health services on a continuum of care, all participating countries reported that schools were a universal entry point for child mental health services (World Health Organization, 2005). Therefore,

despite the variation in specialist child mental health care provision, school is an essential setting for the recognition and management of child mental health problems.

Sourander and colleagues (2001) reported that parents preferred to seek help for children's emotional and behavioural problems from teachers, school nurses and school psychologists. Other studies have also reported that the presence of psychopathology is related to use of school-based services (Angold et al, 2002; Kumpulainen & Rasanen, 2002). An example for the role of school and teachers as effective frontline agencies is the national mental health programme in the Islamic Republic of Iran. Launched in 1988, it mainly focused on the integration of mental health into primary health care, and introduced a successful school-based model. The intervention significantly helped improve students' and parents' attitudes towards mental health, increased student self-esteem, reduced fears of examinations, ended corporal punishment, reduced sexual assaults and led to a decline in smoking (Yasamy, 2001). In Pakistan too, a pilot programme demonstrated a feasible and cost-effective school-based intervention for low-income developing children, which could be generated in other countries (Rahman, 1998). The findings of this study indicated differences in the prevalence of psychopathology according to school type. It is, therefore, essential to plan further school-based interventions using available recourses and valuable

infrastructure to meet the specific needs of children with mental health difficulties in Pakistani school settings.

7.3.2-Other frontline agencies

The earlier section discussed the importance of designing school-based intervention programmes to meet the needs of children with mental health problems in developing countries like Pakistan. However, it is worth noting that there are a significant number of children in the country who do not attend school (PSLM, 2007). These children may be at higher risk of mental health problems. It is, therefore, important that other agencies compensate for this gap, as well as re-integrate these vulnerable children to education (Tramontina et al, 2001).

Children's well-being is influenced by multiple sectors of society, for which reason mental health policy and plans should foster collaboration between the different organizations concerned such as education, welfare, religious, housing, correctional, police and other social care agencies. There is recognition that multi-agency partnerships are essential in delivering co-ordinated services, especially for children who are disabled and have mental health problems (Salmon, 2004). All stakeholders should be consulted and actively involved in this process (WHO, 2005).

This form of collaboration is important for the following reasons:

- It encourages a continuum of care;
- Common risk factors underpin many problems encountered by different sectors;
- It enables a range of approaches;
- Similar or identical issues can be addressed in various settings;
- It increases cost effectiveness by reducing duplication and enhancing synergy between sectors; and
- It increases awareness in other sectors of their potential role in implementing mental health promotion strategies (WHO, 2005).

The necessity to enhance the understanding of mental health and to incorporate it into the working practice of frontline professionals working with children is emphasised in a number of reports (Pettitt, 2003; DfES, 2001 & 2003). The role of these professionals in identifying mental health problems is only now beginning to be appreciated by policy-makers. For instance, a study conducted to determine the patterns of service use among children with mental health problems in the UK found that nearly half of those in contact with specialist services and a quarter in contact with frontline agencies were using more than one service, thus illustrating that it is vital for agencies to collaborate to prevent duplication of resources and to stop children from falling through gaps in service provision (Ford et al, 2007).

Frontline workers need training in child mental health to improve their knowledge, skills and confidence in identifying, assessing and containing the issues they are confronted with. The development of child mental health training for primary care practitioners is being established in many countries (Bower, et al, 2001). For instance, paediatricians are increasingly incorporating child mental health in their professional training. Children often present to paediatric clinics primarily with physical symptoms that are subsequently found to be indicators of underlying mental health problems, a substantial proportion of which can be treated within the paediatric setting, as this is perceived to be less stigmatising (Kramer & Garralda 2000; Gale & Vostanis, 2003). In developing countries like Pakistan, where the number of child mental health professionals is very low, existing professionals should be involved in training, so that child mental health problems are treated effectively in other settings. This can be achieved by creating a Faculty within the College of Physicians and Surgeons of Pakistan, in order to develop a formal curriculum for child and adolescent psychiatry and establish a local training programme for postgraduates' trainees, thus ensure local sustainability (Tareen et al, 2009).

Apart from paediatricians, other frontline workers such as, educational and non-statutory practitioners should have adequate training in child mental health, so that they recognize disorders and provide early interventions (Vostanis, 2007). This is of particular importance for a developing country like

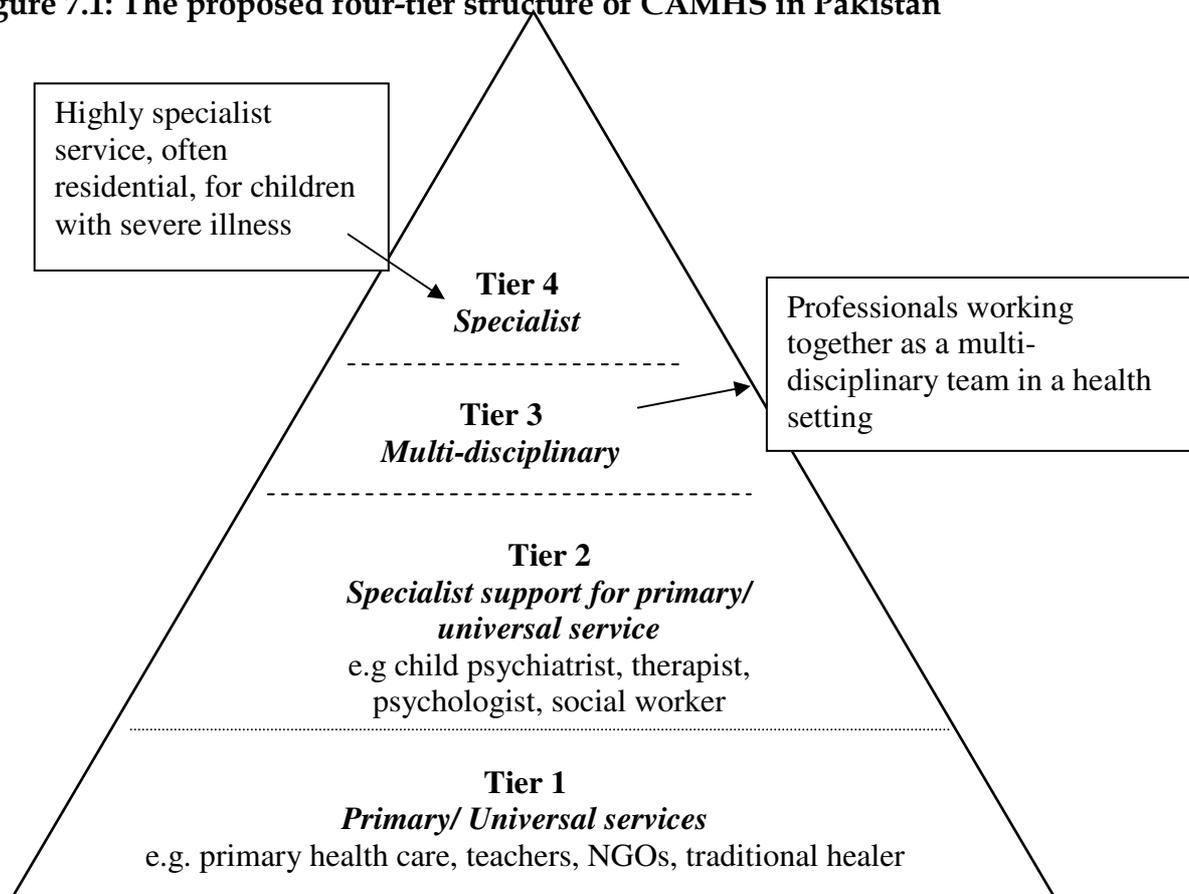
Pakistan where deep stigma is related to mental health issues; hence mental health services provided in primary care settings can serve to reduce the stigma and increase effective service use (Mubbashar, 2002; 2003).

7.3.3-Specialist child mental health services

The term 'Child and Adolescent Mental Health Services' (CAMHS) can be used in two ways. It often describes all services that contribute to the mental health care of children and young people, including health, social care, education and other agencies. The core function of these services may not be mental health care. The term is also used to describe specialist mental health services. The primary objective of these services is the delivery of mental health care, usually through multidisciplinary teams (Department of Health, 2004; DfES, 2003).

Specialist child and adolescent mental health services (CAMHS) in the UK and most western countries have expanded in recent years and target children and their families or carers who are experiencing the more serious mental health problems (Kelvin, 2005; Williams & Kerfoot, 2005). At first look, the four-tier CAMHS model adopted in the UK (Department of Health, 2004) may be considered prohibitive for developing countries, or indeed for health systems without primary care (Vostanis, 2005). However, this CAHMS model can be adapted to meet the needs of children in developing countries like Pakistan, and the remit of its components is discussed next.

Figure 7.1: The proposed four-tier structure of CAMHS in Pakistan



Tier 1 (Universal service)

Non-specialist health workers form the backbone of any system for people with mental health disorders. In low-income countries like Pakistan, there is a need to built services across the education and health systems, with a particular focus on low-cost, universally available resources, and on empowerment of families and children (Patel et al, 2007). Examples of such interventions described in the literature include schools in India (Sinha et al, 2003) or residential units for orphaned or abandoned children (SOS villages) in Nigeria (Dogra & Omigbodun, 2004). Studies from Pakistan have reported successful school-based programmes (Rahman et al, 1998) and primary health

care interventions for child mental health problems (Mubbashar, 2001; 2002; 2003). Additional programmes and services are urgently needed in both urban and rural areas to meet the needs of children in Pakistan.

Tier 2 (Specialist support)

Clinical studies from Pakistan have pointed out that, in the face of resource adversity and competing physical health priorities, the limited staff adopted innovative and efficient approaches to meet the needs of service users (Syed et al, 2007a; Vostanis, 2007). There are also a number of NGOs in the country carrying out independent voluntary work for a wide range of child mental health problems and related needs, including autism, learning disabilities, sexual abuse, or child labour. Unfortunately, there is a lack of collaboration amongst them and no institutions that provide all required services under one platform (Syed et al, 2007a). It is, therefore, essential to organise the child mental health professionals who are currently working individually, build a network for referrers, and improve communication and collaboration thus, enabling more efficient use of specialist time.

Tier 3 (Multi- disciplinary working)

In developed countries, multi-disciplinary working is well established across CAMHS and is becoming embedded across the wider spectrum of children's services (Craig et al, 2008). In Pakistan, it is difficult, but not impossible to develop a multidisciplinary team. In child mental health, an ideal team consists of professionals from different disciplines, including psychiatrists,

psychologists, occupational therapists, nursing staff, family therapists and psychotherapists. There are usually close links with paediatricians, and local educational and social services. Currently in Pakistan, teams consist mainly of psychiatrists, psychologists and nurses. Many units provide occupational therapy within in-patient units. Psychiatrists working in adult psychiatric units attached to a general hospital (which is now the usual arrangement) often have good links with teams in the rest of the hospital, with reciprocity of referrals. Similar links could be developed between CAMHS and local paediatricians (Khan et al, 2008). In future, however, it is essential to establish an assessment centre with several child mental health services under one roof, so that parents and schools have access to the full range of professional skills of a multidisciplinary team.

Tier 4 (Specialist CAMHS)

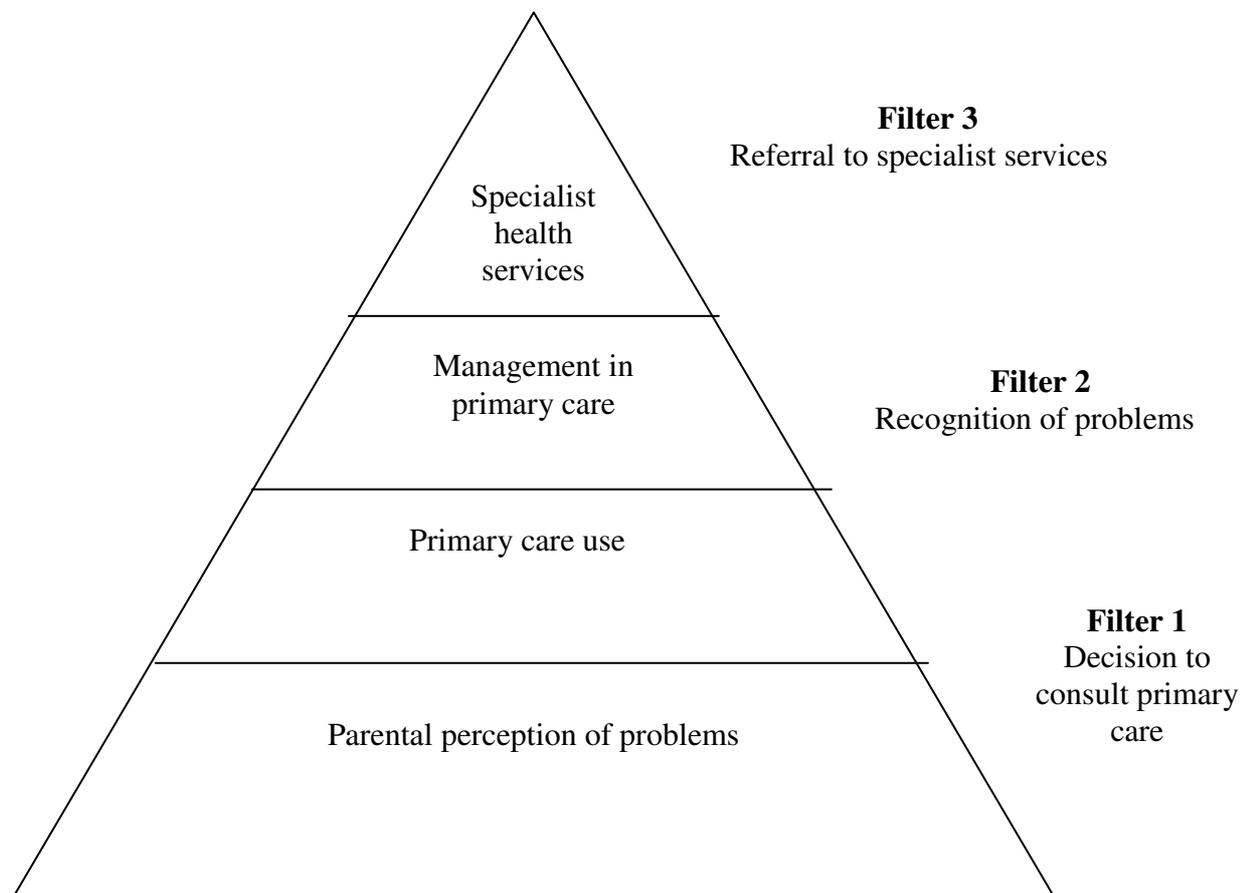
Tier 4 child and adolescent mental health services (CAMHS) aim to meet the needs of children and young people with the more complex, severe or persistent mental health problems. Tier 4 CAMHS refers not only to residential treatment in child or adolescent inpatient units, but also includes a range of community, home based and outreach services. In addition, Tier 4 CAMHS include a range of highly specialised outpatient services (Svanberg & Street, 2003). These include services for those with complex neuropsychiatric disorders, hearing impairment and for those requiring a forensic assessment (McDougall et al, 2008). At present, in Pakistan there are no specialist services

for children with complex needs, which is an essential task and challenge for the future.

7.3.4-Care pathways

Compared to adult mental health, there is limited evidence on an effective interface between primary care and specialist CAMHS. Pathways for children are more complex, as they rely on adults such as parents and teachers to identify their problems and to initiate service use. Sayal (2006) has suggested a four-step pathway to care model for children with mental health problems, and this model can be adapted for Pakistan.

Figure 7.2: Proposed child mental care pathway (Sayal, 2006)



Parental perception of problems

Parental views on of child mental health problems have not been explored in Pakistan. However, a review of parental help-seeking behaviour for child psychopathology suggested that this increased with co-morbidity (Sourander et al, 2001; Ford et al, 2008), and with severity and persistence of problems (Briggs-Gowan et al, 2000; Teagle, 2002). The effect of the child's gender on parental problem recognition and help seeking is dependent on the age of the child (Sayal, 2003). In childhood and early adolescence, more help is sought for boys, whereas in late adolescence, girls seek help more frequently (Cornelius et al, 2001). This finding may result from the fact that externalising problems, which are more prevalent in boys than girls, tend to decrease with age, whereas internalising problems, which are more typical for girls, tend to increase with age. The presence of additional physical health and school-related problems has repeatedly been shown to increase help seeking for child psychopathology (Zwaanswijk et al, 2003; Ford et al, 2003; 2008). Other studies suggested that parental problem recognition and help-seeking is associated with the amount of distress or burden parents experience in raising their child (Brugman et al, 2001), as well as parental attitudes and beliefs, education level and family stress help seeking, rather than on the level of child psychopathology per se (Kelleher et al, 2000). The impact of these factors needs to be investigated in the future amongst Pakistani children.

Primary care attendance

Children with mental health problems or disorders are regular attenders within primary care, and most parents acknowledge that it is appropriate to discuss concerns about psychosocial issues in this setting (Sayal, 2006). In the UK, Ford and colleagues (2003) found that 24% of children with a disorder attended primary care in relation to mental health issues over an 18-month period. This is of particular relevance to developing countries like Pakistan, where primary care serves as the first line of contact for most service users (Mubbashar, 2003). Further studies are required in Pakistan to investigate the role of primary health care in providing effective mental health service.

Management in primary care

Even in developed countries, there is limited empirical information about the management of child mental health problems in primary care (Bower et al, 2001). GPs have reported treating over 80% of children they recognised as having a disorder, through a range of management strategies such as monitoring, watchful waiting, follow-up, support, advice, counselling, and further referral (Rushton et al, 2002; Glazebrook et al, 2003). Medication is more likely to be used if the child is known to the GP or has hyperactivity problems (Gardner et al, 2000). A review of the management of child mental health problems in primary care pointed to the potential of educational interventions in improving the confidence and skills of primary care professionals (Bower et al, 2001). This is especially important in developing

countries, where the number of child psychiatrists and psychologists is well below the population requirements (Tareen et al, 2009). Primary health care workers can, therefore, play a crucial role in effective interventions. A study in Pakistan reported that integration of mental health care into primary care can prove cost effective (Chisholm et al, 2000). Further studies are required in other regions within the country to ensure that these facilities are provided to cater for the needs of the wider population.

Referral to and use of specialist mental health services

The UK child mental health survey found that utilization of CAMHS was predicted by the impact of psychopathology; contact with teachers or primary health care; and parents' and teachers' perceptions that the child had significant difficulties (Heijmens et al, 2000; Ford et al, 2003; 2005; 2008). For example, children with conduct disorders and their families use mental health and social services significantly more than children with other disorders (Scott et al, 2001; Vostanis et al, 2003; Zwaanswijk et al, 2003; Ford et al, 2007; Shivram et al, 2009).

Although no study has been conducted in Pakistan to determine the factors that influence service use, one clinical study establishing the source of referrals and diagnostic patterns over a period of three years reported that medical professionals were the most common source of referrals, followed by self-referrals from parents. School referrals constituted a small proportion.

The most common reasons for referral were aggressive behaviour towards others, oppositional behaviours, poor attention and overactivity (Syed et al, 2007). Our study also found that behavioural problems were the most common in all three school groups, although it did not investigate the service contacts and help-seeking behaviour of parents. This is an important task for the future.

7.4-Interventions

There are three compelling reasons for developing effective interventions for children and adolescents:

- (i) Since specific mental disorders occur at certain stages of child and adolescent development, screening programmes and interventions can be targeted to the stage at which they are most likely to appear;
- (ii) Since there is a high degree of continuity between child and adolescent disorders and those in adulthood, early intervention could prevent or reduce the likelihood of long-term impairment; and,
- (iii) Effective interventions reduce the burden of mental health disorders on the individual and the family, and they reduce the costs to health systems and communities (Eisenberg, 2000; WHO, 2005).

Early interventions with children and adolescents, as well as with their parents/families, can reduce or eliminate the manifestations of some mental disorders and foster the integration into mainstream educational and health services of children and adolescents who would otherwise require specialist intensive services (Essex & Kraemer, 2009). Mental health interventions cover a spectrum of activities, ranging from mental health promotion (to build awareness and resilience) and universal and targeted prevention (to reduce risk and vulnerability factors, and build protective factors), as well as indicated prevention and early intervention strategies (for those with early signs of disorder), to treatment of varying intensity (for those with an established disorder), and extended care and rehabilitation programmes (for those with secondary impairments as a result of a disorder) (Patel et al, 2007; Graeff-Martins et al, 2008).

The next section discusses two of the most effective types of evidence-based interventions for developing countries like Pakistan, namely school-based programmes and staff training, as these have been found to play an essential role in systems with limited specialist resources.

7.4.1-School-based interventions

After the family, schools are the most important organisation in the lives of the vast majority of children and young people (Taras et al, 2004). It is well established that the quality of school settings has a significant impact on children's mental health and well-being (Weare, 2004). Exclusions,

absenteeism, low achievement and the presence of special educational needs (SEN) can all be linked to the onset and continuation of a mental health problems (Davidson, 2008).

Schools also have an important role to play in mental health promotion (DfES, 2001). The school environment and the curriculum content provide a good opportunity to disseminate information, foster a positive lifestyle, and raise children's awareness of mental health. Despite its benefits, a WHO report points out that school-based consultation services are not employed to the degree possible in either the developing or the developed world, even though 'model programmes' have been implemented in some countries. This gap leads to a failure to reach children who otherwise might be helped to avoid many of the problems associated with school drop-out and other negative consequences of ill mental health (WHO, 2005b; Sharan & Rajesh, 2007).

A few successful school-based programmes have been launched to prevent self-harm and suicide, tackle bullying, provide pastoral support, and promote an equal, fair and non-discriminatory environment (Ploeg et al, 2000; Hawton et al, 2002; Evans et al, 2004). In many resource-poor countries, educational institutions represent the most coherent system embracing children and adolescents, and provide the primary venue for health-related interventions. For instance, in a study evaluating the effect of the school mental health programme in Pakistan, it was reported that knowledge, attitudes and

superstitions about mental health problems significantly improved in a group of schoolchildren, their friends and neighbours after the implementation of the programme, compared with a control group (Rahman et al, 1998; 2000). The effectiveness of this intervention indicates that it is possible to conduct school-based interventions using available resources. Since the present study has pointed out differences in the nature of psychopathology based on the school type, further such programmes are needed to meet the needs of children in other regions within the country.

7.4.2-Staff training

Workforce development and training are essential in child mental health (Dogra, et al 2005). As there are likely to be few appropriately qualified workers within a country, careful planning is required to ensure that sufficient human resources are available to achieve policy objectives. Workforce needs should be identified followed by training strategies for frontline and specialist practitioners.

Several studies recommend that in developing countries like Pakistan, generic health workers such as nurses should receive training to provide low levels of child mental health input (Sebuliba & Vostanis, 2001; Tareen et al, 2009). The WHO recommends that, in order to increase resources for the provision of specialist treatment, selected professionals from different disciplines might need to obtain skilled training overseas before adapting and implementing such training within their own countries. In some instances, this can include

retraining or additional training of adult psychiatrists, psychologists or other clinicians to meet minimal competency requirements for the treatment and care of children and adolescents (WHO, 2005b). In developing countries like Pakistan, limited specialist time should be used sparingly and effectively, through consultation, joint work with primary care staff, and brief therapeutic interventions (Gale & Vostanis, 2003). Training of primary care staff has also shown effective outcomes in developing countries (Dogra et al, 2005). A recent pilot project to train adult psychiatrists and psychologists in the identification and management of child mental health problems in Pakistan via the internet was highly successful (Tareen et al, 2009).

Other studies have suggested that non-specialist workers should be trained to use standardised assessments to identify children with mental disorders and to help families through the use of appropriate therapeutic programmes through books or CD-ROMs. Children who did not respond to this approach can be prime candidates for referral to specialist interventions (Ford et al, 2007). Apart from training programmes, other schemes such as the NHS Scholarship Programme and the Commonwealth Scheme, aim to support service improvement in low and middle income countries, as advocated in the Lord Crisp, Global Health Partnership Report (GHP, 2007). This report made a number of recommendations about how to support individuals, organizations and countries, including the need for develop new partnership arrangements with voluntary agencies, and mechanisms to support staff

wishing to volunteer abroad, before returning to the National Health Service (NHS).

In developing countries, there is also a need to train faith or traditional healers in order to ensure their contribution to the improvement of child mental health within their communities (WHO, 2001). This is especially important in countries like Pakistan where faith healers are a major source of care for people with mental health problems. One study reported that educating traditional faith healers assisted tremendously in the identification and referral of people with mental illness to specialist services (Saeed et al, 2000).

Other studies have found that training school staff, mainly class teachers, can have a positive effect on children. Qualified teachers have considerable experience of developmentally appropriate behaviours. This has important implications for future training, particularly as previous research demonstrated that educational interventions involving brief training sessions can improve the accuracy of both teacher and GP identification of children and young people with mental health problems (Gledhill et al, 2003). Similar findings have been established for teacher recognition of ADHD and classroom based management techniques (Sayal et al, 2006). In a recent study in Pakistan, qualified teachers who attended a brief course on child mental

health were more able to identify children with behavioural difficulties, and to manage such difficulties in the classroom environment (Syed et al, 2009b).

7.5- Conclusions

The findings of this study of Pakistani school children indicate a high demand on health, social and educational services to meet the needs of this group of children and their families. Previous research evidence indicates that childhood mental disorders have long-term consequences, specifically with respect to delinquency, crime, unemployment, and substance abuse. Early recognition and prompt treatment may relieve the psychological and social burden, which will otherwise continue to hamper children's future functioning. This is particularly important in the planning of social and health services in a country like Pakistan, where policy makers are faced with difficult choices, since in the short-term there are limited resources to expand services, while in the longer run the country cannot afford the cost of leaving so many children untreated.

Policy makers, commissioners and practitioners in Pakistan should respond with suitable planning and co-ordination of services and staff skills mix. It is essential that clear inter-agency protocols are in place, with agreed care pathways. Such protocols should include criteria for referral, assessment and evidence-based interventions, and these should be followed by both statutory and non-statutory agencies. The overarching objectives for all sectors should be the avoidance of duplication in the use of resources; the prevention of

services gaps; and the prevention of child mental health problems, secondary impairments and associated costs. At present, Pakistan does not have any organized service for child mental health needs. In the future, it will be important not only to develop specialist services but also to disseminate basic assessment and treatment skills more widely to teachers, paediatricians, adult psychiatrists, psychologists and traditional healers to meet the needs of all children.

The findings of this study emphasise the need of maximising the role of universal children's services, and of relating to specialist services at multiple levels, notably through joint care pathways, consultation and training initiatives. Unfortunately, inequalities in child mental health care do not only exist across societies or according to socio-economic deprivation. They are also affected by stigma, racial prejudice and discrimination. The findings suggest that mental health campaigns, work with the media, and preventive programmes should constitute a central component of child mental health strategies. An essential priority for future service planning is the establishment of multidisciplinary child mental health teams. This will require the emergence and training of a range of professionals.

Children with ill mental health have an adverse effect on the country's productivity and economic stability. Further studies can enhance the understanding of the patterns of co-morbidity, perceived treatment needs and psychological correlates. The area of scholastic difficulties, including the impact of emotional and behavioural problems on academic performance, as well as co-morbid learning difficulties warrants further exploration. A longitudinal cohort study should be the next step in understanding the natural history of child and adolescent disorders.

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APPENDIX A (Behaviour disorders)

Oppositional Defiant Disorder (ODD)

Oppositional Defiant Disorder (ODD) consists of a pattern of negativistic, hostile, and defiant behaviour lasting at least 6 months, during which four (or more) of the following behaviours are present:

- often loses temper
- often argues with adults
- often actively defies or refuses to comply with adults' requests or rules
- often deliberately annoys people
- often blames others for his or her mistakes or misbehaviour
- is often touchy or easily annoyed by others
- is often angry and resentful
- is often spiteful or vindictive

Each of the above is only considered diagnostic if the behaviour occurs more frequently than is typically observed in children of comparable age and developmental level and if the behaviour causes clinically significant impairment in social, academic, or occupational functioning.

Oppositional Defiant disorder is not diagnosed if the behaviours occur exclusively during the course of a Psychotic or Mood Disorder or if Conduct Disorder is diagnosed.

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CONDUCT DISORDER (CD)

A. A repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated, as manifested by the presence of three (or more) of the following criteria in the past 12 months, with at least one criterion present in the past 6 months:

Aggression to people and animals

- (1) often bullies, threatens, or intimidates others
- (2) often initiates physical fights
- (3) has used a weapon that can cause serious physical harm to others (e.g., bat, brick, broken bottle, knife, gun)
- (4) has been physically cruel to people
- (5) has been physically cruel to animals
- (6) has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery)
- (7) has forced someone into sexual activity

Destruction of property

- (8) has deliberately engaged in fire setting with the intention of causing serious damage
- (9) has deliberately destroyed others' property (other than by fire setting)

Deceitfulness or theft

- (10) has broken into someone else's house, building, or car
- (11) often lies to obtain goods or favors or to avoid obligations (i.e., "cons" others)
- (12) has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery)

Serious violations of rules

- (13) often stays out at night despite parental prohibitions, beginning before age 13 years
- (14) has run away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period)
- (15) is often truant from school, beginning before age 13 years

B. The disturbance in behavior causes clinically significant impairment in social, academic, or occupational functioning.

C. If the individual is age 18 years or older, criteria are not met for Antisocial Personality Disorder.

Specify type based on age at onset:

Childhood-Onset Type: onset of at least one criterion characteristic of Conduct Disorder prior to age 10 years

Adolescent-Onset Type: absence of any criteria characteristic of Conduct Disorder prior to age 10 years.

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APPENDIX B (ADHD)

Diagnostic criteria for Attention-Deficit/Hyperactivity Disorder

A. Either (1) or (2):

(1) **inattention**: six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities

(b) often has difficulty sustaining attention in tasks or play activities

(c) often does not seem to listen when spoken to directly

(d) often does not follow through on instructions and fails to finish school work, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)

(e) often has difficulty organizing tasks and activities

(f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)

(g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)

(h) is often easily distracted by extraneous stimuli

(i) is often forgetful in daily activities

(2) **hyperactivity-impulsivity**: six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

(a) often fidgets with hands or feet or squirms in seat

(b) often leaves seat in classroom or in other situations in which remaining seated is expected

(c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)

(d) often has difficulty playing or engaging in leisure activities quietly

(e) is often "on the go" or often acts as if "driven by a motor"

(f) often talks excessively

Impulsivity

(g) often blurts out answers before questions have been completed

(h) often has difficulty awaiting turn

(i) often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorders, or a Personality Disorder).

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APPENDIX C (Mood disorder)

Criteria for Major Depressive Disorder

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either

- (1) [depressed mood](#) or
- (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly due to a general medical condition, or [mood-incongruent delusions](#) or [hallucinations](#).

(1) depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). **Note:** In children and adolescents, can be [irritable](#) mood.

(2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)

(3) significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. **Note:** In children, consider failure to make expected weight gains.

(4) [Insomnia](#) or [Hypersomnia](#) nearly every day

(5) [psychomotor agitation](#) or [retardation](#) nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)

(6) fatigue or loss of energy nearly every day

(7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)

(8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)

(9) recurrent thoughts of death (not just fear of dying), recurrent [suicidal](#) ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

B. The symptoms do not meet criteria for a [Mixed Episode](#) (see p. 335).

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a [substance](#) (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by [Bereavement](#), i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

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APPENDIX D (Anxiety disorders)

Diagnostic criteria for 308.3 Acute Stress Disorder

(cautionary statement)

A. The person has been exposed to a traumatic event in which both of the following were present:

- (1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
- (2) the person's response involved intense fear, helplessness, or horror

B. Either while experiencing or after experiencing the distressing event, the individual has three (or more) of the following dissociative symptoms:

- (1) a subjective sense of numbing, detachment, or absence of emotional responsiveness
- (2) a reduction in awareness of his or her surroundings (e.g., "being in a daze")
- (3) derealization
- (4) depersonalization
- (5) dissociative amnesia (i.e., inability to recall an important aspect of the trauma)

C. The traumatic event is persistently reexperienced in at least one of the following ways: recurrent images, thoughts, dreams, illusions, flashback episodes, or a sense of reliving the experience; or distress on exposure to reminders of the traumatic event.

D. Marked avoidance of stimuli that arouse recollections of the trauma (e.g., thoughts, feelings, conversations, activities, places, people).

E. Marked symptoms of anxiety or increased arousal (e.g., difficulty sleeping, irritability, poor concentration, hypervigilance, exaggerated startle response, motor restlessness).

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or impairs the individual's ability to pursue some necessary task, such as obtaining necessary assistance or mobilizing personal resources by telling family members about the traumatic experience.

G. The disturbance lasts for a minimum of 2 days and a maximum of 4 weeks and occurs within 4 weeks of the traumatic event.

H. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition, is not better accounted for by Brief Psychotic Disorder, and is not merely an exacerbation of a preexisting Axis I or Axis II disorder.

Diagnostic criteria for 300.29 Specific Phobia

A. Marked and persistent fear that is excessive or unreasonable, cued by the presence or anticipation of a specific object or situation (e.g., flying, heights, animals, receiving an injection, seeing blood).

B. Exposure to the phobic stimulus almost invariably provokes an immediate anxiety response, which may take the form of a situationally bound or situationally predisposed [Panic Attack](#).

Note: In children, the anxiety may be expressed by crying, tantrums, freezing, or clinging.

C. The person recognizes that the fear is excessive or unreasonable. Note: In children, this feature may be absent.

D. The phobic situation(s) is avoided or else is endured with intense anxiety or distress.

E. The avoidance, anxious anticipation, or distress in the feared situation(s) interferes significantly with the person's normal routine, occupational (or academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.

F. In individuals under age 18 years, the duration is at least 6 months.

G. The anxiety, [Panic Attacks](#), or phobic avoidance associated with the specific object or situation are not better accounted for by another mental disorder, such as [Obsessive-Compulsive Disorder](#) (e.g., fear of dirt in someone with an obsession about contamination), [Posttraumatic Stress Disorder](#) (e.g., avoidance of stimuli associated with a severe stressor), [Separation Anxiety Disorder](#) (e.g., avoidance of school), [Social Phobia](#) (e.g., avoidance of social situations because of fear of embarrassment), [Panic Disorder with Agoraphobia](#), or [Agoraphobia Without History of Panic Disorder](#).

Specify type:

Animal Type

Natural Environment Type (e.g., heights, storms, water)

Blood-Injection-Injury Type

Situational Type (e.g., airplanes, elevators, enclosed places)

Other Type (e.g., phobic avoidance of situations that may lead to choking, vomiting, or contracting an illness; in children, avoidance of loud sounds or costumed characters)

Diagnostic criteria for Substance-Induced Anxiety Disorder
(cautionary statement)

A. Prominent anxiety, [Panic Attacks](#), or [obsessions](#) or [compulsions](#) predominate in the clinical picture.

B. There is evidence from the history, physical examination, or laboratory findings of either (1) or (2):

(1) the symptoms in Criterion A developed during, or within 1 month of, Substance [Intoxication](#) or [Withdrawal](#)

(2) medication use is etiologically related to the disturbance

C. The disturbance is not better accounted for by an [Anxiety Disorder](#) that is not [substance](#) induced. Evidence that the symptoms are better accounted for by an Anxiety Disorder that is not substance induced might include the following: the symptoms precede the onset of the substance use (or medication use); the symptoms persist for a substantial period of time (e.g., about a month) after the cessation of acute withdrawal or severe intoxication or are substantially in excess of what would be expected given the type or amount of the substance used or the duration of use; or there is other evidence suggesting the existence of an independent non-substance-induced Anxiety Disorder (e.g., a history of recurrent non-substance-related episodes).

D. The disturbance does not occur exclusively during the course of a [Delirium](#).

E. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Note: This diagnosis should be made instead of a diagnosis of Substance Intoxication or Substance Withdrawal only when the anxiety symptoms are in excess of those usually associated with the intoxication or withdrawal syndrome and when the anxiety symptoms are sufficiently severe to warrant independent clinical attention.

Code [Specific Substance]-Induced Anxiety Disorder

(291.8 (new code as of 10/01/96: 291.89) Alcohol; 292.89 Amphetamine (or Amphetamine-Like Substance); 292.89 Caffeine; 292.89 Cannabis; 292.89 Cocaine; 292.89 Hallucinogen; 292.89 Inhalant; 292.89 Phencyclidine (or Phencyclidine-Like Substance); 292.89 Sedative, Hypnotic, or Anxiolytic; 292.89 Other [or Unknown] Substance)

Specify if:

With Generalized Anxiety: if excessive anxiety or worry about a number of events or activities predominates in the clinical presentation

With Panic Attacks: if Panic Attacks predominate in the clinical presentation

With Obsessive-Compulsive Symptoms: if obsessions or compulsions predominate in the clinical presentation

With Phobic Symptoms: if [phobic](#) symptoms predominate in the clinical presentation

Specify if:

With Onset During Intoxication: if the criteria are met for Intoxication with the substance and the symptoms develop during the intoxication syndrome

With Onset During Withdrawal: if criteria are met for Withdrawal from the substance and the symptoms develop during, or shortly after, a withdrawal syndrome

Diagnostic criteria for 300.23 Social Phobia

A. A marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing.

Note: In children, there must be evidence of the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interactions with adults.

B. Exposure to the feared social situation almost invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed [Panic Attack](#). Note: In children, the anxiety may be expressed by crying, tantrums, freezing, or shrinking from social situations with unfamiliar people.

C. The person recognizes that the fear is excessive or unreasonable. Note: In children, this feature may be absent.

D. The feared social or performance situations are avoided or else are endured with intense anxiety or distress.

E. The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.

F. In individuals under age 18 years, the duration is at least 6 months.

G. The fear or avoidance is not due to the direct physiological effects of a [substance](#) (e.g., a drug of abuse, a medication) or a general medical condition and is not better accounted for by another mental disorder (e.g., [Panic Disorder With](#) or [Without Agoraphobia](#), [Separation Anxiety Disorder](#), [Body Dysmorphic Disorder](#), a [Pervasive Developmental Disorder](#), or [Schizoid Personality Disorder](#)).

H. If a general medical condition or another mental disorder is present, the fear in Criterion A is unrelated to it, e.g., the fear is not of [Stuttering](#), trembling in [Parkinson's disease](#), or exhibiting abnormal eating behavior in [Anorexia Nervosa](#) or [Bulimia Nervosa](#).

Specify if: Generalized: if the fears include most social situations (also consider the additional diagnosis of [Avoidant Personality Disorder](#))

Diagnostic criteria for 300.02 Generalized Anxiety Disorder

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).

B. The person finds it difficult to control the worry.

C. The anxiety and worry are associated with three (or more) of the following six [symptoms](#) (with at least some symptoms present for more days than not for the past 6 months). **Note:** Only one item is required in children.

(1) restlessness or feeling keyed up or on edge

(2) being easily fatigued

(3) difficulty concentrating or mind going blank

(4) [irritability](#)

(5) muscle tension

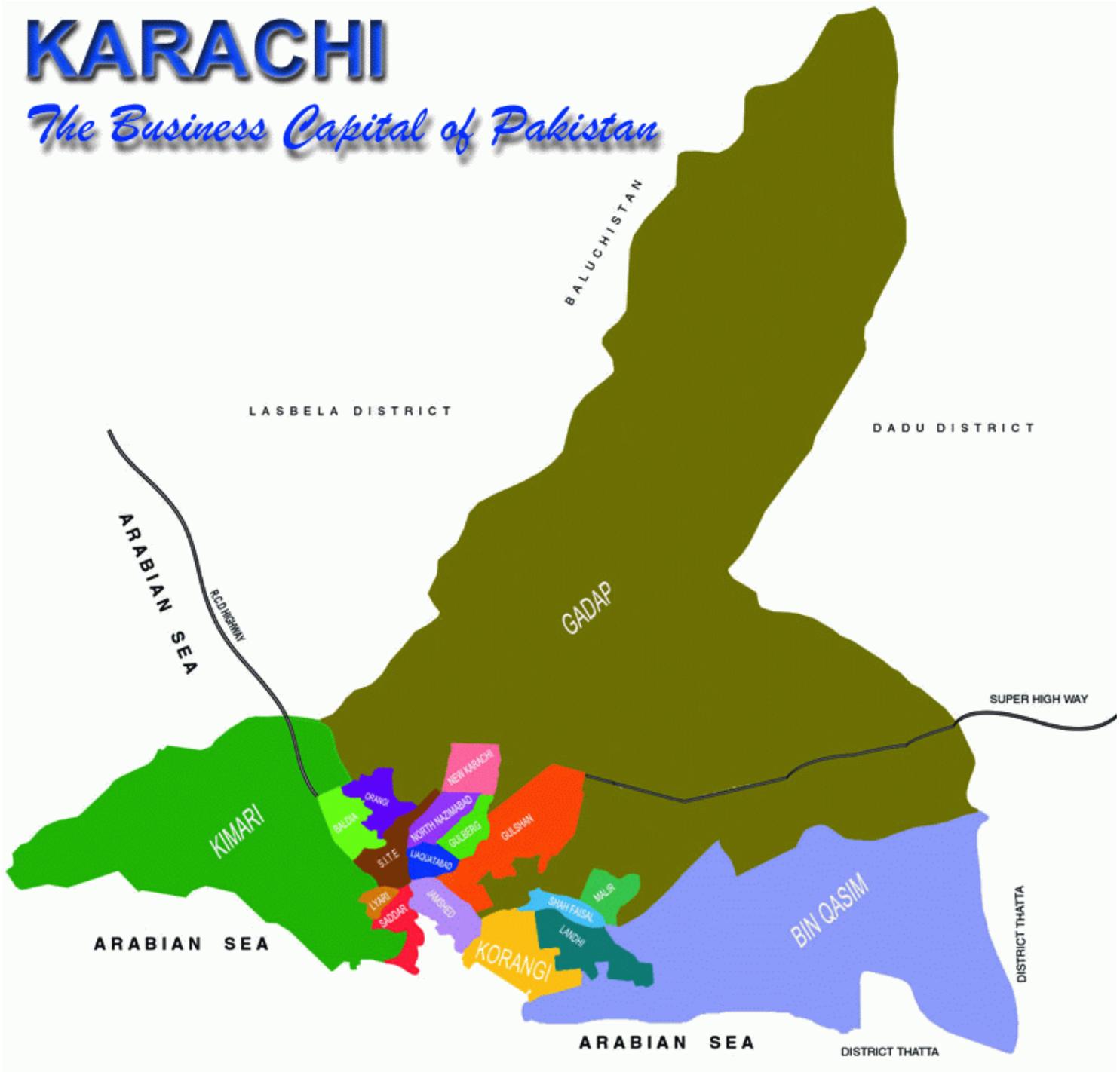
(6) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep)

D. The focus of the anxiety and worry is not confined to features of an [Axis I](#) disorder, e.g., the anxiety or worry is not about having a [Panic Attack](#) (as in [Panic Disorder](#)), being embarrassed in public (as in [Social Phobia](#)), being contaminated (as in [Obsessive-Compulsive Disorder](#)), being away from home or close relatives (as in [Separation Anxiety Disorder](#)), gaining weight (as in [Anorexia Nervosa](#)), having multiple physical complaints (as in [Somatization Disorder](#)), or having a serious illness (as in [Hypochondriasis](#)), and the anxiety and worry do not occur exclusively during [Posttraumatic Stress Disorder](#).

E. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

F. The disturbance is not due to the direct physiological effects of a [substance](#) (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism) and does not occur exclusively during a [Mood Disorder](#), a Psychotic Disorder, or a [Pervasive Developmental Disorder](#).

APPENDIX E (Map of Karachi)



APPENDIX F (Parents demographic sheet)

For office use only

S.No. -----

Date -----

DEMOGRAPHIC SHEET FOR PARENTS

Could you please provide the following information regarding your child:

Name: (Optional) -----

Gender: Male /Female----- Date of Birth: -----Age: -----

Residential Area: -----

School's Name: ----- Class: -----

Mother's Name: ----- Age: -----

Education: ----- Profession: -----

Father's Name: ----- Age: -----

Education:- ----- Profession: -----

Family: Joint / Nuclear -----

Does your child have any physical disability/disorder? -----

Head of the family:----- Number of Earning Members:-----

Total Family Income (please tick as appropriate):

2000,3000,4000,5000,6000,7000,8000,9000,10000,11000, 12000,13000,14000,15000
more than 15,000
// 25,000
// 35,000
// 45,000

Language spoken at home:-----

Kindly provide the following personal details:

Your Name (optional)----- Your Relation to the Child -----

Contact Address-----

Phone ----- Mobile -----

Is there any other information regarding your child you would like to share with us

Thank your for your cooperation

APPENDIX G (Teachers demographic sheet)

DEMOGRAPHIC SHEET FOR TEACHERS

For office use only

S.No. -----

Date -----

Could you please provide the following information regarding the child:

Name: (optional)-----

Gender: Male /Female ----- Date of Birth: ----- Age: -----

Residential Area: -----

---School's Name: ----- Class:-----

How would you rate the child's academic performance?

Excellent Good Satisfactory Needs improvement

How punctual is the child?

Excellent Good Satisfactory Needs improvement

Could you please provide the following information about yourself?

Name (optional):-----

Education: Matric Intermediate Bachelors Masters

Higher qualification

Teaching Experience in Years: -----

Is there any other information regarding the child that you would like to share with us:

Thank your for your co operation

APPENDIX H (C-GAS)

گلوبل اسیسمنٹ اسکیل Global Assessment Scale (GAS)

مرض کو ان دو (2) مخصوص وقت کے لئے Rate کریں اس کی "سب سے کم" کام کرنے کے Level یا حد تک۔ درمیانہ درجہ Intermediary اس وقت استعمال کریں جہاں ضرورت پڑھے (مثلاً ۶۴، ۵۸، ۳۵) اصل کام کرنے کو (Fxn) کو Rate کریں، علاج یا Prognosis کو دھیان میں نہ رکھتے ہوئے۔ موجودہ حالت کو اس کے سب سے بڑے وقت میں Rate کریں، اگر موجودہ حالت نہ ہو تو گزریے سال کی سب سے بدتر حالت کو کریں۔

- | | |
|-----|---|
| ۱۰۰ | کوئی علامت نہیں، بہترین کام کر رہا ہے بہت سی سرگرمیوں میں، گھر پہ، اسکول میں اور دوستوں کے ساتھ |
| ۹۰ | عارضی علامات شاید ہوں ہوں، مگر اچھی کارکردگی ہے سب جگہ پہ، شوق اور لگاؤ ہے بہت سی مختلف سرگرمیوں میں، معاشرتی علوم، عام طور پہ زندگی سے مطمئن "ہر روز" کی پریشانیوں بھی بھارتا بوسے باہر ہو جاتی ہے۔ |
| ۸۰ | بہت کم علامات ہو سکتے ہیں مگر تھوڑا کام کرنے میں گھٹاؤ ہوا ہے، گھر میں، اسکول میں یا دوستوں کے ساتھ علامات صرف دباؤ (Stress) کی صورت حال میں ظاہر ہوتی ہیں (والدین میں علیحدگی، موت یا بہن بھائی کی پیدائش) |
| ۷۰ | کچھ معمولی علامات (مثلاً غم زدہ موڈ اور نیند کی کمی) یا کچھ سرگرمیوں میں مشکل پیش آنا مگر عموماً کارکردگی صحیح ہے، کچھ خاص ایسی تعلقات ہیں اور بہت سے نہ جاننے والے لوگ (Untrained) اسے "بیمار" نہیں کہہ سکتے۔ |
| ۶۰ | محدود علامات یا عموماً کام کرنے میں تھوڑی بہت مشکل کا سامنا (مثلاً کم درست اور کوئی اثر نہ ہونا، غم زدہ موڈ اور خود اعتمادی نہ ہونا، نشے کی حالت جیسا موڈ (Euphoric) اور بولنے میں دباؤ محسوس کرنا، ہلکا یا جھبی بھارتا غیر سماجی رویہ) |
| ۵۰ | کوئی عجیبہ مرضی علامات یا کام کرنے میں بڑا مسئلہ جو ماہرین (Clinicians) کے خیال میں علاج کی یا توجہ چاہتا ہو (مثلاً خودکشی کے خیالات یا حرکات، شدید طاری رہنے والی روایات، بے چینی کے رویے، شدید غیر سماجی رویہ) |
| ۴۰ | بہت شدید کام کرنے میں مسئلہ بہت سی جگہ پہ، جیسے اسکول، گھر کے رشتوں میں، دوستوں کے ساتھ فیصلے میں، سوچنے میں اور موڈ میں (مثلاً غم زدہ بچہ دوستوں سے دور رہے گا، گھر پہ بہت غصہ آئے گا، اسکول کا کام نہ کر پانا، یا اصل صورت حال میں یا بول چال میں کچھ مسائل یا بے ہوجہ بولنا، یا ایک اصل خودکشی کی کوشش |
| ۳۰ | تقریباً کچھ بھی نہ کر پانا (مثلاً بستر میں رہنا یا سارا دن گھر پہ رہنا) یا رویے کو عارضی یا چھوٹے خیالات (Delusions or hallucinations) کی وجہ سے اثر ہونا یا بول چال میں بہت زیادہ اثر ہونا (مثلاً اکثر کوئی جواب نہ ملنا یا بیجا ہونا) یا فیصلہ کرنے میں (مثلاً بالکل غیر رویہ جو قابل دیدہ نہ ہو) |
| ۲۰ | اس کا خیال رکھنے کی ضرورت (Supervision) کی تاکہ وہ اپنے آپ کو یا دوسروں کو نقصان نہ پہنچائے یا اپنی صفائی کا خیال رکھنے کے لئے (مثلاً مسلسل خودکشی کی کوشش کرنا، اکثر شدید غصہ، بہت زیادہ پر جوش ہونا، جسمانی گند ہر طرف پھینکنا، یا بول چال میں شدید مسئلہ (مثلاً زیادہ بے جا بولنا یا بالکل خاموشی اختیار کرنا) |
| ۱۰ | مسلسل خیال رکھنے کی ضرورت پکائی دن کے لئے تاکہ اپنے آپ کو یا دوسروں کو |
| ۰ | نقصان نہ پہنچائے یا اپنی صفائی بالکل کوئی خیال نہ رکھتا۔ |

CHILDREN'S GLOBAL ASSESSMENT SCALE

For children 4-16 years of age

David Shaffer, M.D., Madelyn S. Gould, Ph.D.

Hector Bird, M.D., Prudence Fisher, B.A.

Adaptation of the Adult Global Assessment Scale

(Robert L. Spitzer, M.D., Miriam Gibbon, M.S.W., Jean Endicott, Ph.D.)

Rate the subject's most impaired level of general functioning for the specified time period by selecting the *lowest* level which describes his/her functioning on a hypothetical continuum of health-illness. Use intermediary levels (e.g., 35, 58, 62).

Rate actual functioning regardless of treatment or prognosis. The examples of behavior provided are only illustrative and are not required for a particular rating.

Specified time period: 1 month

- | | | | |
|--------|--|-------|---|
| 100-91 | Superior functioning in all areas (at home, at school and with peers), involved in a range of activities and has many interests (e.g., has hobbies or participates in extracurricular activities or belongs to an organized group such as Scouts, etc.). Likeable, confident, "everyday" worries never get out of hand. Doing well in school. No symptoms. | 50-41 | Moderate degree of intereference in functioning in most social areas or severe impairment of functioning in one area , such as might result from, for example, suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals, major conversion symptoms, frequent anxiety attacks, frequent episodes of aggressive or other anti-social behavior with some preservation of meaningful social relationships. |
| 90-81 | Good functioning in all areas . Secure in family, school, and with peers. There may be transient difficulties and "everyday" worries that occasionally get out of hand (e.g., mild anxiety associated with an important exam, occasionally "blow-ups" with siblings, parents or peers). | 40-31 | Major impairment in functioning in several areas and unable to function in one of these areas , i.e., disturbed at home, at school, with peers, or in the society at large, e.g., persistent aggression without clear instigation; markedly withdrawn and isolated behavior due to either mood or thought disturbance, suicidal attempts with clear lethal intent. Such children are likely to require special schooling and/or hospitalization or withdrawal from school (but this is not a sufficient criterion for inclusion in this category). |
| 80-71 | No more than slight impairment in functioning at home, at school, or with peers. Some disturbance of behavior or emotional distress may be present in response to life stresses (e.g., parental separations, deaths, birth of a sib) but these are brief and interference with functioning is transient. Such children are only minimally disturbing to others and are not considered deviant by those who know them. | 30-21 | Unable to function in almost all areas , e.g., stays at home, in ward or in bed all day without taking part in social activities OR severe impairment in reality testing OR serious impairment in communication (e.g., sometimes incoherent or inappropriate). |
| 70-61 | Some difficulty in a single area, but generally functioning pretty well , (e.g., sporadic or isolated antisocial acts, such as occasionally playing hooky or petty theft; consistent minor difficulties with school work, mood changes of brief duration; fears and anxieties which do not lead to gross avoidance behavior; self-doubts). Has some meaningful interpersonal relationships. Most people who do not know the child well would not consider him/her deviant but those who do know him/her well might express concern. | 20-11 | Needs considerable supervision to prevent hurting others or self, e.g., frequently violent, repeated suicide attempts OR to maintain personal hygiene OR gross impairment in all forms of communication, e.g., severe abnormalities in verbal and gestural communication, marked social aloofness, stupor, etc. |
| 60-51 | Variable functioning with sporadic difficulties or symptoms in several but not all social areas . Disturbance would be apparent to those who encounter the child in a dysfunctional setting or time but not to those who see the child in other settings. | 10-1 | Needs constant supervision (24-hour care) due to severely aggressive or self-destructive behavior or gross impairment in reality testing, communication, cognition, affect, or personal hygiene. |

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APPENDIX I (SDQ)

منفویوں اور مشکلات کا سوالنامہ (Strengths and Difficulties Questionnaire)

(URDU)

برہنہ کیلئے، براہ کرم درست نہیں ہے، لکھ درست ہے یا یقیناً درست ہے کے ماننے میں نفعان لگائیں۔ اس سے ہمیں مدد ملے گی اگر آپ تمام باتوں کا جتنا بھی بہترین طریقے سے جواب دے سکیں وہی جابجا ہے آپ کو بالکل یکا جہیں بھی نہ ہو یا بیش آپ کو اعتماد نظر آئے! براہ کرم جوابات لکھنے، چھپسوں کے دوران اپنے بچے کے رویہ کی بنیاد پر ہوں۔

آپ کے بچے کا نام: _____

تاریخ پیدائش: _____

درست نہیں ہے، لکھ درست ہے، یقیناً درست ہے

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	دوسرے لوگوں کے احساسات کا خیال رکھنے والا
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	بے آرام، ضرورت سے زیادہ، مہم سٹلا، ایک جگہ پر زیادہ دیر کھیلے نہیں کھیر سکتا
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	انٹرسر درد، بہت میں درد یا اصلی یا نئے آنے کی شکایت کرتا ہے
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	دوسرے بچوں کے ساتھ خوش سے چیزیں بانٹ کر کھیلتا ہے (چیزیں بخش کرنا، کھلونے، پھلپھول وغیرہ)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	انٹرفیڈ و منقب و لے زواج یا گرم مزاج کا مظاہرہ کرتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	خود سے تباہی پسند ہے، اکیلے کھیلتا پسند کرتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	عام طور پر کھانا مانتا ہے، معمولاً بالذرا زیادہ کھانے کچھتے ہیں کرتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	بہت سی پریشانیوں ہیں، انٹرسریشان نظر آتا ہے
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	اگر کسی کو چوٹ لگ جائے، پریشان یا صدمہ محسوس کر رہا ہو تو مدد کرتا ہے
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مسکل بے زار یا بل کھاتا ہے
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	اس کام کو لڑکے ایک اچھا دوست / سہیل ہے
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	انٹرسرے بچوں کے ساتھ لڑتا ہے یا دھمکیاں دیتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	انٹرسر ناخوش، بے دل یا افسردہ ہوتا ہے
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	عام طور پر اسے دوسرے بچے پسند کرتے ہیں
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	بآسانی توجہ سمجھ لیتا، معمولی توجہ دینا کھانا کھاتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	نئے ماحول میں گھبراہٹا یا مت ڈرتا ہے، امتداد بآسانی کھودتا ہے
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	معمولے بچوں کے ساتھ نرم دل ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	انٹرسرٹ بولتا ہے یا دھمکیاں بازی کرتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	دوسرے بچے اس کو لٹکانے یا دھمکیاں دیتے ہیں
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	دوسروں کی مدد کرنے کیلئے انٹرسرٹ خدمات پیش کرتا ہے (والدین، اساتذہ، دوسرے بچے)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	عمل کرنے سے پہلے چیزوں پر غور کرتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	گھر، سکول یا کسی اور جگہ سے چوری کرتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	دوسرے بچوں کے مقابلے میں بالذرا ارادے کے ساتھ بہتر دوستی بنا سکتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	بہت سے خوف، بآسانی ڈر کھاتا ہے
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	کام کو ختم کرنے تک نہیں چھوڑتا، توجہ دینے کی حدت اسی ہے

براہ کرم ورق الٹیں۔ دوسری طرف چھوڑے سے اور سوالات ہیں

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often volunteers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Signature

Date

Parent/Teacher/Other (please specify:)

Thank you very much for your help

© Robert Goodman, 2005

APPENDIX J (K-SADS-IV-R)

OVERANXIOUS DISORDER

بچی ذات میں خوف کی کیفیت مثلاً نروس ہو جانا، مطلب جلد گھبرا جانا، کسی بات یا کام کی وجہ سے ہاتھ پاؤں پھول جانا، پرسکون کیفیت میں واہس آنے کی صلاحیت کا نہ ہونا خواہ اس کا تعلق جسمانی یا بدنی اظہار سے ہو یا نہ ہو یا کسی خاص ضرورت یا تعلق سے ہو یا نہ ہو۔
اس پیکش میں پریشانی کے خوف و ڈر کو شامل نہ کریں مثلاً عام طور پر ماضی کا مضطرب یا بے چین تجربہ یا مسلسل کیفیت یا مضطرب موڈ کا طاری ہونا، پریشانی کا خوف یا ڈر کے حملے، بے سبب یا بے وجہ، بے آرامی کی کیفیت

بے چینی یا اضطراب کی کیفیت

- بے آرامی کا سبب بنتا ہے
خواہ وہ ان احساسات کے جن کا میں اوپر ذکر کر چکی ہوں:
- 0- کچھ معلوم نہیں
 - 1- کچھ نہیں یا ہفتے میں ایک بار سے کم
 - 2- ہفتے میں ایک بار سے کم
 - 3- ہلکا سا: کبھی کبھار (بہت سے بے چینی بناؤ ہوتا ہے)
 - 4- تھوڑا بہت: اکثر اوقات بہت بے چینی ہو جاتا ہے۔ 50% زیادہ تر
 - 5- شدید: زیادہ تر بے چینی رہتا ہے، کبھی بے چینی سے آ زائیں ہوتا (یہاں تک کہ وجہ معلوم نہیں)
 - 6- بہت زیادہ/بہت شدید تقریباً ہر چھ ماہ مسلسل اور بے وجہ
- 1- کیا آپ کہیں خوف زدہ، جلد گھبرانا، ڈرا ہوا، تناؤ، بے آرامی، ہیٹ میں مروڑ محسوس کرنا
 - 2- کب یہ کیفیت محسوس کرتے ہیں۔
 - 3- کیا آپ کو معلوم ہے کہ کس وجہ سے ایسا ہوتا ہے؟
 - 4- آپ کتنی بار ایسا محسوس ہوتا ہے؟
 - 5- کیا آپ نے پچھلے ہفتے تو ایسا محسوس نہیں کیا؟
 - 6- اس کی شدت کتنی زیادہ ہوتی ہے؟
 - 7- کیا آپ آرام کرنے میں وقت محسوس کرتے ہیں؟
 - 8- کیا آپ کہیں اطمینان اور سکون محسوس کرتے ہیں۔
 - 9- کیا کسی تبدیلی یا کسی سے ملنے کی وجہ سے آپ کے احساس تبدیلی واقع ہوتی ہے۔

آخری ہفتہ 6 5 4 3 2 1

آخری ہفتے کے بارے میں آپ کیا کہتے ہیں

OVERANXIOUS DISORDER

Subjective feelings of current (present) fearfulness, nervousness, inability to relax, inner tension or apprehension, whether or not accompanied by somatic manifestations and whether or not focused on specific concerns. Usually manifested as constant, non-phasic, anxious background mood on which exacerbations occur quite frequently.

Do not include Separation Anxiety, Panic Attacks, Phobic Anxiety, or stranger anxiety in this rating. **ANXIOUS TENSION** refers to restless, keyed up symptom of GAD.

ANXIOUS TENSION

(Restless)

- | | |
|---|--|
| <ul style="list-style-type: none"> • Besides the feelings I have just asked you about, do you feel scared, nervous (not fidgety), afraid, uptight, tense, unable to relax, or as if you had butterflies in your stomach? About what? • When do you feel this way? • Do you know what brings it on? • How frequently do you have these feelings? • How bad does it get? • Have you ever not felt () during the last few weeks? • Do you find it difficult to relax? • Can you relax sometimes? Hardly ever? • Is there anything that happens or any person that can make the feeling get better? How much better? Does it go away? For how long? | <p>0 -- No info.</p> <p>1 -- Not at all or less than once a week.</p> <p>2 -- Slight: occasionally feels somewhat anxious (at least once a week for less than one hour).</p> <p>3 -- Mild: sometimes feels quite anxious or tense (at least 3 times a week, for more than 3 hours each). Can't relax.</p> <p>4 -- Moderate: often feels very anxious (over 50% of time).</p> <p>5 -- Severe: most of the time feels very anxious. Never anxiety free, even when no stressful circumstances are apparent.</p> <p>6 -- Extreme: almost all the time has pervasive feeling of intense anxiety; constant and unrelieved.</p> |
|---|--|

WHAT ABOUT DURING THE LAST WEEK?

LAST WEEK: 0 1 2 3 4 5 6

OBSESSIONS & COMPULSIONS

سبب سے مراد مسلسل شدت سے آنے والے خیالات یا تصاویر ہیں جن کی وجہ سے بے چینی کا احساس ہوتا ہے۔
کسی کام کی تکرار کرنا مثلاً بار بار نماز پڑھنا، کھٹی کرنا، ہاتھ دھونا، الفاظ دہرانے
پہلے نیچے دیئے ہوئے ایٹم کو اسکو کرکریں پھر مجموعی شدت کو اسکو کرکریں۔

نہیں معلوم	بالکل نہیں	معمولی	شدید	انتہائی
0	1	2	3	4

- ☆ کیا ایسی عجیب حرکتیں جو آپ بار بار کرتے ہیں؟
- ☆ کیا آپ میں ایسی حرکتیں ہیں کہ آپ بار بار کسی چیز کو چھتے ہیں۔ گنتی کرتے ہیں۔ ہاتھ دھوتے ہیں۔ تالوں اور دروازوں کو چیک کرتے ہیں یا غیر ضروری چیزوں کو جمع کرتے ہیں؟
- ☆ کیا آپ جیسی چیزیں ہیں بالکل ویسا ہی کرتے ہیں۔ اور تہہ پٹی برداشت نہیں کرتے؟
- ☆ کیا ہستر پر جانے سے پہلے بار بار چیزوں کو چیک کرتے ہیں؟
- ☆ کیا آپ اپنے کمرے میں مخصوص انداز میں چیزوں کو ترتیب دیتے ہیں۔ اگر آپ ایسا نہ کریں تو کیا ہوگا؟
- ☆ اگر کوئی آپ کو اس عادت سے روکنے کی کوشش کرتا ہے تو کیا ہوتا ہے؟
- ☆ کیا کبھی ان ان مادوں کی وجہ سے اسکول کی چھٹی ہو جاتی ہے؟
- ☆ کیا اس وجہ سے آپ کی تعلیم متاثر ہوئی؟
- ☆ کیا اگر آپ کی یہ عادت نہیں ہوتی تو آپ کو کھیل کیلئے زیادہ نام ملتا؟
- ☆ کیا آپ کے ذہن میں خیالات اور نظرات جم جاتے ہیں تفصیل جم جاتی ہیں؟
- ☆ کیا ہر روز خیالات آتے ہیں یا کبھی کبھار؟
- ☆ کیا یہ خیالات جلدی آتے ہیں اور وہ پس پلے جاتے ہیں۔ اور کتنی دیر تک رہتے ہیں۔ جب آپ کے ذہن میں یہ خیالات ہوتے ہیں تو کیا کسی دوسری بات پر توجہ دینے میں مشکل ہوتی ہے؟
- ☆ کیا ان سوچوں کو تھما سکتے ہیں؟
- ☆ کیا یہ سوچیں اس وقت بھی آتی ہیں جب آپ کوئی کام کر رہے ہیں یا کھیل رہے ہیں؟
- 1- چیزوں کو چھونا۔ 0 1 2 3 4
- 2- گنتیاں لگتی کرنا۔ 0 1 2 3 4
- 3- دھونا۔ 0 1 2 3 4
- 4- چیزوں کو چیک کرنا۔ 0 1 2 3 4
- 5- چیزوں کو جمع کرنا۔ 0 1 2 3 4
- 6- چیزوں کو ترتیب سے رکھنا۔ 0 1 2 3 4
- 7- دیکر تفصیل بتائے۔ 0 1 2 3 4

OBSSESSIONS & COMPULSIONS

Obsessions refer to recurrent, persistent ideas, thoughts, or images. They are usually accompanied by a desire to ignore or suppress the ideation and are recognized as "ego-dystonic", i.e., not voluntarily produced. Content of obsessions usually is stereotypic, repetitive and/or seemingly meaningless. Differentiate from Brooding, Worrying, etc. which refers to repetitive thinking about real or unpleasant events in past, present, or future which generally have meaningful content.

Compulsions refer to purposeful repetitive behavior, performed in accordance with rules or in a stereotyped fashion, which is not an end in itself. It is frequently designed to bring about or prevent some future event or situation. The connection between the compulsion and the supposed event or situation is not rational or the activity is unreasonably excessive. If forcibly prevented from repeating a ritual, a child usually becomes highly anxious and/or angry.

First score symptoms listed below; then rate **OVERALL SEVERITY**.

	No		Mild/	Severe/
	Info	No	Slight	Moderate
	0	1	2	3
			Extreme	4

- Do you have silly habits you have to do over and over again?
- Do you have habits you can't resist repeating like touching or counting things, washing your hands many times, checking locks, or collecting things?
- Are there things you always feel you have to do exactly the same way? Like what?
- When you go to bed, do you have to check something several times before you can fall asleep?
- Do you have to arrange things in your room a particular way?
- What might happen if you don't do this?
- Do you try to stop yourself from doing ()? What happens then?
- What happens if someone tries to stop you from doing your habits?
- Have you missed any school because of these habits?
- Have your grades gone down?
- Would you see more of your friends if you didn't have to do these things?
- Do you have thoughts or pictures stuck in your mind? What kinds?
- Do these thoughts come every day? Many days? Once in a while?
- Do they come and go quickly? Stay for a long while?
- When () is on your mind, is it hard to pay attention?
- Is it hard to make it go away?
- Does () come even when you're playing or doing fun things?

- 2 -- Occasionally
- 3 -- Sometimes/Often
- 4 -- Most of the time/
Almost all the time

Manifestations included:

Compulsions

Touching0 1 2 3 4
 Counting.....0 1 2 3 4
 Washing0 1 2 3 4
 Checking0 1 2 3 4
 Collecting.....0 1 2 3 4
 Arranging Objects0 1 2 3 4
 Other0 1 2 3 4
 Specify: _____

LAST WEEK:0 1 2 3 4

Obsessions:.....0 1 2 3 4

Specify: _____

WHAT ABOUT DURING THE LAST WEEK?

LAST WEEK: 0 1 2 3 4

APPENDIX K (K-SADS-IV-R permission letter)

October 31, 2005

Dear Sajida,

Attached are PDF file copies of the updated version of the K-SADS IIIR, which is the K-SADS IVR. These files can be opened and subsequently printed through Adobe Reader (www.adobe.com), which can be freely downloaded from the Internet. This K-SADS version, which I have edited with J. Faye Dixon, is now currently DSM IV and IIIR compatible. As you will see, included with the question booklet are several score sheets. These include the K-SADS-P (present state exam), and three smaller score sheets which are the A-SADS for reviewing anxiety disorder symptoms, the B-SADS for reviewing behavior disorder symptoms, and the M-SADS for reviewing mood symptoms. A K-SADS-L (Lifetime) score sheet is under final development. These current PDF score sheets have been designed for optical scanning into an SPSS database. Please take note of the edition date at the bottom of each score sheet as they still are going through minor corrections and may need to be updated in the future.

The second feature of these score sheets is that several pertinent symptoms are highlighted on all of them. What this implies is that if one is interested in streamlining administration of the K-SADS for just diagnostic purposes, one only needs to ask these highlighted questions to verify presence or absence of major diagnoses. In this fashion, the K-SADS IVR administration time for all domains can be significantly reduced. However, it should be clear that use of streamlined administration does not allow one to gather other pertinent information that might be helpful for assessing comorbid symptoms or looking at symptom severity in non-diagnosed conditions.

The administration of the K-SADS IVR is analogous to its previous edition and little has changed except some new diagnoses were added. These include PTSD and GAD. A full description of the change in this edition is explained in the updated introduction to the question booklet.

It is our belief that the K-SADS IVR has become much more flexible and user friendly with this updated edition. It also has much more flexibility regarding diagnosing and assessing severity of psychopathology than an alternate version, the K-SADS P/L. If you have any questions regarding this edition, please feel free to contact me directly at 215-842-4402 or e-mail at Paul.Ambrosini@Drexel.edu.

Sincerely,

Paul J. Ambrosini, M.D.

APPENDIX L (Research information)



**Sindh
Education
Foundation**

Date: March 18, 2009



Government of Sindh

Ref: _____

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

I am writing in support of Ms. Sajida Abdul Hussein who is registered as PhD doctoral student at University of Leicester, UK. She is working under the banner of Sindh Education Foundation.

The main aim of this research study is to investigate the learning, behavioural and emotional problems of children and its influence on academic achievement. The participants of the study will be 5-11 year old primary school children (currently registered at the schools in Karachi) their parents and teachers. This research study will be beneficial to all who are taking part in it and the information will possibly help to develop practical preventive measures.

I sincerely hope that you will volunteer the support of your school to allow the study to proceed. Please do not hesitate to contact me or the above mentioned researcher at the following address if you require any further information.

Yours Faithfully,

Anita Ghulam Ali

Professor Anita Ghulam Ali (S.I.)
Managing Director
Sindh Education Foundation
Plot-9, Block 7, Kehkashan, Clifton-5
Karachi - 75600.
Phone: (92-21) 111-424-111
Fax: (92-21) 9251652
Email: sef@cyber.net.pk

Head Office: Plot 9, Block 7, Kehkashan, Clifton 5, Karachi-75600, Pakistan.
UAN: (92-21) 111 424 111, Fax: (92-21) 9251652, E-mail: info@sef.org.pk, Website: www.sef.org.pk

Sub Offices:
Hyderabad Ph: (92-22) 9240156, 9240209, 9240211 Khairpur Ph: (92-243) 9280370, 9280305
Larkana Ph: (92-74) 4059729, 4058639 Mehr Ph: (92-254) 730138 Sehwan Ph: (92-254) 620396, 620022

APPENDIX M (Parent information letter)



**Sindh
Education
Foundation**



Government of Sindh

Date: _____

Ref: _____

Parent Form

Dear Parents,

Sindh Education Foundation is carrying out a research study to obtain an overview of behavioural and emotional problems of children and its influence on academic achievement. This study is being carried out by Sindh Education Foundation (SEF) in collaboration with University of Leicester, UK & University of Karachi, Pakistan. Sindh Education Foundation is a semi-autonomous organisation with the main aim "to empower disadvantaged communities towards social change by creating and facilitating new approaches to learning and education".

In order to help us better understand child's behavior, we are including both parents and teachers into the study. The goal of this research study is to improve our understanding of child's behavior enabling us to be able to help them function more efficiently.

If you agree to take part, you will be asked to fill in a brief questionnaire about how your child is getting along at home and school. Some of you may be contacted again for a detailed interview. It is not a test, so there are no right or wrong answers. Please do not worry; we just want to learn more about your child, helping us to understand children better.

If you agree to take part, you can decide not to answer any question you don't want to. No one will see the data except the research team. Anything you talk about with us will be treated as strictly confidential and will not be passed onto your school or your family. You will be free to withdraw from the study at any time without giving a reason. At the end of the study, a summary of the results will be made available to you.

If you wish to take part, we would be grateful if you would complete the slip below and return it to the school. If you have any questions; please feel free to contact us and we would be happy to discuss any questions you may have.

Many thanks for your help!

Sajida Abdul Hussein
Sindh Education Foundation, Plot-9, Block 7, Kehkashan, Clifton-5
Karachi - 75600. Phone: (92-21) 111-424-111, Fax: (92-21) 9251652
Email: sef@cyber.net.pk

Head Office: Plot 9, Block 7, Kehkashan, Clifton 5, Karachi-75600, Pakistan.
UAN: (92-21) 111 424 111, Fax: (92-21) 9251652, E-mail: info@sef.org.pk, Website: www.sef.org.pk

Sub Offices:
Hyderabad Ph: (92-22) 9240156, 9240209, 9240211 Khairpur Ph: (92-243) 9280370, 9280305
Larkana Ph: (92-74) 4059729, 4058639 Mehar Ph: (92-254) 730138 Sehwan Ph: (92-254) 620396, 620022

APPENDIX N (School information letter)



**Sindh
Education
Foundation**



Government of Sindh

Date: March 15, 2008

Ref: _____

INFORMATION LETTER FOR SCHOOLS

Who is conducting the survey?

Sindh Education Foundation is carrying out a research study to obtain an overview of behavioural and emotional problems of children and its influence on academic achievement. This study is being carried out by Sindh Education Foundation (SEF) in collaboration with University of Leicester, UK. Sindh Education Foundation is a semi-autonomous organisation with the main aim "to empower disadvantaged communities towards social change by creating and facilitating new approaches to learning and education".

What is the survey about?

The purpose of this study is to obtain an overview of behavioural and emotional problems of children and its influence on academic achievement.

What is involved for schools?

Incorporating mental health problems into the wider spectrum of educational objectives would be beneficial. Study findings would not simply provide the prevalence rates but would enable government to take initiatives and design relevant policies and interventions. These findings will also be used to design programs to train, sensitise and mobilize teachers and parents regarding child's psychological, emotional and behavioural problems.

If you are happy to take part in this survey, an independent researcher will hold group meetings with staff at the beginning of the project and two years later to talk about their experience and share the findings of this survey. These group interviews will not involve any personal questions. In order to help us to understand all views expressed, the group meetings might be audio-tape recorded, if you are in agreement. The tapes will be analysed by the researcher only, and will not be available to any other staff.

Will the information be kept confidential?

All the information will be coded, so that no person can be identified. All information will remain confidential, the name and address of any participant will not be included in any report.

What if I do not want to take part, or wish to withdraw from the survey?

If you do not wish to participate in the survey, you may do so without justifying your decision, and this will not affect the child in anyway.

Head Office: Plot 9, Block 7, Kehkashan, Clifton 5, Karachi-75600, Pakistan.
UAN: (92-21) 111 424 111, Fax: (92-21) 9251652, E-mail: info@sef.org.pk, Website: www.sef.org.pk
Sub Offices:
Hyderabad Ph: (92-22) 9240156, 9240209, 9240211 Khairpur Ph: (92-243) 9280370, 9280305
Larkana Ph: (92-74) 4059729, 4058639 Mehrar Ph: (92-254) 730138 Sehwan Ph: (92-254) 620396, 620022

APPENDIX O (Consent form)



**Sindh
Education
Foundation**



Government of Sindh

Date: _____

Ref: _____

CONSENT FORM

Principle Investigator: Sajida Abdul Hussein
(This form should be provided in conjunction with the Information letter. Please make sure that you have read it.)

I(name) have read and understood the information provided about the survey and agree to take part in the study.

I understand that I can withdraw from the study at any time without justifying my/our decision, and without it affecting my/our child in any way.

I am not currently involved in any other research study.

Please write your name.....

SignatureDate.....

Head Office: Plot 9, Block 7, Kehkashan, Clifton 5, Karachi-75600, Pakistan.
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APPENDIX P (Ministry of Education letter)



NO. EDOE/CDG/ESTT/1294-98/2007
OFFICE OF THE
EXECUTIVE DISTRICT OFFICER EDUCATION
CITY DISTRICT GOVERNMENT KARACHI

Dated: 02-2-2007

To,

The District Officer Education,
Elementary (Male/Female),
Local Bodies Wing,
City District Government,
Karachi.

SUBJECT: **REQUEST FOR AUTHORIZATION GRANTING ACCESS TO GOVERNMENT SCHOOLS.**

Please find enclosed herewith a copy of FAX, dated 03.2.2007 on the subject noted above and to inform you that the Sindh Education Foundation, Government of Sindh, Karachi, which is a semi autonomous organization, working for empowerment to the disadvantaged communities towards social change by creating and facilitating new approaches to learning and education.

The Sindh Education Foundation is intending to conduct teacher and parent based survey of 5 to 11 years old primary school children and need your cooperation to complete the research study in a befitting manner.

You are therefore, requested to cooperate with the team of the Foundation to obtain learning, behavioral and emotional problems of children and its influence on academic achievement, as desired.

(MRS. FAKHAR KARIM SIDDIQUI)
EXECUTIVE DISTRICT OFFICER EDUCATION
CITY DISTRICT GOVERNMENT KARACHI

A copy is forwarded for information and necessary action to:

1. The Managing Director, Sindh Education Foundation, Karachi.
2. The District Officer Education (Head Quarters), E.D.O.E.

(MRS. FAKHAR KARIM SIDDIQUI)
EXECUTIVE DISTRICT OFFICER EDUCATION
CITY DISTRICT GOVERNMENT KARACHI

APPENDIX Q (Published papers)

Soc Psychiatry Psychiatr Epidemiol (2007)

DOI 10.1007/s00127-007-0188-x

ORIGINAL PAPER

Ehsan Ullah Syed · Sajida Abdul Hussein · Sadia Mahmud

Screening for emotional and behavioural problems amongst 5–11-year-old school children in Karachi, Pakistan

Accepted: 15 March 2007 / Published online: 21 April 2007

Abstract *Background* While a number of studies in the western countries have provided estimates of prevalence for child psychiatric morbidity and associated risk factors, relatively little is known about child psychiatric problems and risk factors in developing countries like Pakistan. *Method* A cross sectional survey of 5–11-year-old children attending main stream private and community schools in Karachi was conducted. Seven private and eight community schools agreed to participate. About 1488 consent forms were sent to 700 parents of private school and 788 parents of community school children. A total of 675 parents agreed to participate in the study. The response rate was 45.4%. Assessment of children's mental health was conducted using Strength and difficulties questionnaire (SDQ) by parents based on cut-off provided by Goodman. *Results* About 47% children were rated as normal, 19% as borderline and 34% as abnormal by the parents. Ordinal regression was used to identify factors associated with parent's rating. The odds of female children of being normal was 1.5 times relative to male children, adjusting for school type and mother's education (ORadj = 1.5, 95% CI: 1.1–2.0). Children attending private schools were more likely to be normal as compared to community school children, adjusting for child's gender and mother's education (ORadj = 2.3, 95% CI: 1.3–4.0). *Conclusion* In the present study, prevalence of child mental health

problems was higher than reported in studies from other countries. Prevalence was higher amongst children attending community schools. Consistent with most studies, male children were at a higher risk than females. There is a need for developing programs to train, sensitise and mobilize teachers and parents regarding child's psychological, emotional and behavioural problems with special attention to community schools. Since the male child is at a greater risk we should be cognizant of this while evaluating children for psychopathology.

Key words Pakistan – child mental health – prevalence – risk factors

Introduction

In reviewing 52 epidemiological studies of child and adolescent disorders mental health Roberts et al. [22] found tremendous variations in prevalence rates ranging from 1% to 50% with a mean prevalence rate of 15.8%. These authors also observed that the rates varied, depending on age, gender and other factors, with approximate rates of 8% for preschoolers and 12% in studies including wider age ranges.

The high prevalence of psychiatric disorders in children and adolescence is not exclusive to Western societies. The range of disorders seen in children in developing countries is not too different from that in the West, and includes emotional disorders (anxiety, depression, and phobias), behavioural disorders (conduct), Neuropsychiatric disorders (Hyperkinetic disorders), learning disabilities and pervasive developmental disorders (autism, Asperger's Syndrome). Also neurological disorders such as epilepsy are very prominent.

The importance of early detection of emotional and behavioural problems is being recognized worldwide. However, up until now there has been

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little systematic research into childhood psychiatric disorders in the developing countries [20]. In the past year, two more studies have been carried out in developing countries exploring the prevalence of child psychiatric disorders. A study carried out in Bangladesh on a sample of 922, 5–10-year-old children [18], found an estimated prevalence for any ICD-10 diagnosis around 15%. Another study carried out in India [26] indicated a prevalence rate of 12.5% among children aged 0–16 years.

The presenting features of mental disorder in children can be associated with one or more risk factors. These add to the complexity of the condition, influence severity and so may determine the nature of the service required. There is a wide range of predisposing and precipitating factors which can result in an equally wide range of difficulties. A review of English-language journals published since 1990 and three global mental health reports identified 11 community studies among adult population from six countries in Africa (Lesotho and Zimbabwe), Asia (Indonesia and Pakistan) and Latin America (Brazil and Chile). The findings of these studies suggested an association between poverty and common mental disorders in six low- and middle-income countries. Most studies showed an association between indicators of poverty and the risk of mental disorders, the most consistent association being with low levels of education [21].

Social factors are clearly implicated in the genesis and maintenance of these and in their extension into adulthood [24]. Such factors include the quality of the parents' relationship; family structure and aspects of family function; parental mental health, parent's education and occupation, total family income, the socio-economic status of the family, child's school experiences and broader environmental circumstances such as adequacy of housing [6, 11, 13, 17]. There is also good evidence that childhood difficulties can be the precursors of adult criminality and mental disorder [4, 14]. Child and adolescent mental health is directly and indirectly influenced by genetic factors, physical health, developmental status and educational ability.

There is increasing evidence of interaction between all of these and other psychosocial factors in the genesis of mental health difficulties [2, 23].

While a number of risk factors associated with childhood psychopathology have been identified in the western culture, it cannot be assumed that the same factors will operate universally. Most of the world's youth live in developing countries like Pakistan in a setting that carry a wide range of risk factors including poverty, malnutrition, infectious diseases, inadequate schooling, child labor etc.

Available evidence suggests that specific cultural and socio-demographic variables are important in determining the risk in any given community [3, 7, 12].

Population-based epidemiological studies among adults show the prevalence of common mental disorders in Pakistan to be one of the highest in the developing world—higher even than developing countries with similar socio-economic indicators [19]. These figures range from a low of 25% (urban areas) to a high of 72% (rural areas) for women and between 10% (urban) and 44% (rural) for men [19]. In Pakistan, the current scarcity of child mental health services mirrors the scarcity of epidemiological studies. There is a lack of mental health services for children, partly reflecting a lack of adequate information about the magnitude of the needs that should be met, or even the most basic information about what are the main behavioural and emotional problems. There has been only one study carried out in Lahore, capital city of the province of Punjab which aimed to establish the prevalence of emotional and behavioural problems in school children using the Rutter rating scales. The study found a prevalence of 9.3%, with antisocial problems being the commonest [15]. The Lahore study used a questionnaire as the only measure for emotional and behavioural problems and indicated a wide range of mental health problems among this age group. No such study has been carried out since then. The timing is therefore right for a larger-scale and better designed epidemiological study on the mental health needs of Pakistani school children. This should address the important issues, including questions like: what is the prevalence of behavioural and emotional disorders amongst Pakistani school children? And how do they correlate with specific cultural and socio-economic factors?

The objective of the present study is to estimate the prevalence of emotional and behavioural problems among 5–11-year-old school children. Moreover, we also aimed to identify socio-demographic characteristics of children associated with their mental health status. The factors that were examined included those suggested by previous studies [1, 3, 7, 12] as well as other factors based on the peculiarities of the cultural setting in the area.

Method

■ Setting

The study was conducted in Karachi, which is located in south-east of Pakistan, its population at the time of the survey was estimated as 15 million. Karachi is divided into 18 towns, each having its own union council and district "Nazim" (mayor). Karachi is the largest city of Pakistan and is the main industrial and business hub.

■ Sampling strategy

The educational setup in Pakistan comprises of public or government run schools, community schools and private schools, with the latter offering much better quality of education and facilities. In order to give equal represent it in we aimed to collect data from all

school types. However, despite our efforts we were unable to obtain permission from government school authorities for participation in our research study. Therefore data was collected from community and private schools. Community schools are run by non-governmental organizations (NGOs) and mostly have a low fee structure and cater for lower socio-economic class. Sindh Education Foundation (SEF) was established in 1992 as a semi-autonomous organization with the main aim to provide education to disadvantaged communities. A town-wise list of all the community schools in Karachi was obtained from SEF. They advised us to select nine towns assuring that school authorities in these towns were most likely to cooperate with us. From each of these nine towns one community school was selected. In seven of these towns we were also able to identify a private school. Two of the private and three community schools selected declined to take part in the study, asserting that the topic might upset parents or was irrelevant to their pupils. We contacted three other community schools in the same towns of which two agreed to participate, of the two other private schools contacted in the same towns both agreed to participate. Hence a total of seven private and eight community schools agreed to participate. From each school 100 children were selected, 50 from each class (grades 1-5). If there were less than 20 children in a class all were selected and if there were more than 20 then 20 were selected from the class attendance register using alternate odd-even serial number to select children from each class (grades 1-5). A total 1488 children were selected and consent forms and information sheets were sent to their parents. The consent forms were collected by the teachers. About 675 parents gave consent to participate in the study. The response rate was 45.4%. Those who agreed to participate in the study were called on a later date to the school for data collection. Active parental consent was required before a child could be considered for inclusion in the study. Consequently, children of those parents who did not give consent were excluded. Information on non-respondents was not collected and therefore not part of the analysis. Children were eligible for the study if they were over 3 year of age and had not yet reached their 12 birthday. This age range was chosen mainly because this is the age for compulsory schooling in Pakistan according to "Compulsory Primary Education Ordinance (2001)".

Protocol and instruments

Screening of all children was carried out by means of parental questionnaire.

Socio-demographic parent form (SDPF)

This 13-item Form was developed based on existing literature and expert discussions. It elicited details like; child age, gender, type of schooling, parental education, parental occupation, age of parents, residential area, informant, name of the head of the household, family income, family type, physical illness/disability, languages spoken at home. The socio-economic status was determined on the basis of the categories provided by the Federal Bureau of Statistics, Pakistan [5].

Strengths and difficulties questionnaire (SDQ) is a brief mental health-screening questionnaire that measures 25 attributes, some positive and others negative [6]. The 25 items are grouped into five sub scales of five items each, generating scores for conduct, hyperactivity, emotional, peer problems, and prosocial behaviour. All scales including the last are summed to generate a Total Difficulties score (0-40). Category bands and total difficulties scores can be classified as normal, border line and abnormal. These bands which are not adjusted for age or gender have been chosen so that approximately 80% of children in the community are considered to be in normal category, 10% in the borderline and 10% in abnormal category [6]. SDQ can be completed by the parents or the teachers of 4-16 year olds.

Besides common areas of emotional and behavioural difficulties, the extended SDQ also has an impact supplement, inquiring whether the informant thinks that the child has a problem in these

areas and, if so, asks about resulting distress and social impairment [9]. The present study on Pakistani school children has not included the analysis of impact scores. The SDQ has been shown to be of acceptable reliability and validity, performing at least as well as the longer-established Rutter Questionnaire and Child Behaviour Checklist [10]. Originally published in English [9] the SDQ has subsequently been translated into over 40 languages, including Urdu, the national language of Pakistan. (<http://www.sdqinfo.com>). A study to test the validity of the Urdu version of the Strength and Difficulties Questionnaire (SDQ) was carried out in Pakistan [25].

Data collection procedure

The data was collected from January to March 2006 for the private schools and from April to June 2006 for the community schools. In order to obtain consent from schools a meeting was held with the educational authorities and school principals. They were provided with consent forms, an information sheet, and a brief outline of the research procedure and the kind of assistance required by the schools. The materials were available in English, Urdu the national language as well as Sindhi the regional language spoken in some areas of Karachi. For the schools that consented to participate in the study, a meeting was held with the parents and teachers of selected students separately at the school.

Parents were given a short presentation on child mental health disorders explaining the rationale of the study. The purpose of the presentation was to provide awareness as there is a lack of information on child psychiatric problems in the country, as well as encouraging survey participation, and reducing the number of dropouts. SDQ was filled by parents.

As most parents of private school children could read, they filled the questionnaires, however in the community schools majority of parents were uneducated. For those parents needing assistance the principal researcher (SH) along with other interviewers helped fill in the questionnaires. A team of five interviewers assisted with data collection. All had master's degrees with two of them including the principal investigator having master's degree in Psychology. Before data collection, they were all trained by various means in interviewing style, concepts and coding conventions including interviews of volunteers, role-play and recorded interviews. All data was entered into a specially designed database and verified by independent double entry.

Statistical analysis

Descriptive statistics were computed for the socio-demographic characteristics of children and parents. Mean and standard deviation of SDQ scores were calculated. Mean SDQ scores for private and public schools, and for male and female children were compared using *t*-tests. The frequency distribution for the 'normal', 'borderline' and 'abnormal' categories on total SDQ and subscales was computed. Subscale ratings were compared with respect to gender and school type using Chi-square test of independence respectively. The association of socio-demographic variables with total SDQ rating was examined using ordinal regression analysis. Data was analysed using the software package SPSS version 14.5 and SAS version 9.1.

Results

Thirty five questionnaires were excluded, as they didn't meet the criteria, (over/under age of child). Data analysis was carried out on 640 parent forms.

Table 1 reports the descriptive statistics for socio-demographic variables. The mean age of the children in the study sample was 8.4 years with standard deviation (SD) of 1.85 years. About 42% children were

Table 1 Socio-demographic variables (n = 40)

	n (%)
Gender	
Male	139 (35)
Female	301 (49)
School type	
Private school	271 (40.5)
Community school	369 (59.5)
SES^a	
Lower	492 (8.6)
Middle	113 (8.7)
Upper	21 (3.3)
Mother education	
Not educated	319 (40.8)
>10 years of schooling (85.0%)	
10-12 years of schooling	161 (25.2)
Graduate degree/higher	28 (11.7)
Father education^b	
Not educated	202 (21.6)
<10 years of schooling	120 (8.8)
10-12 years of schooling	166 (24.9)
Graduate degree/higher	151 (28.6)

^amissing data n = 626

^bmissing data n = 629

going to private while 57% were going to the community schools. Mean age of the mothers of these children was 35 years (SD ± 7 years). A total of 50% of mothers and 32% fathers were uneducated. Only 12% of mothers and about 24% of fathers had graduate/higher education. Majority of the mothers were housewives (89%) and belonged to lower socioeconomic status (79%). Ethnically our sample was very diverse. Since languages or dialects represent different ethnic groups in Pakistani culture, spoken language is often the most appropriate determinant of ethnicity. A total of 16 different linguistic or ethnic groups were represented in our sample. Urdu was the language spoken by 42% of the households with 12% Sindhi and Balochi each, 9% Pashto and 7.5% Punjabi. Other respondents reported many different languages spoken in the Subcontinent as their primary means of communication.

Based on parent's rating on SDQ, the mean and standard deviation of scores was 14.4 and 5.9 respectively. The mean score for private schools (13.0) and that for community schools (15.4) were significantly different (P -value = 0.000). The mean scores for male (14.9) and for female (13.8) children were also significantly different (P -value = 0.013).

Parents rated 46.7% as "normal", 18.9% as "Borderline" and 34.4% of children as falling under the "abnormal category on SDQ (Fig. 1). Amongst community school children 40.4% and among private school children 26.2% were rated as 'abnormal'. Among male children 40.1% and among females 27.9% were rated as abnormal.

On the individual behavioural subsets scores 37.3% were rated as abnormal on emotional subset, 42.3% on conduct problems, 18.8% on hyperactivity, and 37.8% on peer problems subset (Table 2). Gender

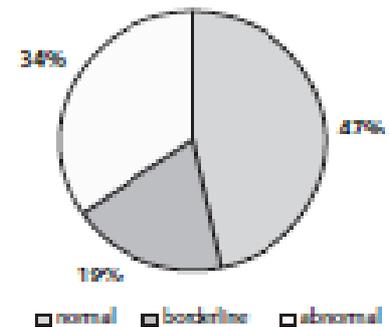


Fig. 1 Percentage of children rated Normal, Borderline, Abnormal on SDQ by parent

wise analysis of the individual behavioural subsets rating showed that there was no significant difference between males and females for emotional, peer problems and pro social subsets (Table 2). However there was a highly significant difference for conduct (48.7% of males and 35.2% females were abnormal) and hyperactivity subscales (23.6% males and 13.3% females were abnormal).

School wise analysis of the individual behavioural subsets rating showed that there was a highly significant difference between community and private schools for emotional (31.4% private and 41.7% community school children were abnormal) and conduct problems subsets (29.5% private and 51.8% community school children were abnormal) (Table 2). For hyperactivity, peer problems and prosocial subsets the difference in SDQ ratings were not significantly different between private and community schools (P -value > 0.05). However, for the former two subsets there was a tendency for more hyperactivity and peer problems in community school children compared to private schools as evidenced by the difference in the proportion of abnormal children (Table 2).

Ordinal regression analysis was conducted to identify factors associated with total SDQ behaviour ratings. The univariate ordinal regression analysis is reported in Table 3. The potential predictor variables we considered were gender of the child, school type, mother's education, father's education and socioeconomic status (SES). In the univariate ordinal regression gender, school type, mother's education and father's education were significant whereas SES was not significant. Variables with P -value less than 25% were selected for inclusion in the multivariable ordinal regression model. The final multivariable regression model is reported in Table 4. Both mother's and father's education were insignificant in the multivariable model, however the former was confounding the effect of school type on the response. Hence the final model included gender, school type and mother's education. The proportional odds assumption for the final ordinal regression model was satisfied (P -value for the score test = 0.329).

Table 2 Number and (percentage) of children rated Abnormal by parents in SDQ subscale ratings; by gender; by school type

SDQ subscale	Male	Female	P-value ^a	Private	Community	P-value ^a	Total
Emotional	125 (36.9)	114 (37.9)	0.927	85 (31.4)	154 (41.3)	0.000	239 (37.3)
Conduct	166 (48.7)	106 (35.2)	0.001	80 (29.5)	191 (51.8)	0.000	271 (42.3)
Hyperactivity	80 (23.6)	40 (13.3)	0.000	43 (15.9)	77 (20.4)	0.079	120 (18.8)
Peer problems	138 (39.2)	109 (36.2)	0.728	91 (33.6)	151 (40.4)	0.065	242 (37.8)
Pro social	4 (12.1)	36 (12.0)	0.339	25 (9.2)	52 (14.1)	0.114	77 (12.0)

^aP-value is obtained from chi-square test of independence

We interpret the results from the final regression model as follows. The odds of female children of being normal were 1.5 times the odds for male children, adjusting for school type and mother's education (adjusted OR = 1.5, 95% CI: 1.1–2.0). The children attending private schools were more likely to be rated normal on SDQ by parents as compared to community school children, adjusting for child's gender and mother's education (adjusted OR = 2.3, 95% CI: 1.3–4.0) (Table 3).

Discussion

This survey was carried out with the objective to screen the psychological state of school children aged 5–11 years and determine the associated risk factors in Karachi. Most studies report the prevalence of psychiatric morbidity among children from community samples between 10 and 20% [27]. These estimates vary and depend on the instrument used and the study design. Screening tools yield higher results while diagnostic interviews of the screened population often result in lower estimates. A range of 1–51% has

been reported in a review of literature from the past 40 years with a mean prevalence of 15.8% [22].

In our study 34% of all children were categorized as 'abnormal' based on parent's rating on SDQ. Estimates of emotional and behavioural problems may have been higher in our study because these frequencies are being reported based on screening questionnaire alone. A recent study on Sri Lankan school children using similar method showed significantly higher rates of behavioural problems compared to the British population [16].

Since there is a lack of child mental health studies, we reviewed studies in child mental health research from other countries as well as adult literature in Pakistan to determine the risk factors for psychopathology. Based on literature reviews we looked at socio-demographic factors associated with psychiatric morbidity among children such as gender, school type and parental education as well as socioeconomic status. According to the present study male gender and attending community school were significantly associated with psychopathology in children aged 5–11 years. Male gender has been consistently reported in literature as a predictor of psychopathology. A

Table 3 Univariate ordinal regression analysis for identifying factors associated with parent's rating of school children (Normal/Borderline/Abnormal), n = 640

Variables	Normal	Borderline	Abnormal	Odds ratio	95% CI	P-value ^a
Gender						0.008
Male	147	56	136	1.0	–	
Female	152	65	88	1.5	(1.1, 2.0)	
School type						0.000
Community	146	74	140	1.0	–	
Private	153	47	71	2.0	(1.4, 2.6)	
Mother's Education						0.005
Not Educated	130	65	124	1.0	–	
>10 years of school	39	13	25	1.1	(0.7, 1.6)	
10–12 years of school	92	27	42	1.9	(1.3, 2.7)	
Graduate/Higher	38	16	21	1.5	(0.9, 2.3)	
Father's education^b						0.004
Not educated	81	42	79	1.0	–	
>10 years of school	47	23	30	0.9	(0.6, 1.4)	
10–12 years of school	88	27	51	1.6	(1.1, 2.3)	
Graduate/Higher	82	29	40	1.8	(1.2, 2.6)	
SES^c						0.271
Lower	221	99	132	1.0	–	
Middle	60	16	37	1.3	(0.9, 1.9)	
Upper	12	4	5	1.7	(0.7, 3.9)	

^aLikelihood ratio test

^bMissing data n = 629

^cMissing data n = 626

Table 4 Multivariable ordinal regression analysis for identifying factors associated with parent's rating of school children (Normal/Borderline/Abnormal) (n = 640)

Variables	Adjusted odds ratio ^a	95% CI ^b
Gender		
Male	1.0	-
Female	1.5	(1.1, 2.0)
School type		
Community	1.0	-
Private	2.5	(1.4, 4.0)

Likelihood ratio test, *P*-value < 0.001

Score test for proportional odds assumption, *P*-value = 0.329

^aAdjusted for mother's education

higher prevalence among boys was found in most studies except the one conducted in Alain which found a female preponderance [3]. School type has not so far been reported in the literature searched by the authors except one study carried out in Brazil, where similar to our findings the most striking difference by school type was the substantially higher prevalence of psychiatric disorders as a whole among children attending public schools as opposed to private schools [7]. In Pakistani setting community schools are generally over crowded and under funded thus leading to poor quality education and lack of discipline which may result in expression of behavioural problems. In our present study parents of community schools children rated higher estimates of mental health problems amongst their children compared to children attending private schools. Nearly half the number of community school children were rated by their parents with conduct problem (Table 3). The same trend is also seen in the Brazilian study where children attending public schools had a higher prevalence of oppositional—conduct disorders [7].

Limitations of the study

- The sampling unit for the present study was schools, which was most feasible method of recruiting and assessing children in Pakistan, similar to studies in many other developing countries. However it must be noted that not all children in developing countries including Pakistan have access to formal education, therefore the generalizability of findings of this study is limited only to school attending children.
- Most parents in private schools were able to fill out the questionnaires, however parents in community schools were assisted by the researcher in filling out the forms this could have resulted in some bias.
- The selected population was representative of school children in Karachi, however since no record was maintained for the characteristics of non respondents, it could be that the respondents were more motivated

and aware regarding mental health issues.

- The low response rate of the study could be due to the stigma, low literacy levels and a lack of awareness amongst the general population.
- Despite reassurance to the parents, due to a general lack of research culture parents may be apprehensive about the findings and how the results will be dealt with, this could also have lead to a lower response rate.
- Although we gave a brief presentation to the parents proving information on child mental health issues prior to data collection, its important to carry out more awareness campaigns and workshops aiming to sensitise parents towards child psychiatric problems and encouraging participation in research studies. Subsequent studies by the same author has noted that approaching parents on school program like parents-teachers meeting day, improves chances of participation.
- Optimal assessment of child psychopathology is based on multi informants ratings, the present study is based only on parents report. However in Pakistani school setting there are an average of 35 students in a class, this puts a lot of pressure on one teacher to fill out the questionnaires for each child.
- A major limitation of the study is the use of screening tools as a measure to determine prevalence as opposed to a diagnostic interview and therefore resulting in prevalence higher rates.

Conclusions and implications

This survey was carried out with the main aim to better understand the emotional and psychological state of school aged children of Karachi and determine the associations of psychopathology. This exploratory study suggest that estimates of child mental health problems was higher than reported in studies from other countries. Problems were higher amongst children attending community schools. Consistent with most studies risk was greater for males than females. Findings of this study suggest that incorporating mental health problems into the wider spectrum of educational objectives would be beneficial. There is a need especially in community schools to design programs to train, sensitise and mobilize teachers and parents regarding child's psychological, emotional and behavioural problems to be able to at least identify those children most needy of mental health attention, and be able to make appropriate and timely referrals. Also keeping in view the limitations of the present study it is important to carry out further research with multi informants and wider age range.

■ **Acknowledgement** The study was generously supported by grants from Sindh Education Foundation (SEF) and Aga Khan University Hospital (AKUH) Karachi, Pakistan. We are grateful for

the guidance and support provided by Dr Petros Vostanis, (Professor of Child and Adolescent Psychiatry), Greenwood Institute of Child Health, University of Leicester.

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Prevalence of Emotional and Behavioural Problems Among Primary School Children in Karachi, Pakistan – multi Informant Survey

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ABSTRACT

Objective. While a number of studies in the western countries as well as developing countries have provided estimates of prevalence of emotional and behavioral problems among school children relatively little is known about the prevalence of child psychiatric problems and associated risk factors in Pakistan. A cross sectional survey of 5-11 years old children attending main stream private and community schools in Karachi was conducted in order to determine some baseline prevalence data.

Methods. A cross sectional survey of school children of certain towns within Karachi metropolitan area, aged 5 to 11 years during 1st half of 2006. SDQ was filled out by parents and school teachers for the same children. Demographic data of parents, teachers and children were also collected using a separate performa.

Results. 7 private and 8 community schools agreed to participate. 1488 consent forms were sent to 700 parents of private school and 788 parents of community school children. A total of 675 parents agreed to participate in the study. The response rate was 45.3%. Assessment of children's mental health was conducted using Strength and Difficulties Questionnaire (SDQ). Parents rated 34.4% of children as falling under the "abnormal category" on SDQ, slightly higher estimates 35.8% were reported by the teacher. The findings suggest a striking difference between the informants' ratings as well as gender wise difference in prevalence of common child mental health problems.

Conclusion. In the present study prevalence of child mental health problems was higher than reported in studies from other countries. There was also a gender difference in prevalence; boys had higher estimates of behavior/externalizing problems, whereas emotional problems were more common amongst females. There is a need for developing programs to train, sensitize and mobilize teachers and parents regarding child's psychological, emotional and behavioral problems. E-mail: ehsan.syed@aku.edu

Key word : Child mental health; Prevalence; Risk factors

In Pakistan, there is a lack of mental health services for children, partly reflecting a lack of adequate information about the magnitude of the needs that should be met, or even the most basic information about what are the main learning behavioral and emotional problems. There have been two studies carried out in Pakistan to establish the prevalence of emotional and behavioral problems in school children one using the Rutter rating scales¹ and other SDQ.² They found prevalence ranging from of 9.3% to 33%, with antisocial problems and conduct problems being the commonest

in each, respectively. Schools have an important role towards the health of children and a profound influence on their families and the community. Children spend approximately 1500 hours in school per year. It is therefore not surprising that experiences in school, such as bullying and pressure for academic achievement together with overall school ethos can influence the rate of childhood disorder.

The importance of early detection of emotional and behavioral problems is being recognized worldwide. However, until now there has been little systematic research into childhood psychiatric disorders in the developing countries.³ In a study carried out in Bangladesh on a sample of 922 of 5 to 10 years old, Mullick found an estimated prevalence for any International Classification of Diseases (ICD-10)

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diagnosis around 15%.⁴ Another study carried out in India indicated a prevalence rate of 12.5% among children aged 0-16 years.⁵

In the light of the reviewed literature, a survey was conducted on the mental health of Pakistani school children. Some of the results from the survey by the same authors focusing mainly on parental account of child's problems have been reported elsewhere.⁶ The present article takes into account teacher's report and compares it with the parents' version.

MATERIAL AND METHODS

Setting

The study was conducted in Karachi, which is located in south-east of Pakistan, its population at the time of the survey was estimated as 15 million. Karachi is divided into 18 towns, each having its own union council and district 'Naib' (Mayor). Karachi is the largest city of Pakistan and is the main industrial and business hub.

Sampling Strategy

The educational setup in Pakistan comprises of public or government run schools, community schools and private schools, with the latter offering much better quality of education and facilities. In order to give equal representation, the present study aimed to collect data from all types of school. However, despite our efforts, we were unable to obtain permission from government school authorities for participation in the present research study. Therefore, data was collected from community and private schools. Community schools are run by non-governmental organizations (NGOs) and mostly have a low fee structure and cater for lower socio economic class. A town-wise list of all the community schools in Karachi was obtained from selected 9 towns since the school authorities in these towns were most likely to cooperate with us. From each of these 9 towns, one community school was selected and all but one agreed to participate. In 7 of these towns, we were also able to identify a private school agreeing to participate. Hence a total of 7 private and 8 community schools agreed to participate. From each school 100 children (grade 1-5) were selected, 20 from each class (grade 1-5). If there were less than 20 children in a class, all were selected and if there were more, then only 20 were selected from the class attendance register using alternate odd-even serial number. A total of 1488 children were selected and consent forms and information sheets were sent to their parents. The consent forms were collected by the teachers. A total of 675 parents gave consent to participate in the present study. Active parental consent was required before a

child could be considered for inclusion in the study. Consequently, children of those parents who did not give consent were excluded. Information on non respondents was not collected and therefore not part of the analysis. Children were eligible for the study if, they were over 5 year of age and had not yet reached their 12th birthday. This age range was chosen mainly because this is the age for compulsory schooling in Pakistan according to 'Compulsory Primary Education Ordinance (2001).'⁴

PROTOCOL AND INSTRUMENTS

A. Socio-demographic Parent Performa (SDPP)

This 13-item SEPP was developed based on existing literature and expert discussions. It elicited details like, child age, gender, type of schooling, parental education, parental occupation, age of parents, residential area, informant, name of the head of the household, family income, family type, physical illness/disability, languages spoken at home. The socio economic status was determined on the basis of the categories provided by the Federal Bureau of Statistics, Pakistan.⁷

B. Demographic Teacher Performa (DTP)

DTP was designed to provide information by the teacher regarding the child raised on a 4 point rating scale. Including child's performance at school, attendance, teacher qualification, and teaching experience.

Strength and Difficulties Questionnaire (SDQ)

Is a brief mental health-screening questionnaire that measures 25 attributes, some positive and others negative.⁸ The 25 items are grouped into 5 sub scales of 5 items each, generating scores for conduct, hyperactivity, emotional poor problems, and prosocial behavior. All scales excluding the last are summed to generate a total difficulties score (0-40). Category bands and total difficulties scores can be classified as normal, border line and abnormal. These bands which are not adjusted for age or gender have been chosen so that approximately 80% of children in the community are considered to be in normal category, 10% in the borderline and 10% in abnormal category.⁹ SDQ can be completed by the parents or the teachers of 4-16-year-olds. The SDQ has been shown to be of acceptable reliability and validity, performing at least as well as the longer-established Rutter Questionnaires and Child Behavior Checklist. Originally published in English,⁸ SDQ has been translated in Urdu and a study to test the validity of the Urdu version has been carried out in Pakistan.¹⁰

Data collection procedure

Prevalence of Emotional and Behavioral Problems Among Primary School Children in Karachi

The data was collected from January to March 2006 for the private schools and from April to June 2006 for the community schools. Parents were given a short presentation on child mental health disorders explaining the rationale of the study. The purpose of the presentation was to provide awareness as there is a lack of information on child psychiatric problems in the Pakistan, as well as encouraging survey participation, and reducing the number of dropouts. As most parents of private school children could read, they filled the questionnaires themselves, however in the community schools majority of parents were uneducated. For those parents needing assistance the principal researcher (SH) along with other interviewers, helped fill in the questionnaires. A team of 5 interviewers assisted with data collection. All had master's degrees with 2 of them including the principal investigator having master's degree in Psychology. All data was entered into a specially designed database and verified by independent double entry.

Statistical Analysis

Descriptive statistics were computed for the socio-demographic characteristics of children and parents. The frequency distribution for the 'normal', 'borderline' and 'abnormal' categories for both the parent and teacher rating of SDQ subsets was computed. The inter rater agreement between the parents and teachers, total behavioral problem and individual subsets scores on SDQ were analyzed using non parametric spearman's rho correlations. Data was analyzed using the software package SPSS version 14.5.

RESULTS

Thirty five questionnaires were excluded, as they didn't meet the criteria. Data analysis was carried out on 640 parent forms and 485 teacher questionnaires. Table 1 reports the descriptive statistics for socio-demographic variables. The mean age of the children in the study sample was 8.4 years with standard deviation (SD) of 1.85 years. About 42% children were going to private while 57% were going to the community schools. Most belonged to the lower socio economic status (78.6%) and almost half of the mothers in our sample were uneducated (49.8%). Parents rated 46.7% as 'normal', 18.9% as 'borderline' and 34.4% of children as falling under the 'abnormal category on SDQ, whereas teachers rated 36.4% were 'normal', 13.5% 'borderline' and compared to parents slightly higher 'abnormal' ratings, 35.8%, of children on SDQ. Overall there was a weak but positive correlation between teachers' and parents' report in all subsets and total scores on SDQ (significance =0.05). A gender wise analysis of the individual behavioral subsets of SDQ is given in table 2.

Table 1. Type and frequency of behavioral problems. (parents n=640, teacher n=485)

Behavioral scale	Normal	Borderline	Abnormal
Total behavioral problems			
Parent report	299 (46.7)	121 (18.9)	220 (34.4)
Teacher report	177 (36.4)	135 (27.8)	174 (35.8)
Emotional problems			
Parent report	305 (47.7)	96 (15.0)	239 (37.3)
Teacher report	346 (71.2)	51 (10.5)	89 (18.3)
Conduct problems			
Parent report	271 (42.3)	98 (15.3)	271 (42.3)
Teacher report	236 (48.6)	90 (18.5)	159 (32.7)
Hyperactivity			
Parent report	444 (69.4)	76 (11.9)	120 (18.8)
Teacher report	362 (74.5)	61 (12.5)	63 (13.0)
Fear problems			
Parent report	294 (45.9)	104 (16.3)	242 (37.8)
Teacher report	267 (54.9)	115 (23.7)	104 (21.4)
Pro Social Scale			
Parent report	510 (79.9)	53 (8.3)	77 (12.0)
Teacher report	320 (65.8)	59 (12.1)	106 (21.8)

Chi-squares test analysis was carried out to determine association between SDQ scores and gender for both versions. The results showed that there was significant association in total problems rated by parents and the male gender (Chi square =10.82, df=2, p=0.004), as well as for conduct disorders (Chi-square=13.10, df=2, p=0.001) and hyperactivity (Chi-square =20.25, df=2, p=0.000). On the teachers SDQ significant association with male gender was only seen on the hyperactivity (Chi square =11.901, df=2, p=0.003) and pro social subscales (Chi square =5.789, df=2, p=0.05). All other associations were found to be statistically insignificant.

DISCUSSION

The findings suggest a difference between parents and teachers identified problems, however, there were more commonalities. Both parents and teachers rated the majority of children as having conduct problems and more boys than girls were identified in this category by each informant. Consistent with studies done in the western as well as in developing countries, parents rated more females with emotional problems and males with peer related problems. More significant number of

Table 2. Gender wise percentage of behavioral problems (parents n=640, teacher n=485)

Behavioral scale	Males			Females		
	Normal	Borderline	Abnormal	Normal	Borderline	Abnormal
Total behavioral problems						
Parent report	43.4	16.5	40.1	50.5	21.6	27.9
Teacher report	34.7	26.7	38.6	38.5	28.6	32.9
Emotional problems						
Parent report	48.4	14.7	36.9	46.8	15.3	37.9
Teacher report	74.1	8.8	17.1	67.9	12.4	19.7
Conduct problems						
Parent report	36.3	15.0	48.7	49.2	15.6	35.2
Teacher report	47.4	16.7	35.9	50.0	20.5	29.1
Hyperactivity						
Parent report	61.7	14.7	23.6	78.1	8.6	13.3
Teacher report	68.5	13.9	17.5	81.2	10.7	8.1
Peer problems						
Parent report	44.8	15.9	39.2	47.2	16.6	36.2
Teacher report	54.2	24.3	21.5	55.6	23.1	21.4
Pro Social Scale						
Parent report	78.2	9.7	12.1	81.4	6.6	12.0
Teacher report	65.0	14.3	24.7	70.9	9.8	18.8

boys were rated as hyperactive. This finding is consistent with literature that also suggests a difference in prevalence of specific disorders depending on the informant. Teachers identified more classroom related problems like conduct and hyperactivity, whereas more parents rated their child as having emotional difficulties. This difference could have resulted from a difference in the perspective of teachers and parents (mothers mostly in this case). Where teachers typically are mostly focused on discipline and academic issues, parents may take a more empathic view of the situation and see the disturbance in behavior as a result of an emotional problem. The present study research, however, was not designed to gather this specific information. Mothers in our culture just as every where else may be reporting less hyperactivity and conduct.¹¹

Teachers are found to have been able to provide valuable predictive information on externalizing behaviors.¹² This may be helpful in identifying subsets of problems such as conduct, hyperactivity and peer problems using SDQ in a school setting but may not be so in case of internalizing problems such as depression. In assessing children for mental health problems, it is more useful to have a multi informant perspective to get a more clear and unbiased picture than only relying on single informant alone.

Limitations of the study

- The sampling unit for the present study was schools, which was most feasible method of recruiting and assessing children in Pakistan therefore the generalizability of findings of this study is limited only to school attending children.
- Most parents in private schools were able to fill out the questionnaires, however parents in community

schools were assisted by the researcher in filling out the forms this could have resulted in reporting bias.

- The low response rate of the study could be due to the stigma, low literacy levels and a lack of research culture hence low motivation for participation among the general population.
- A major drawback of the study is the use of screening tools as a measure to determine prevalence as opposed to a diagnostic interview and therefore resulting in higher prevalence rates.

CONCLUSION

This exploratory study suggests that there was gender difference in prevalence; boys had higher estimates of behavior/externalizing problems, whereas, emotional problems were more common amongst females. There was also a difference in the rating between teachers and parents regarding conduct disorder and hyperactivity subsets. Males may have been more easily picked up for any of the externalizing disorders and thus get help they require, however, girls suffering from internalized problems may have been under diagnosed at schools and get neglected when it comes to intervention. This suggests a multi-informant assessment so that a complete picture could be obtained.

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Prevalence of Emotional and Behavioral Problems Among Primary School Children in Karachi

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Contributions: Dr Ehsan Ullah Syed was the co investigator along with the 2nd author and participated in planning, execution and conduct study, data analysis, writing the manuscript and editing further drafts including final draft. Sajid Abdul Hussien was the principal investigator of this part of the study and she played the major role in planning, conducting the study and analyzing the data. She also wrote the first draft of the manuscript. Sana e Zehra Haidry participated in actual survey, data collection and coordinated between the investigators and one of the funding agency i.e., Sindh Education Foundation. She also contributed to writing the 1st draft of the manuscript.

Conflicts of Interest: Nil

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URDU TRANSLATION AND CULTURAL ADAPTATION OF SCHEDULE FOR AFFECTIVE DISORDERS & SCHIZOPHRENIA FOR SCHOOL AGE CHILDREN (6-18 YRS) K-SADS-IV R

Sajida Abdul Hussein, Panos Vostanis

ABSTRACT

Objective: The main objective of the study was the urdu translation and cultural adaptation of Schedule for Affective Disorders & Schizophrenia for School Age Children (6-18 yrs) K-SADS-IV R.

Design: Descriptive study.

Place and duration of study: The study was carried out in Karachi, Pakistan from January 2006 to July 2007.

Subjects and Methods: The translation panel consisted of nine members from variety of backgrounds. All member had experience working with children and were fluent in both languages (original and target). The 'Multiple-forward translation' process was applied.

Results: A number of items were reworded and rephrased to meet the cultural, social and religious values of the Pakistani society.

Conclusion: The translation and adaptation of the K-SADS-PIV-R-U represents an advance in the process of identifying children with mental health problems in Pakistan. However there is a need to conduct further clinical validation studies to establish the reliability and validity of this tool in Pakistan.

Key words: Child psychiatry, Diagnostic tool, Pakistan.

INTRODUCTION

In recent years interest in the problems of translation and cross-cultural adaptation of health and service outcome measures has grown considerably. Often mental health measurements and psychological tests have been developed for content, validity and reliability in one country or language exclusively. Some of these instruments are then used in different languages and cultural settings, but often without detailed attention to the cross-national and cross-cultural adaptation that is necessary¹, while the ideal solution is to develop indigenous instruments and establish their psychometric properties

in the local population, this is not always possible because of lack of resources and expertise. Furthermore, most health constructs are universal and can be applied to diverse populations after cultural adaptation. Therefore it is often more feasible to use tried and tested instruments after appropriate adaptation². Literature points out that before any research instruments can be used with populations beyond that of their original purpose, source documents should be adapted for language and cultural appropriateness³.

In Pakistan the lack of instruments limits researchers to two alternatives: developing a new instrument or translating, adapting and validating an existing one. The first option has the disadvantages of high cost, prolonged research time and above all, limitations in terms of comparisons with data from other parts of the world. Thus, the second alternative is more economic, efficient and practical.

Health research in Pakistan often requires questionnaires in English language developed in the West to be translated into the local language. Many of the factors measured by these questionnaires are complex and

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31

apply to a different culture. Simple translations may lead to problems of validity and reliability in the Pakistani setting⁶.

A recent systematic review of psychiatric ratings scales in Urdu (official language of Pakistan) identified only nineteen questionnaires. Six of these questionnaires were developed indigenously in Urdu while thirteen were translated from English. All the tools were for adult populations with the exception of the Strength and Difficulties Questionnaire (SDQ), designed to screen emotional and behavioural problems in children which has been translated and validated in Pakistan⁶.

Therefore there is a need in Pakistan to translate and adapt instruments according to the culture. Cultural adaptation of research instruments aims to achieve, as far as possible, research tools that are 'culture-free' or culturally equivalent. An instrument can be considered culturally equivalent when all forms of biases, or social norms specific to the culture of origin, have been removed⁶.

The process of translation and adaptation can be broken down into three steps: (a) the translation process; (b) cross-cultural verification and adaptation; and (c) verifying the psychometric properties of the instrument in the target population⁶. The first two steps of the process will be considered in this paper, which will describe the development of a translation protocol, and the cultural adaptation process. The third step i.e. verifying the psychometric properties of the instrument will not be addressed in this paper.

Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children

The Kiddie Schedule of Affective Disorders & Schizophrenia for School-Age Children (6-18 years) (K-SADS-P[®]) was updated by Ambrosini and Dixon⁶ to its current version (K-SADS-P-IV[®]), which is compatible with the DSM-IV. The research diagnostic criteria (RDC) were used to reach a diagnosis of those syndromes covered both in the research diagnostic criteria⁷ and the *Diagnoses and Statistical Manual 4th version (DSM-IV)*⁸. The K-SADS-IV[®] has six major sections: Major Depression, Mania, Eating Disorders, Anxiety Disorders, Behavioral Disorders and Psychoses. The major changes in this current edition are that diagnoses have been updated to include Generalized Anxiety Disorder which is new to the DSM-V for children and adolescence. In addition, Post Traumatic Stress Disorder (PTSD) also has been added and the 24-item Hamilton Depression Rating Scale (HAM-D) has been included in this edition of the K-SADS. DSM-III symptoms were eliminated which were no longer required by DSM-III-R or DSM-IV⁸. The K-SADS has been translated and its reliability and validity for child and adolescent psychiatric diagnosis has been established in a number of countries including Israel, Greece, Korea, Iran and Spain^{9,10}.

SUBJECTS AND METHODS

Urdu translation of (K-SADS-P-IV[®])

• Standard linguistic validation process

The first step involved a conceptual analysis of the original instrument in collaboration with the author of K-SADS-P-IV[®] to define the notions investigated through each item. The authors were in regular communication with Professor Ambrosini via emails who was able to offer guidance and advice throughout the linguistic validation process.

• Recruitment and briefing of a panel of experts to assist in translation process

Translation panel members were recruited from different professional backgrounds. As the panel had to assess the translated instruments for use with children in Pakistan it was vital to ensure the panel members had experience. The selected translation panel consisted of nine members from variety of backgrounds; including a psychiatrist and researcher with experience of child psychiatry, a psychologist, paediatrician, GP, social worker, school counsellor, English and Urdu language experts as well as an Islamic scholar.

• Translation process

The aim of a linguistic validation process is to obtain a translation of an original instrument in a target language that is both conceptually equivalent to the original and easily understood by the people to whom the translated questionnaire is administered. The translation and cultural adaptation of instruments is an internationally recognized method¹¹. Translation consists of obtaining a version that is semantically equivalent to the original. Cross-cultural adaptation is necessary when the instrument is intended for use on a target population that is culturally different from that of the original version. In the present study, the translators had sufficient experience and were fluent in both languages (original and target), as well as had the cultural understanding of mental distress and disorder essential for appropriate cultural adaption of a tool¹¹.

There are many different methods for linguistic validation of a tool. 'Back translation' method appears to be the most commonly used method of translation¹²; however this procedure that can very costly and time consuming especially for more detailed instruments like the K-SADS. An alternative to the use of back-translation includes 'Multiple-forward translation'¹³.

This is when two or more translators both translate the instrument from the original language to the new language, and the versions of the instrument in the new language are then compared. For this present study the 'Multiple-forward translation' process was applied. Each section was translated by two members; the researcher then compared the two and compiled the most suitably translated and culturally accepted items. Once

all the three sections of K-SADS-P-N-R i.e. affective disorder, emotional disorders and behavioural disorders were completed and most suitable translation for each item were compiled, the researcher mailed the translated instruments to the panel members to rate the appropriateness of the translation on a three point rating scale (disagree, needs amendment, agree). Each panel member was expected to rate the appropriateness of the translation on two basic guidelines, firstly, does this translation represent the idea that is conveyed by the original statement in English. Secondly, does that translated item reflect the cultural equivalence rather than linguistic equivalence¹⁸.

Those items that failed to achieve consensus in translation were amended and reworded/phrased based on unanimous decision of the panel members. Proof-reading of the translated Urdu version was carried out by two independent consultants who were not part of the original translation process. Once again the researcher compared the suggestions put forward by the independent proof reader and incorporated the results into the final draft. A review of the final draft of translated Urdu K-SADS was done by a child psychiatrist from Pak-

istan practicing in the UK, with excellent command over both English and Urdu. Suggestions put forward by the reviewer were incorporated into the final version of K-SADS Urdu.

RESULTS

Cultural adaptation of K-SADS items

- Translation included changing some of the items to make them consistent with the children's community and their cultural/ religious background. The changes were derived from the environmental surroundings of Pakistani children in Karachi. The various provinces of Pakistan have a hugely diverse culture, and adaptations made to an instrument cannot be easily generalized to all regions within the country. A major challenge was to ensure literal and conceptual equivalence of idioms and cultural symbols, as each can contribute to the latent meanings within any communication. For example, 'feeling blue' or 'butterflies in the stomach' required alternative conceptually equivalent terms. A table indicating all the major adaptations made is presented below.

K-SADS items and a list of the adaptation made in Urdu version.

Disorders	Item	Changes made
Genital SXS: Loss Of Libido/ Dating	How has your interest in boys/girls (sex) been this past week? I'm not asking about dating (performance) but about your interest in boys/girls (sex) — how much do you think about it? Has there been any change in your interest in boys/girls (sex) from when you were not depressed?	Items related to sexual activities were re-phrased in order to avoid offending.
Anhedonia/Loss Of Interest	Are you less sexually interested than you used to be [in adolescents]?	
Anhedonia/Loss Of Pleasure	[For adolescents] Do you enjoy sex as much as you used to?	
Poor Judgment	At that time, did you do anything sexual that you usually don't do? What happened?	
Unusually Energetic/ More Active	What about in school, in your club, sports or gang, church, at home, with friends, hobbies, new projects or interests?	Items referring to the child's social activities added places such as mosque, Imambargah, and Jamatkhana apart from churches, to cater to children of all major religious backgrounds.
Sleep Problems	Do you sleep alone or with your parents?	Keeping in view the socioeconomic and poor housing, this item was scored in view of the family's living condition.

Non-confrontational Stealing	Often persistently stealing over \$10 per week, or something valuable once during present episode. Has stolen very valuable object (over \$50).	Items were converted to Pakistani rupees in order to understand the worth of items stolen.
Vandalism	Often vandalizes or at least once damage was over \$100.00. Most of time will vandalize when the opportunity is there, or at least once damage over \$500.00.	Items were converted to Pakistani rupees in order to understand the worth of items destroyed
Substance Abuse/ Dependence	Were you ever addicted to alcohol or drugs?	For substance abuse, specific mention was made regarding the most common drugs in Pakistan.

DISCUSSION

To our knowledge this is the first study that has translated and culturally adapted a diagnostic interview for children and adolescents in Pakistan. The main concern in this process was to ensure semantic, conceptual and technical equivalence between the versions of the instrument²⁹. This study demonstrated the need for cultural adaption of items to ensure appropriate outcomes. One of the major difficulty also noted in other studies included the translation of local idioms such as 'blues' and 'feeling on guard'³⁰. Also specific to Pakistani culture it was essential that the items be worded in a manner that is applicable to all in the society. Pakistan is predominantly a Muslim country and most of the people practice Islam. It was therefore important to respect these religious values and for this reason an Islamic scholar was added to the panel. The scholar reviewed all the items mainly those dealing with issues of sexual relationship and drug and alcohol use and provided suggestions to ensure that religious values have been considered.

Another important factor was related to the household environment of Pakistani families; particularly those living in poverty. Pakistan has the highest growth rate of population world wide; the number of people increased eight-fold within a century. The Asian Development Bank (ADB) reports that more than 12 million people were added to the ranks of the poor in Pakistan between 1993 and 1999³¹. Poverty has a direct effect on the housing conditions of people; with people of low social economic class living in poor housing conditions, on average in Pakistan more than four persons occupy one room in poor households³². Some items in the interview were related to the home environment and issues of housing such as number of occupants and space, as such these items were phrased and rated within the cultural context.

Although this study is first of its kind and is an important contribution to child psychiatric research in Pakistan, it has some limitations. While a panel of expert was employed to ensure that the face and content validity of the instrument during the translation process was

maintained, there are other methods that can further strengthen the process such as, pilot studies and consultation with community agencies and in particular focus groups with young people and their carers to see which items were culturally inappropriate and needed modification. Our study did not employ such techniques mainly due to lack of resources. Another important limitation is the lack of any Pre-Testing, using either the Probe Technique or the Bilingual method.

Also the current study aimed to translate and adapt the instrument and did not establish reliability and validity of the instrument. If the K-SADS-P/IVR-U has to be used for diagnostic and research purpose in Pakistan it is essential that future studies are conducted to establish its reliability and validity among Pakistani children.

CONCLUSION

The translation and adaptation of the K-SADS-P/IVR-U represents a major advance in the process of identifying children with mental health problems in Pakistan. However there is a need to conduct further studies to establish the reliability and validity in Pakistan. The use of a diagnostic tool that has been standardized and translated in different countries will facilitate cross-cultural collaboration and comparison of diverse populations of children.

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