LOW BACK PAIN: A REVIEW OF SOCIAL SECURITY DATA; GP, PUBLIC AND PATIENT BELIEFS IN JERSEY

Thesis submitted for the degree of

Doctor of Philosophy

at the University of Leicester

by

Julia Morris MSc (Glasgow)

Department of Health Sciences

University of Leicester

June 2010

ABSTRACT

This research aimed to investigate the attitudes and beliefs of Jersey's general population, GPs and patients towards LBP and its management. Trends of sickness certification for LBP for the entire registered working population of Jersey were also investigated. From 1994 to 2003 Incapacity Benefit costs rose sharply (153.4% Long-term Incapacity Benefits (LTI); 76.99% Short-term Incapacity Benefits (STI) and are discussed in relation to changes seen in certification for LBP and other symptom dominated conditions.

Investigation of the working population's attitudes and beliefs revealed that educational attainment was the best single predictor of beliefs about LBP held by those currently suffering with the condition; with those reporting the lowest educational attainment also reporting the most negative beliefs.

The internal consistency and test-retest reliability of the Pain Attitudes and Beliefs Scale (PABS) when used with GPs was examined. The measure was found to have adequate internal consistency, test-retest reliability and sensitivity to change. It was subsequently used alongside sickness certification data to determine if GP attitudes and beliefs about LBP influenced their decisions with regard to sick listing LBP patients. Neither PABS factor was able to add to the prediction of numbers of certificates issued; however general propensity to issue sickness certificates did.

When combining patient and GP factors a clear interaction was found in relation to prediction of sick-listing for LBP. For the patient, previous absenting with LBP was a risk for future sickness certification; as was high fear avoidance of work. The biopsychosocial orientation of GPs also added to our prediction model and appeared to reduce the likelihood of sick-listing. These findings have implications for current clinical management of LBP.

Finally, changes in trends of sickness certification are discussed in relation to both the research work conducted as well as specific service provision changes implemented.

ACKNOWLEDGEMENTS

I would like to thank Chris Sanderson and Dr Gari Purcell-Jones from the States of Jersey Health & Social Services Department for their support throughout the PhD. I would also like to thank Dr Duncan Gibaut and Sarah Davis of the States of Jersey Statistics Unit for allowing us to use the JASS to conduct our population study. I am grateful to Peter Baker and Tom Gales of the States of Jersey Employment and Social Security Department for their help with the social security data.

I would also like to thank all the GPs, patients and members of the public who agreed to take part in the different aspects of the research, without whom the work would not have been possible.

I am extremely grateful to Professor Paul Watson, University of Leicester for his help, support and expert guidance throughout.

To my family and friends and especially my husband Stephen, I would like to say a big thank you for all your love and patience.

Finally, I would like to dedicate this Thesis to my mum Catherine Anne Bowey, who has unwavering belief in me and without whose encouragement and love I would not have thought it possible to embark on this journey; thank you.

CONTENTS

CHAPTERS

TABLES

FIGURES

APPENDICES

CHAPTER 1 – THE PROBLEM OF LOW BACK PAIN

Back pain is one of the most frequently reported conditions affecting the population (Bressler et al., 1999). Over the past 30 years or so interest in the condition of LBP, particularly within westernised countries, has increased and the term "epidemic of low back pain" has been used to describe the current problem faced by health and social care sectors. The term "epidemic" would suggest that there has been a dramatic rise in the number of people within the population suffering with LBP. Numerous epidemiological studies have been conducted in order to attempt to determine if this is the case (Deyo et al., 2006, Linton and Ryberg, 2000, Lawrence et al., 1998, Papageorgiou et al., 1995, Leino et al., 1994, Linton et al., 1998). Different international studies seemed to provide conflicting views as to whether or not there was any potential trend of changes in the prevalence of low back symptoms (Leboeuf-Yde and Lauritsen, 1995, Leino et al., 1994, Palmer et al., 2000). However, it is now generally accepted that the variability in terms of estimates is most likely attributable to the differential selection of subjects between the studies or the exact wording of the questions contained within them, rather than to any specific differences in trends across populations or across time (Waddell et al., 2002). An excellent example of this is the finding of relatively stable prevalence rates across a five year time span within Great Britain's population when asked exactly the same questions over subsequent years (Waddell et al., 2002, DoH, 1999).

From an epidemiological perspective the importance of LBP as a condition rests more in the potential impact that it has on an individual's life, and thus on

society, rather than its population prevalence. Research interest in the condition of LBP is most often related to its cost and more specifically its cost to industry and society (Walker, 2000) through its impact on individuals' work ability; "By the end of the twentieth century, non-specific low back pain (NSLBP) disabled more people in western society than all serious spinal diseases put together" (Waddell, 2004)(pg 1)). LBP remains one of the most common reasons for work loss, healthcare use and sickness benefit payment in Western societies (Waddell, 2004). Compensated work loss, through sickness and invalidity benefit payments for LBP has risen dramatically since the mid 1950s (Waddell et al., 2002); with no discernable related change in prevalence rates or rates of physician consultations (Deyo et al., 2006, Lawrence et al., 2008).

It is suggested that there has been a public shift in attitudes and behaviour relating to symptom dominated conditions and work (Waddell, 2004); but this has not, to date, been fully quantified and is therefore a specific area for potential research interest given the resultant impact that LBP as a condition has had on work status. Future work aimed at quantifying this potential shift may be limited by a lack of comparable retrospective data or limited by narrow fields of research interest, i.e. only focusing on one specific population group (e.g. factory workers (Symonds et al., 1996). In order to identify any real shift in public attitudes, investigation of a range of attitudes held across different social groups may provide more robust evidence and form appropriate baseline measurements for future assessments of change.

Potential reasons for the statistical trend of increasing compensated incapacity have been investigated and current healthcare management of the condition has been suggested as a possible contributing mechanism (Rainville et al., 2000, Indahl et al., 1995). Traditionally, healthcare management has been biomedical in nature with limited appreciation for the psychosocial nature of many symptom dominated conditions (Main and Watson, 1999). Subsequent treatments directed at symptoms alone have rarely produce rehabilitative results (Waddell and Burton, 2005). Treatment of patients who present at healthcare is often empiric and related to high failure rates (Waddell, 2004); the patient's initial presenting problem is often compounded by conflicting advice and variability in treatments offered (iatrogenic factors) resulting in poor outcomes.

Published reviews and management guidelines for LBP (van Tulder et al., 2006, Burton and Waddell, 1998, Koes et al., 2001) have failed to encourage consistent management throughout healthcare settings and particularly in primary care (Dey et al., 2004, Schers et al., 2001, Gonzalez-Urzelai et al., 2003). The clinical management of LBP by General Practitioners (GPs) is of particular interest when considering sickness and invalidity benefit payments as GPs act in many social security systems as "gatekeepers" for social insurance benefits(Hussey et al., 2004, Ford et al., 2000, Sawney, 2002). Thus investigation of the impact of the condition of LBP requires the analysis of numerous factors, including social attitudes; medical management practices as well as social trends in incapacity benefit payments and would need to specifically include analysis of the role of the GP.

If the purpose of such investigations is to determine more appropriate health and social care mechanisms with which to manage the condition, it is imperative that the specific local context is taken into account , rather than making assumptions merely from data collected elsewhere (Waddell and Aylward, 2005). This has been shown to be true even in terms of incidence and prevalence rates, where differences exist between countries even in Europe and probably relate to a myriad of specific differences in social and cultural attitudes, social support systems and access to and type of healthcare provision available (Waddell et al., 2002). The management of non-specific LBP remains a major consumer of health care resources in most developed countries and these costs are dwarfed by the costs associated with work absence, wage replacement and other social benefits associated with inability to work (Maniadakis and Gray, 2000, Aylward, 2004). Within certain European countries this rising trend of incapacity benefit payment for LBP may have peaked and indeed may even have started to level off (Waddell, 2004, Waddell et al., 2002). However, less is known about earlier stages of sickness absence due to differences in compensation schemes, the comprehensiveness of their cover and/or the generalisability in terms of their entitlement. Therefore investigations need to relate to specific local contexts and would benefit from analysis of early stage work absence rates, mechanisms and trends.

For over thirty years, researchers have been interested in the influence that attitudes and beliefs have on health behaviour. Within the field of LBP research, the influence that patients' attitudes and beliefs have on the presentation, course and outcome of their condition has received significant

attention. Psychosocial factors which affect patient behaviour have been suggested to exert a significant influence over low back disability and work loss (Symonds et al., 1996). Indeed, it has been suggested that attitudes and beliefs have the greatest influence over the outcome of low back pain conditions, irrespective of the severity of symptoms or any underlying physical pathology (Waddell, 2004).

Many personal, social and cultural factors will influence the development and maintenance of individuals' beliefs about health and illness. Factors which have been shown to exert some influence over the beliefs of patients with LBP include cultural background (Goubert et al., 2004) and socio-economic status (Dionne et al., 2001). Individual's beliefs can in turn influence their subsequent health behaviours (Peebles and Moore, 2000). In order to further explore the development of patients' attitudes and beliefs about LBP interest has more recently shifted towards the interaction between the patient and their health care provider (HCP) (Rainville et al., 1995). This interaction is seen as a potential source of reinforcement of, or contest for, inappropriate or negative attitudes and beliefs held by patients about the cause and likely course of their low back trouble (Waddell, 2004). As a result, the consultation can result in conflict, if either party disagrees with assessment findings or management suggestions, or HCP collusion, where GPs do not challenge inappropriate conceptual frameworks for LBP held by patients in order to avoid conflict. This process is seen as a potential source of on-going inappropriate beliefs maintained by patients (Chew-Graham and May, 1999) and a potential determinant of subsequent patient outcomes.

The evidence for the psychosocial nature of predictors of work absence from this condition is considerable (Main et al., 2005) and attention has focused on the influence of fear avoidance beliefs (Vlaeyen and Linton, 2006). The fear avoidance model of non-specific LBP disability suggests that people who perceive that back pain is harmful and that physical activity (including work) is to be avoided during episodes of back pain are more likely to become disabled or absent from work than those who do not (Vlaeyen and Linton, 2000). Thus determining potential fear avoidance beliefs of any given population could be seen to be a prerequisite of any potential long term intervention aimed at improving LBP management outcomes. As previously suggested, it is perhaps more prudent to take a wide ranging view of attitudes and beliefs held across a variety of settings, looking at both patient as well as HCP attitudes; but also the general public's views, if the overall impact of local attitudes and beliefs on local compensated disability trends are to be determined.

Patients have to seek the assistance of HCPs, most commonly GPs or Occupational Physicians, to have extended work loss sanctioned. The period of self-certification allowance varies from jurisdiction to jurisdiction but within the UK this is five days (Sawney, 2002) and reduces to two days in Jersey (Watson et al., 1998) (with social security compensation payable from a minimum of two days absence – see Chapter 2). Following this, any social insurance compensation for continued work absence requires assessment and sanctioning from a HCP. The attitudes and beliefs of these professionals are therefore of interest to researchers investigating the disability process, particularly in light of evidence which suggests that the day someone stops

work because of back pain they have a 1-10% chance of still being off work one year later (Waddell, 2004). Indeed, researchers have suggested that sickness certification in primary care is the starting point on a route to long term incapacity (Shiels et al., 2004). From a social and financial perspective it has also been suggested that sickness certification is possibly the single activity carried out in primary care that generates the greatest cost (Tellnes, 1989).

Investigating the attitudes and beliefs of HCPs in relation to LBP management has been a current research trend. Researchers have sought to determine the degree to which HCPs attitudes and beliefs regarding LBP may influence their subsequent treatment behaviours, including specific advice given to patients regarding activity and work (Houben et al., 2004, Houben et al., 2005b, Ostelo et al., 2003b, Rainville et al., 2000) and thus perpetuate chronic disability for this symptom dominated condition. Measures to assess the attitudes, beliefs and treatment orientations of different clinicians have been devised and tested over the last decade or so.

Preliminary evidence would suggest that HCPs with more fear avoidant or biomedical orientations may be more restrictive in their recommendations to their patients with regard to guideline advice (Houben et al., 2004, Ostelo et al., 2003b, Houben et al., 2005b) and therefore contribute to the process of disability; the generalisability of these results however, is limited, as the studies relied on an assessment of clinician behaviour by proxy, i.e. the use of case vignettes. Rainville and colleagues note (Rainville et al., 2000), that without comparison of recommendations on vignettes with those of real patients, validity

cannot truly be determined (Jones et al., 1990). It is recognised that HCPs have their own sets of beliefs and attitudes towards the conditions they treat (Rainville et al., 1995). They will also have their own perspective on what treatments are immediately available to them and how valid these treatments are. This may bear some relationship to their training, both in terms of how long ago they trained but also their specific professional specialty (Houben et al., 2005a). It may also be related to other factors such as gender (Englund and Svardsudd, 2000, Brage and Reiso, 1999); or personal experience of LBP symptoms (Haldorsen et al., 1996).

Rainville et al (1995) suggest that HCPs attitudes and beliefs about pain and function are probably expressed in many ways and may include their explicit recommendations to patients on a variety of subjects, including the role of medications, injections, or surgical procedures. It is also likely to be expressed implicitly in the value they place on different outcomes i.e. pain relief or return to function; or the range and type of investigations they may order. This was demonstrated in a study which looked at the amount of instruction given regarding exercise as a treatment (Kerssens et al, 1999). The more exercise orientated the therapist, the more instructions they gave, suggesting that they reinforced their beliefs with the patient in a direct and active way.

In addition, HCPs' attitudes and beliefs about LBP will influence their views on the likely prognosis for the condition. This again may have a subsequent influence on the recommendations they make to patients about activity (Ostelo et al., 2003b). Ostelo et al (2003) suggest that the pain attitudes and beliefs of

patients may be strengthened by that of their HCPs, or that they may in fact seek out HCPs with attitudes and beliefs similar to their own, suggesting that healthcare is in some ways a self fulfilling prophecy.

Previous studies have demonstrated that HCP's recommendations to patients regarding rest or activity can have a significant influence on the clinical outcome (Rozenberg et al., 2004, Waddell et al., 1997). This is reflected in several of the available guidelines produced over the last 16 years to assist HCPs in the management of non-specific low back pain (Abenhaim et al., 2000, CSAG, 1994, RCGP, 1996, van Tulder et al., 2006).

Advice given to patients with low back pain regarding function and activity can vary enormously (Rainville et al., 1995). Despite the numerous guidelines encouraging "advice to stay active" and "maintain normal roles", HCPs' advice to patients remains variable (Gonzalez-Urzelai et al., 2003, Dey et al., 2004). There is some evidence that appropriate guideline advice has a positive impact on decreasing disability levels in patients with low back pain in randomised controlled trials (Indahl et al, 1995). Conversely, patients advised to avoid activities (bed rest) and prescribed narcotic analgesics faired less well, with a 50% greater frequency of reports of moderate to severe activity limitations (VonKorff et al, 1994). Thus reinforcing the view that identification of HCP attitudes and determining their relationship to actual clinical practice, particularly practice intrinsically related to the disability process, is an absolute necessity in determining the specific driving factors and influences on any compensated work loss trends associated with the condition of LBP.

Consequently, the aim of this research was to investigate the attitudes and beliefs held towards LBP and its management within our local context, the necessity for which has been highlighted in Dame Carol Black's "Working for a healthier tomorrow" report (Black, 2008). In order to provide a backdrop for our investigations, we also sought to determine trends of sickness certification for LBP for the entire registered working population of Jersey both prior to our investigations as well as during them. By looking at beliefs held across a broad cross section of our society, including the working age population, our GPs as well as patients presenting to primary care with episodes of LBP, we would wish to inform how LBP should be managed. Any potential effect of training of GPs in relation to biopsychosocial principles and LBP evidence based guidelines, as well as changes in healthcare provision for the condition, are then evaluated within this context.

CHAPTER 2 – THE JERSEY CONTEXT

This chapter provides the socioeconomic and health and social services context for Jersey within which the research was conducted. It highlights previous research findings which suggest comparability between Jersey and the UK in relation to sickness absence (Watson et al., 2008); but simultaneously describes specific differences within the benefit and healthcare systems within the Island which provide novel opportunities for research into the societal costs of sickness absence.

The population

Jersey has an estimated population (December 2007) of nearly 91,000 (SJSU, 2009a); current estimates of population and demographic information are gained annually from, amongst other publications, the Jersey Annual Social Survey (JASS), the Labour Market Report and the Population Update Report, all produced by the States of Jersey Statistics Unit (SJSU).

The Economy and the Labour Market

Jersey is described as being "the second wealthiest country in Europe measured in terms of per capita Gross Domestic Product (GDP)", in research conducted in 2005 (Hart and Walker, 2005). This is due, in part, to Jersey's lack of national debt (SJSSC, 1995), but also to the relatively high proportion of economically active adults. The economic activity rate in Jersey has gradually increased since 2001 mostly due to the increase in female economic activity from 76% (SJSU, 2002) to 82% (SJSU, 2009b). Inactivity rates for Jersey and

the UK differ significantly for the end of 2009 with the UK recording 21.3% total economic inactivity and Jersey only 14% (ONS, 2010, SJSU, 2009b).

Unemployment in Jersey is low in comparison to other European countries, with the average European being more than three times as likely to experience unemployment as a Jersey resident in 2005 (Hart and Walker, 2005). There is no statutory requirement for all unemployed residents in Jersey to register as actively seeking work with the Employment and Social Security Department (ESSD). Therefore, the number of people registered as unemployed should be regarded as an indicator rather than a measure of the actual level of unemployment in the Island (Gibaut, 2009b). The number registered as unemployed in Jersey in June 2009 was 960. Prior to the introduction of Income Support (IS) (January 2008) and a "jobseeker" component of this non-contributory benefit, there was no unemployment benefit in Jersey.

A more widely comparable measure of unemployment from the International Labour Organisation (ILO) is the proportion of unemployed people in comparison to all those who are economically active (SJSU, 2009c). Table 1 shows the ILO unemployment rates for Jersey and the UK covering the last 5 years. In Jersey in 2009 the ILO unemployment rate was 2.7% (SJSU, 2009b) and as it remains under 3% could be described as representing virtual full employment in real terms (Watson et al., 1998).

Table 1. Employment figures Jersey : UK

	2005	2006	2007	2008	2009
ILO unemployment rate UK	4.7	5.5	5.4	5.7	7.9
ILO unemployment rate Jersey	2.2	2.3	1.4	2.3	2.7

The financial services sector (banking, trust and company administration, fund management, accountancy and legal activities) accounts for more than half of the total economic activity in Jersey (53% of Gross Value Added) (Gibaut, 2009a); and employs about a quarter of the workforce.

Social Security & Primary Care in Jersey

Social Security and healthcare systems in Jersey differ from the UK and Europe in a number of key ways (SJSSC, 1995, Watson et al., 1998) and have been subject to considerable change in recent years. Both Jersey and the UK spend proportionate amounts of their government expenditure on Health & Social Services and Social Security (Jersey 50% (Gibaut, 2008): UK 49% (HMTreasury, 2008)), however, in comparison to the European average, Jersey spends a noticeably higher amount of its social security expenditure on sickness and healthcare (37% Jersey : 28% EU-15 average (Hart and Walker, 2005)). This is likely to be due, in part, to the fact that General Medical Practice in Jersey is a private enterprise (SJSSC, 1995) subsidised by the Health Insurance Scheme (HIS); but also because Jersey has its own general hospital, which has been described as being “an expensive asset” for what is effectively a small community (Hart and Walker, 2005). The States of Jersey have no contract with GPs, who operate individual business practices or partnerships; this has always been the case even after the introduction of the NHS in the UK.

The social security programme in Jersey is based on the Beveridge system set up in the UK (SJSSC, 1995, Waddell and Aylward, 2005). The system is a contributory social insurance scheme which has developed to meet the specific needs of the Island over the years (SJSSC, 1995). Contributions are due from everybody resident in Jersey between the ages of 16 and 65 who work for more than eight hours per week (supplementation is available to those in full-time education up to the age of 18 only and a person over 60 who is not working can opt out of paying contributions, but this effects their entitlement). Entitlement is based on an individual's contribution record (employee, employer) and supplemented from general taxation. It provides a "flat rate" of benefit and is not based on earnings; it is comprehensive, providing "minimum rights for many" and means tested benefit for the minority only. The benefits it provides are intended to replace earnings when interrupted for specific reasons such as whilst pregnant, sick, disabled, widowed or retired (SJSSC, 1995).

Through the HIS a contribution is currently being made towards the combined cost of treatment from a General Practitioner (GP) and any prescribed drugs (SJSSC, 1995). The HIS is not a contributory insurance scheme. A proportion of the contributions paid to the ESSD by employees/employers (currently 2%) are paid into this fund, which is further supplemented from general taxation revenues. The entitlement to the subsidised benefit is not based on contributions either specifically or absolutely (SJSSC, 1995), currently the only absolute requirement for entitlement being residence for greater than 6 months. Workers who meet the thresholds for contribution payments and who pay into the scheme are, to a degree, subsidising all who meet the residence entitlement

criteria irrespective of whether they contribute or not. The Employment and Social Security Committee currently have few controls in the system over general practitioner consultation fees, treatment, governance or drug prescriptions (SJSSC, 1995). Registration with the same requires only that the individual has completed the appropriate Regulations of Undertakings legal business requirements, is a doctor who has undergone "vocational training" and subsequently is granted the "mandatory" approval from the ESSD. There is no mechanism for deregistering clinicians or disciplining them other than the Health Services Disciplinary Tribunal which relies on UK governing bodies for guidance and is described as being "cumbersome, expensive and very formal" (SJSSC, 1995)(pg 147). In terms of management for conditions such as LBP, despite the original research in 1996 (Watson et al., 1998), little in the way of joined up service provision for the management of LBP existed prior to the commencement of this research project.

There are currently 98 general practitioners in practice with an Island resident population of 91,000 giving a doctor:patient ratio of approximately 929 patients to every GP the UK figures are on average nearly double this, except in some rural areas (particularly Scotland) where the figures are comparable (www.parliament.uk, 2008).

As previously mentioned, self-certification for sickness from work is only possible for up to two working days in Jersey, unlike the UK five days. Additionally, there is no statutory sick pay (SSP), all sick pay is through the Social Security Fund at a flat rate with enhancement for dependants (Watson et

al., 1998) and requires certification from a registered medical practitioner. The Jersey Social Security database therefore has records of all compensated sickness of equal to or greater than two days duration for all registered workers – thus providing one of the most comprehensive databases on short term incapacity in the world (Waddell, 2004).

Despite the inherent differences between Jersey and the UK in terms of employment rates and health and social security provision, rates of absence from work for LBP were found to be comparable from 1994 data (Watson et al., 1998); but perhaps most strikingly from this original research was the finding that despite the fact that only 3% of claimants were still claiming after 6 months, they accounted for nearly 33% of all short term incapacity benefit costs. This finding, combined with planned changes to the social security benefit system and provision of care from health and social services to manage LBP provided the rationale for the current research.

CHAPTER 3 – TRENDS IN SICKNESS CERTIFICATION (1994 – 2003)

This chapter provides an historical trend analysis of sickness certification within Jersey thus providing baseline assessment of trends against which interventions aimed at addressing societal costs may subsequently be evaluated. The timing of the trend analysis was chosen to link in with previous local research findings (Watson et al., 1998) and the issuing of new guideline advice for the management of LBP within the UK (AHCPR, 1994, CSAG, 1994).

INTRODUCTION

There is little convincing evidence for a general increase in the prevalence of LBP across populations, despite ongoing debate about this phenomena (Deyo et al., 2006, Waddell et al., 2002). Conversely, there is consistent evidence for the rising costs attributable to the condition of LBP and in particular for compensated working days lost (Waddell et al., 2002, Waddell and Aylward, 2005, Buchbinder and Jolley, 2004, Hashemi et al., 1998).

Watson and colleagues (Watson et al., 1998) highlighted the problem of finding accurate, generalisable data on working days lost to LBP for the UK, particularly in relation to short term incapacity. National data is available from Incapacity Benefit (IB) payments but this is not payable for the first 28 weeks of incapacity and most often is reported in terms of the benefits paid rather than numbers incapacitated for work (Watson et al., 1998). Industry specific figures are inevitably limited by their specific context and limited cohorts (Waddell, 2004, Symonds et al., 1996); more general data from the Office of Population and

Census Surveys (OPCS) relates to small samples (Watson et al., 1998), hence Jersey is potentially an ideal location to study short term work absence for LBP due to its comprehensive coverage of the working population, its early initiation (payable from a minimum of two days) and also its data collection system (Watson et al., 1998).

All compensated incapacity for work in Jersey needs to be seen from the perspective of GP sickness certification; due to the minimal allowance for self-certification (two days) compared to the UK and the fact that all claims for wage compensation for sickness absence are paid from the Social Security Fund (SSF) (not explicitly from employers as in the UK with SSP; however it is common practice that many employers do top up this flat rate of benefit to the claimant's usual wage amount (SJSSC, 1995)) and this requires in all cases, a medical certificate from a registered practitioner for validation (SJSSC, 1995, Stafford, 2007).

Sickness certification by registered GPs in Jersey (and many social security systems) is the primary gateway to accessing social insurance funds; therefore trends of sickness certification are critical to understanding associated social costs. In the UK GPs have a contractual obligation to provide medical certificates for social security purposes (Waddell and Aylward, 2005); this is not the case in Jersey, which potentially presents further disincentives in relation to curtailment of the social costs for the condition on the Island and makes the assessment of trends worthwhile. Primary care in Jersey, as previously described, is private and GPs are not contracted to the States of Jersey but

operate their own private businesses (SJSSC, 1995). Certification in Jersey has been described as taking place "in a context where patients pay charges for medical services" and where "patients are seen as an *'asset'* to GPs and doctors do not want to undermine their relationship with them" (Stafford, 2007). Analysis of trends of certification by this group of professionals is therefore a necessary step in understanding the social context of work absence and the financial burden of LBP in Jersey.

In the mid-1990s the States of Jersey undertook a wide ranging review of its then social security and health insurance schemes. In July 1995 recommendations for change were published (SJSSC, 1995) however due to administrative issues and the need to commission the implementation of new computerized systems to manage the proposed changes in the benefits system, these did not come into effect until October 2004. Original guidelines were produced by various government and professional bodies relating to the management of LBP(CSAG, 1994, RCGP, 1996, AHCPR, 1994), and became widely available from 1994 onwards. Thus the decade from the original research conducted by Watson and colleagues (Watson et al., 1998) to prior to the system change provided a perfect opportunity to assess any changes in trends in short term incapacity certification for LBP in the working population of Jersey.

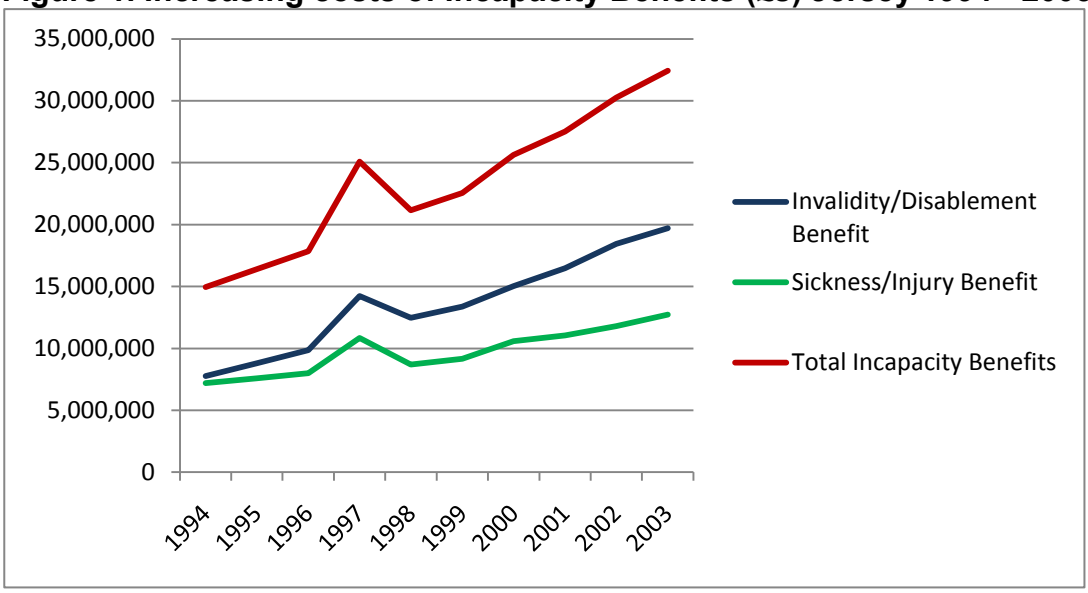
At the time of the initial review of the benefits system (SJSSC, 1995), coming just before the data collection for the initial work by Watson and colleagues (Watson et al., 1998) it was suggested that "payment of benefits for short

periods of incapacity for those with minor aliments and injuries was seen as largely non-problematic" (Stafford, 2007). The potential role that periods of short term incapacity play in the progression to longer periods of work absence and eventual early retirement and disability remains to be further elucidated, however, evidence from elsewhere has suggested that these initial early decisions are often critical to the development of long term disability (Waddell and Aylward, 2005). Indeed, it has been stated that "these early stages are vital, because the evidence shows that the optimum window of opportunity for effective rehabilitation and reintegration is between about 1 – 6 months off work" (Waddell and Aylward, 2005).

Analysis of Audited Reports and Accounts for the ESSD over the time period reveal an increase in costs associated with incapacity benefits (figure 1); with Short Term Incapacity Benefits (STI) (Sickness and Injury Benefits (payable up to one year as wage replacement benefits)) increasing by 76.99% and Long Term Incapacity Benefits (LTI) (Invalidity and Disablement Benefits (long term after one year wage replacement benefit and in work "loss of faculty" compensation benefit) increasing by 153.48%.

The departure in the trend associated with the increase and then decrease between 1996–1998 is attributable to an accounting adjustment (figures were aggregated over 15 months (1996/7)). This trend of incapacity benefit receipt increasing exponentially mirrors the situation elsewhere (Aylward, 2004, Waddell et al., 2002), however, only the Jersey data is able to accurately describe the short term (< six months) position.

Figure 1. Increasing costs of Incapacity Benefits (£s) Jersey 1994 - 2003



To better understand the local drivers for these increases analysis of the social security claims database was undertaken.

In order to provide some context for the above increased incapacity benefit payments, it was the aim of this study to explore the trends in sickness certification for LBP over a ten year period from initial publication of the management guidelines to determine any change in total amount of certification or days certified for the condition. It was a further aim of this study to compare trends in sickness certification for LBP and Total MSK with sickness certification trends for other symptom dominated conditions such as those typically framed under Common Mental Illness (CMI) (Waddell and Aylward, 2005). Evidence from the UK (relating to Incapacity Benefit) suggests a shift in terms of leading cause of incapacity for these two condition categories occurring between 1997 and 1998 (Aylward, 2004); when CMI finally overtook MSK. Additionally, the

relative lack of unemployment in Jersey allows analysis, to a degree, of sickness benefit unhindered by effects of unemployment. Specifically:-

1. In relation to the size of the working population are GPs in Jersey sanctioning work absence more frequently (increase in certification rates)?
2. Is the number of sanctioned days by head of working population increasing (increase in duration of certification episodes)? and
3. How do these changes in certification and duration relate to our conditions of interest: LBP; respiratory; CMI and All MSK (LBP + Other MSK)?

METHODS

Jersey records all sickness certification records presented to the Employment and Social Security Department (ESSD) for compensation on a computer database. The database allows analysis of these records by individual claimant, GP, ailment code and benefits paid. Data for sickness certification for the period 1994 to 2003 inclusive was downloaded from ESSD and prepared and cleaned for analysis (details, Appendix 1). During the period of this study (1994-2003) two types of benefit were payable for incapacity for work up to one year, Sickness Benefit and Injury Benefit. These were essentially the same, except the benefit system at the time differentiated between claims made due to "sickness" or "injury" (the injury was not limited to injuries which occurred at work but could relate to injuries sustained from accidents at home or whilst engaged in leisure activities) (SJSSC, 1995). The "Medical Certificate" is the claim form for Incapacity or Accident Benefits for up to one year. A recipient's first Medical Certificate for a period of incapacity is for a maximum of four weeks, certification can then be for up to 13 weeks. Therefore a recipient could, in effect, be off for 364 days with a minimum of five GP visits (Stafford, 2007), although in practice it is assumed that this would rarely, if ever occur (Stafford, 2007). After one year if the recipient is not deemed fit to return to work they will attend a Medical Board Review at the ESSD and if deemed appropriate convert on to either Invalidity Benefit (if initially in receipt of Sickness Benefit) or Disablement Benefit (if previously in receipt of Injury Benefit). Disablement Benefit was the only "in work" benefit payable during this period. It represented a compensation for the "loss of faculty", physical or mental, sustained because of the accident and paid in percentage terms. For the purposes of this study

only incapacity for the first year and payable by either Sickness or Injury Benefit was assessed.

Any certificates issued by GPs which were not forwarded to the department to form the basis of a claim were not included in the study. The exact number of certificates issued which did not form part of a claim is not known as this information remains only within each Private GP Practice. However, due to the relatively high costs of private primary health care in Jersey (Stafford, 2007, SJSSC, 1995, Hart and Walker, 2005), it is not usual for someone to receive a certificate from their GP and not submit for a claim.

All sickness certificates which result in a claim for benefit are received by the ESSD and are scanned onto their computer database (currently administered by CapGen). If any data are missing from the original sick certificate/claim form, a query is generated by the computer system and the certificate is manually checked by an administrator, both internal and external auditing has previously reported error rates of less than 2% (Watson et al., 1998). The research team received downloaded data on all certificates for Sickness or Injury Benefit received by the Department for the years 1994 to 2003 (01 January – 31 December).

Descriptions of data fields

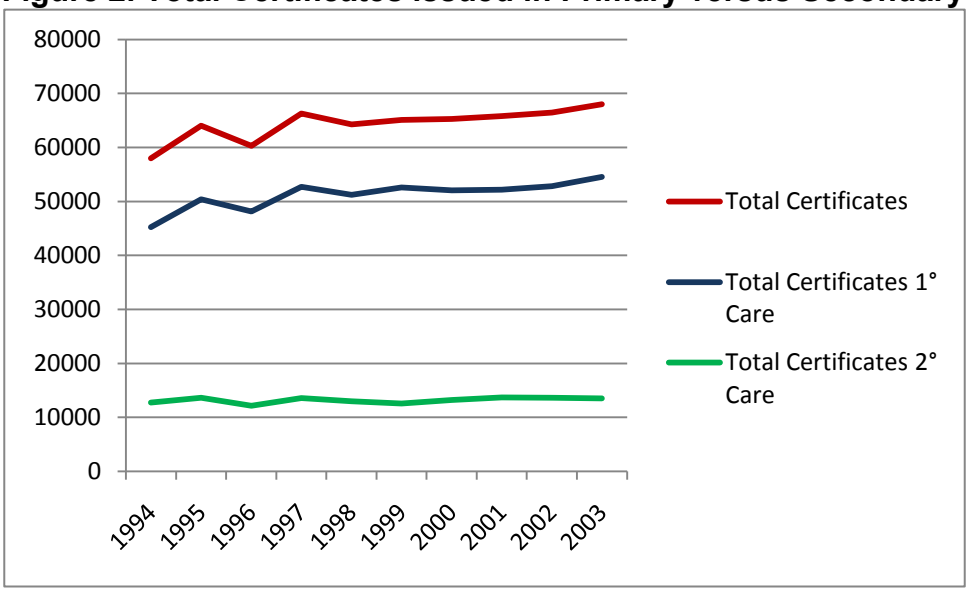
The original data files contained the following information:

1. **Ailment Description**, this relates to an ailment code, a list of which has been produced specifically for the ESSD for use within the Island (Watson et al., 1998) (Appendix 2). This consists of a number and a letter relating to any one of 241 different listed conditions, including broad description categories such as Miscellaneous, Infection and Pain (unspecified). This is a required field. These are not directly aligned to ICD-10 classification categories but are broadly similar in relation to the classification blocks; however with significantly less permutations (241 – v- over 14,400) (WHO, 2007).
2. **Certificate start date and end date** – the dates upon which the certificate is suggested to start and end (this is filled in by the GP); this is used to produce:-
3. **Days certified** – total number of days certified on individual certificate;
4. **Claim start date and end date** – the dates upon which the entire claim (which may be made up of more than once certificate) starts and ends (in order to have detail about the specific claim durations different analysis by the ESSD computer would have been required);
5. **Examination date** – this relates to the date the patient was seen by the GP, this is a compulsory field;
6. **Doctor's name** – this is a pre-printed number code for each GP which appears on sickness certificates issued to GPs who are working in General Practice. It is a unique identifier for each GP who is eligible to issue certificates. This is a required field and appears pre-printed on all certificates.

Certificates of interest

Certificates issued to the Jersey General Hospital for use by Secondary Care physicians for patients seen within the secondary care system have one Doctor's Name code which is distinct from those used for primary care physicians. These were identified and separated from primary care data. Figure 2 shows a comparison of trends for primary care versus secondary care for the study period, secondary care certificates were not the overall subject of this study.

Figure 2. Total Certificates issued in Primary versus Secondary Care



Conditions

Ailment descriptions were grouped into broad condition categories; those of interest for this study included:

1. ***Respiratory conditions (control group)*** – these included all certificates issued with Ailment Descriptions which related to:- Asthma; Bronchitis; COAD/COPD; Cold/influenza; Congestion; Emphysema; Laryngitis;

Pharyngitis; Pleurisy; Pneumonia; Sinusitis; Sore Throat; Tonsillitis; Tracheitis; URTI

2. ***Low Back Pain conditions*** – Back Pain; Lumbago; Pain – back; Spondylitis; Spondylosis; Disc; Prolapsed Intravertebral disc; Pain – nerve/sciatica; Injury back; Injury to back; Injury to spine
3. ***Musculoskeletal conditions (other than LBP)*** – Arthritis; Arthritis – Osteo; Arthritis – Rheumatoid; Carpal tunnel Syndrome; Dislocation; fractures (see appendix 1 for full list); Frozen Shoulder; Injury (see appendix 1 for full list); Myalgia; Pain – leg; Pain – neck/torticollis; Pain – shoulder; Rheumatism; RSI; Shoulder pain; Sprain; Strain / sis; Tendonitis; Tennis Elbow; Tenosynovitis; Whiplash; Whiplash – work related
4. ***Common Mental Illness***- Agoraphobia; Anxiety; Bereavement; Debility; Depression; Exhaustion; Grief; Mental Illness; Nervous Disorder; Nervous Exhaustion; Post-natal depression; Stress.

Where necessary, for comparative purposes, Total MSK Conditions are reported (LBP + MSK).

General Practitioners

In 1994 there were 96 registered GPs in Jersey and this number has remained essentially stable over the proceeding decade. As certification rates and days certified will be related to the working population rates the absolute number of GPs practicing is unlikely to influence the data unduly.

RESULTS

Table 2 shows Manpower returns for the month of December for each year of the current study (SJSU, 2009d); total certificates issued for each year by both primary and secondary care and total certificates and days certified for the conditions of interest. Jersey has a seasonal variation in workforce; therefore December figures have been used for consistency but also because they most likely reflect the working population headcount who also fulfil eligibility criteria for Social Security benefits. Manpower figures for 1995 and 1994 have been estimated from the trend of figures presented as comparable data were unavailable (average difference over proceeding 5 years subtracted from the preceding year).

Over the study period total numbers of certificates issued rose by 7.9% when related to the numbers in the working population. This was made up of a 10.89% increase in primary care certificates and a 12.45% reduction in secondary care certificates (figure 3).

Figure 3. Total certificates as a proportion of the working population

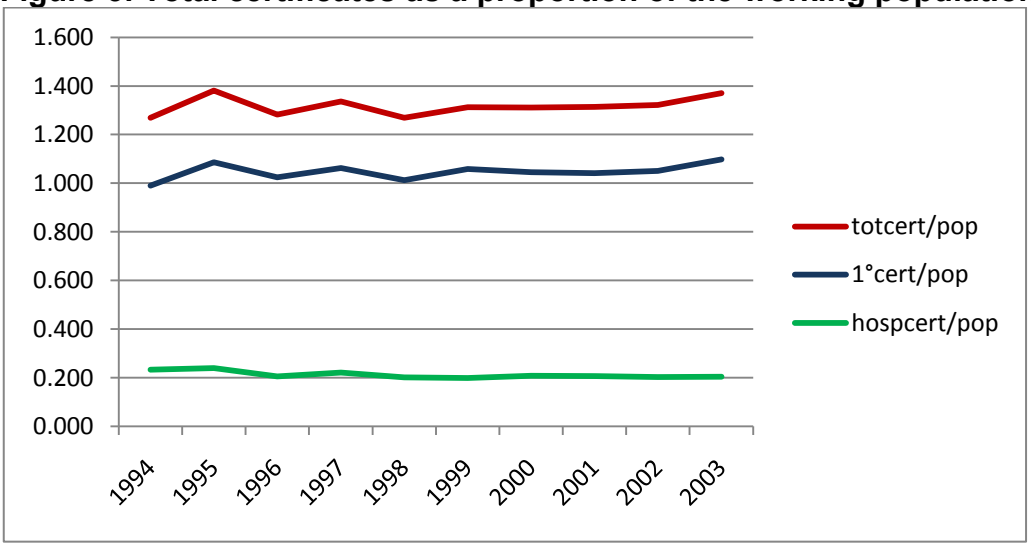
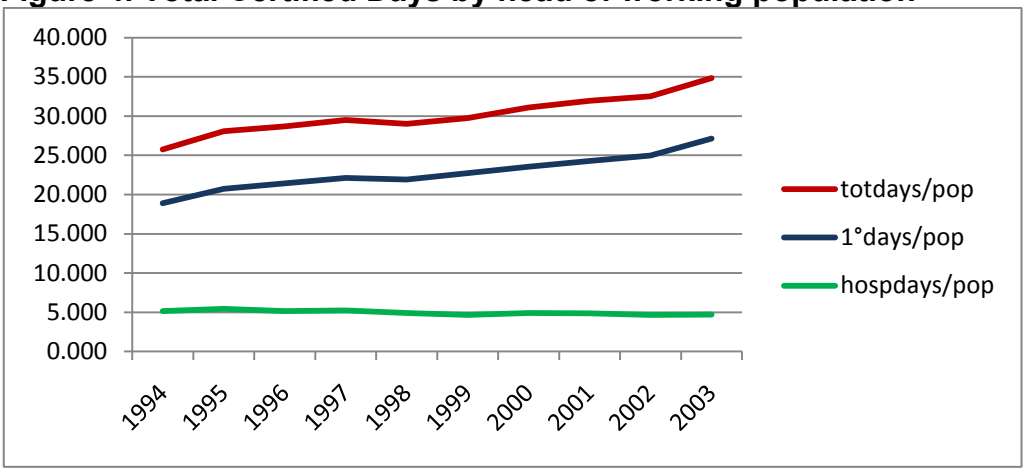


Table 2. Trends of change 1994 - 2003

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Working population	45682	46370	46990	49640	50610	49620	49810	50090	50270	49620
Cost per day (£)	12.23	12.67	13.04	13.57	14.13	15.03	16.31	17.07	18.45	19.22
Total Certificates	57997	64010	60261	66302	64249	65117	65296	65813	66446	68001
Total Days	1175772	1302242	1347412	1464465	1468848	1475300	1548601	1600434	1633687	1729171
Total Certificates 1° Care	45250	50359	48131	52708	51244	52554	52074	52180	52795	54509
Total Days 1° Care	863915	960555	1005846	1098565	1108498	1127074	1173421	1216139	1255615	1346788
Total Certificates 2° Care	12747	13651	12130	13594	13005	12563	13222	13663	13651	13492
Total Days 2° Care	311857	341687	341566	365900	360350	348226	375180	384295	378072	382383
Total Certificates LBP	5502	5740	6006	6335	6462	6188	6607	6371	6493	6613
Total Days LBP	117551	132093	146815	159088	160716	156939	173521	175903	183850	185502
Total Certificates MSK	9893	9912	10374	10501	11005	10692	11049	10702	11461	12668
Total Days MSK	212903	234205	259044	279033	288855	288714	301583	305152	323769	356645
Total Certificates CMI	4166	4673	5034	5691	6159	6468	7149	7499	7930	9101
Total Days CMI	118298	137643	158045	189379	203946	222728	244108	266916	288281	336099
Total Certificates Respiratory	10525	13804	11054	14025	11216	13130	11557	11218	10666	11230
Total Days Respiratory	97362	113310	97083	117465	94126	107084	102244	94819	91078	92703

Figure 4. Total Certified Days by head of working population



Over the study period the total number of days certified as a proportion of the working population rose by 35.4%. This increase was due to a 43.52% increase in days certified in primary care compared with an 8.73% reduction of days certified in secondary care (Figure 4).

Proportional changes in certification rates by head of working population for LBP, Respiratory, CMI and MSK conditions are shown in Figure 5a. Figure 5b. shows the proportional changes with Total MSK substituted for MSK + LBP.

Figure 5a. Certification Rates by head of working population: LBP: MSK: CMI: Resp

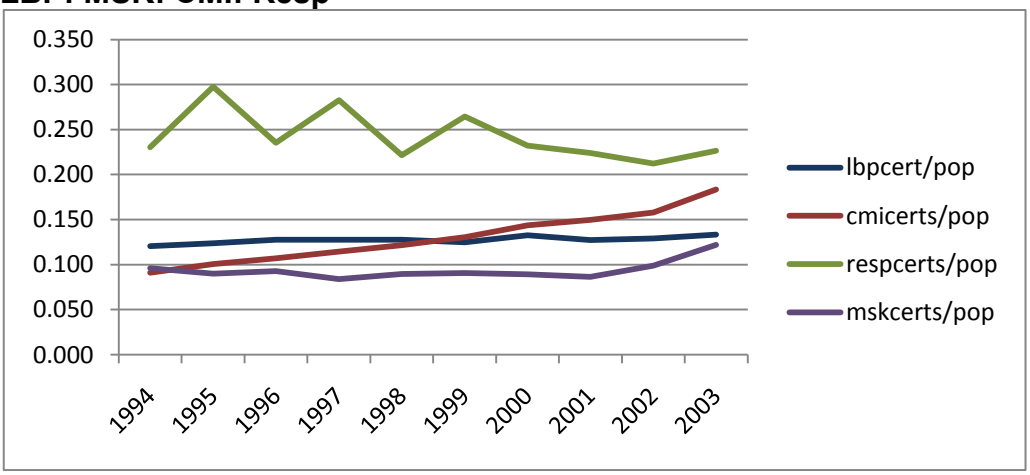
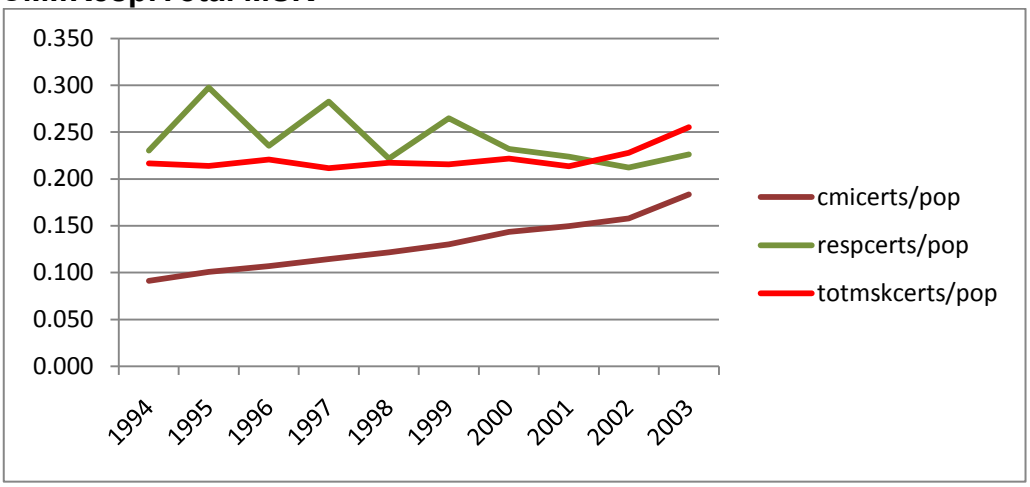


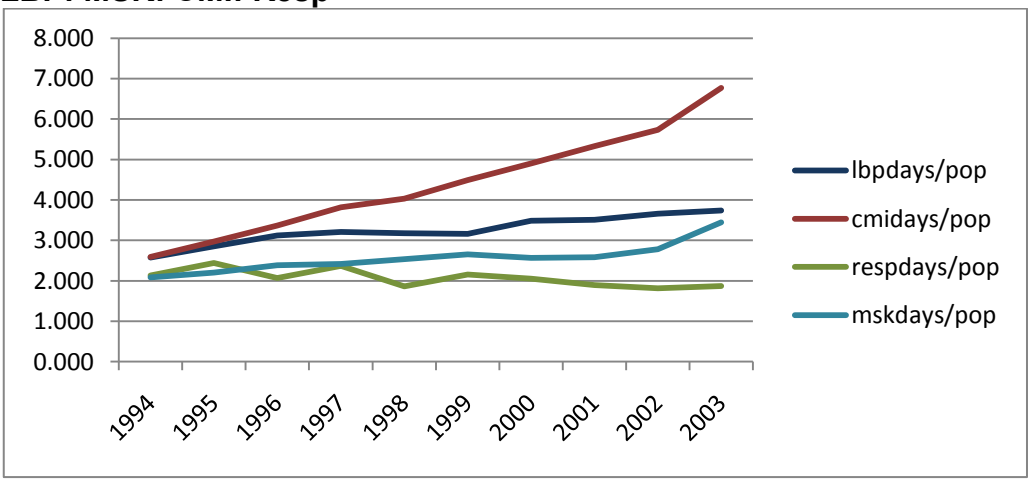
Figure 5b. Certification Rates by head of working population: CMI:Resp:Total MSK



Rates of certification increased for all condition categories except Respiratory which remained static (0% change). LBP rose 8.33%; other MSK conditions rose by 20% and CMI conditions doubled (100%). Overall, certification rates for Total MSK conditions rose by 18.18%.

Proportional changes in days certified by head of working population for LBP, Respiratory, CMI and Other MSK conditions are shown in figure 6.

Figure 6. Certified Days by head of working population: LBP: MSK: CMI: Resp



LBP days certified increased by 45.53%; MSK conditions by 65.07%; and CMI by 161.39% (Total MSK rose by 54.29%). In order to see the proportionate increases in duration of certified episodes, it is necessary to control for the absolute increase in numbers of certificates. Therefore, days certified are shown in relation to certificates issued Figure 7. In terms of durations of certified episodes, CMI conditions attracted longest durations per certificate. However, LBP durations increased by the greatest proportion during the study period (LBP 31.29%; MSK 30.16; CMI 30.05; and Resp -10.77%).

Figure 7. Certified Days per certificate: LBP:MSK:CMI:Resp

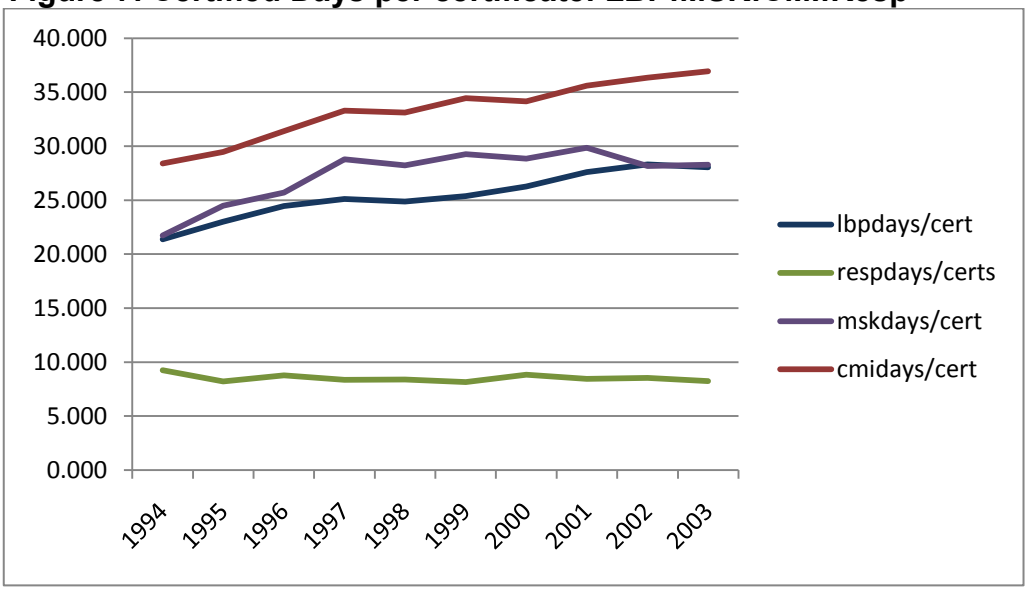
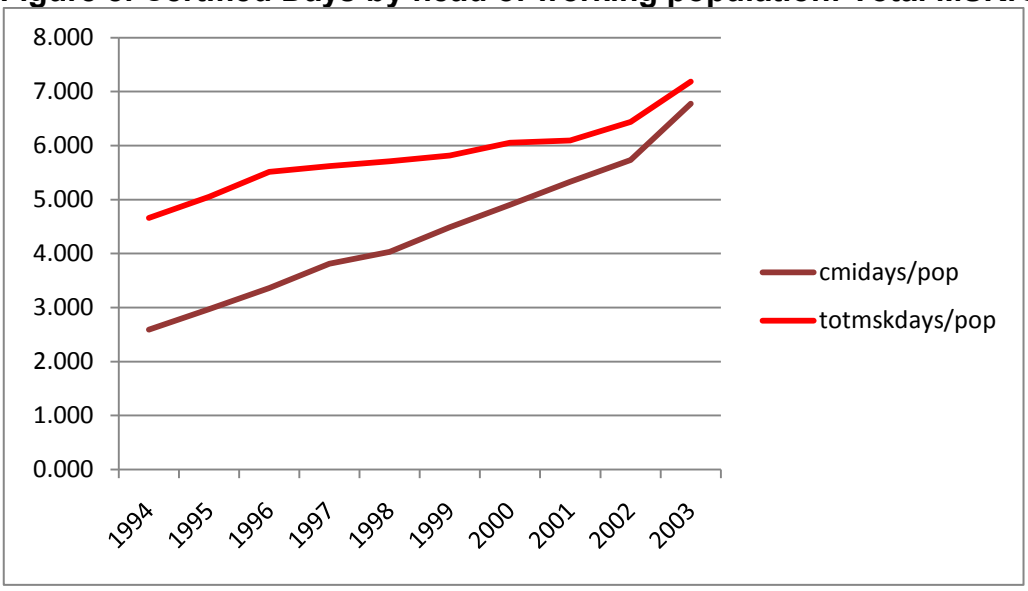


Figure 8. shows changes in days certified per head of working population for Total MSK and CMI conditions separately. Illustrating that Total MSK conditions still attract more certified days absence than any other ailment category.

Figure 8. Certified Days by head of working population: Total MSK:CMI



Figures 9a. and b. illustrate the proportions of certificates (a) as well as days (b) certified by GPs for different diagnoses categories at the start of the study period (1994) (appendix 1). In 1994, LBP accounted for a greater overall proportion of certificates issued than CMI; however both LBP and CMI account for the same proportion of total days certified by GPs. 14% of all certificates issued were for "Miscellaneous" as an Ailment description, which accounted for 18% of all days certified.

Similarly, Figures 10a. and b. illustrate the proportions of certificates and days certified by diagnoses at the end of the study period (2003). LBP accounts for the same proportion of all GP certificates issued, however CMI now accounts for more (14:17%).

Figure 9a. Certification by GP by Diagnoses Group 1994

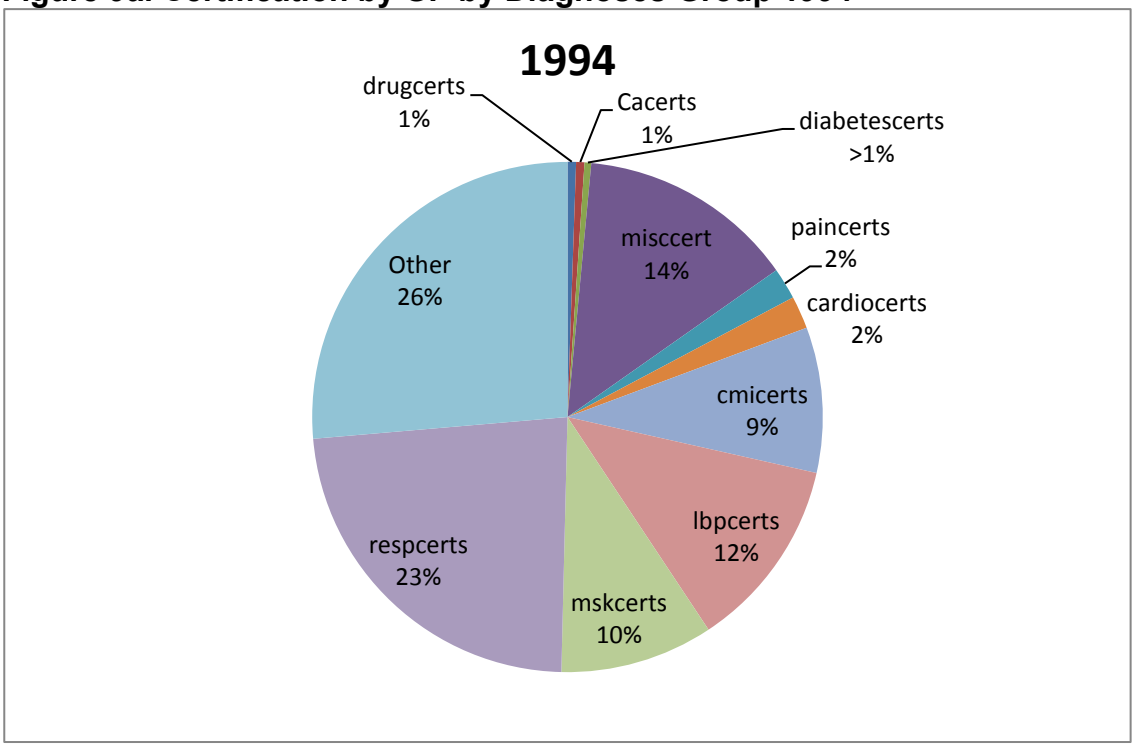


Figure 9b. Days Certified by GP by Diagnoses Group 1994

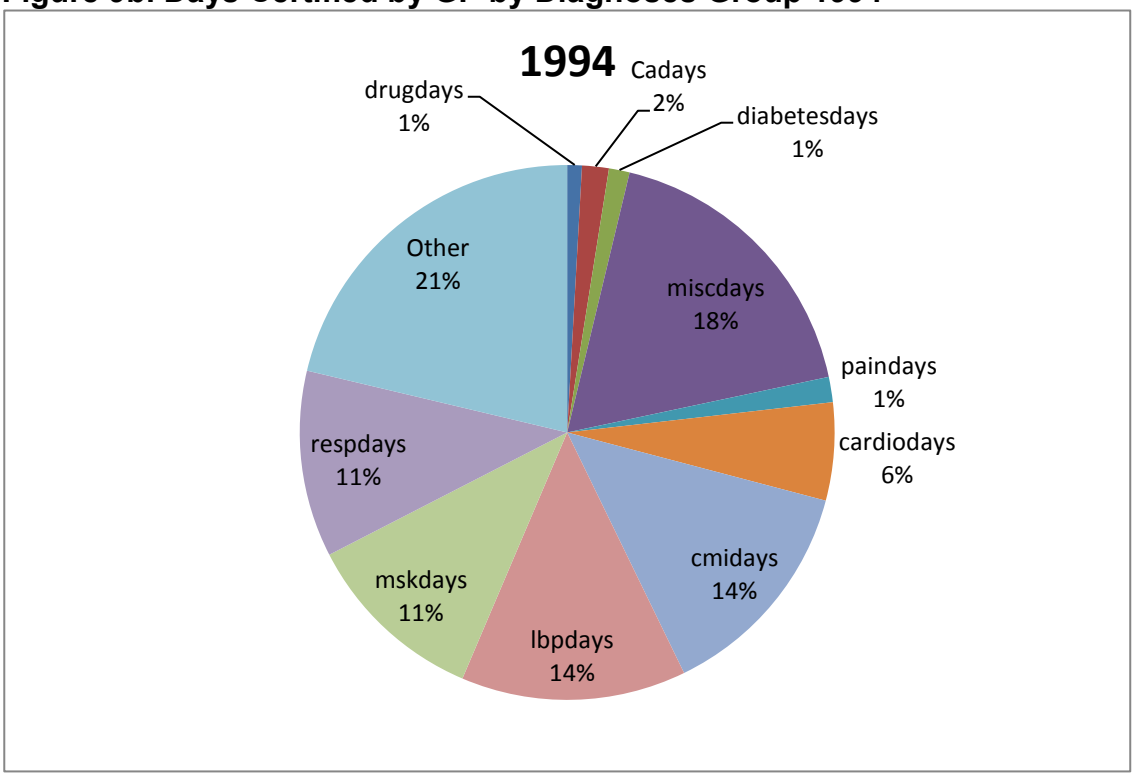


Figure 10a. Certification by GP by Diagnoses Group 2003

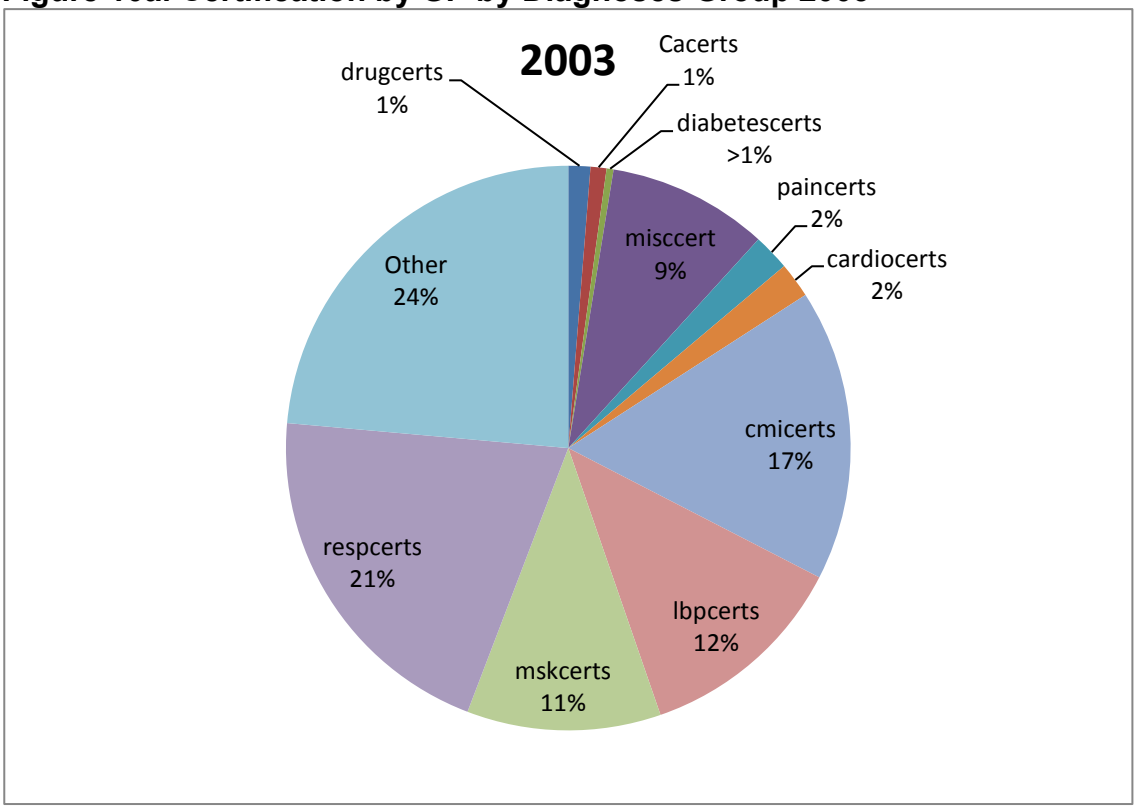
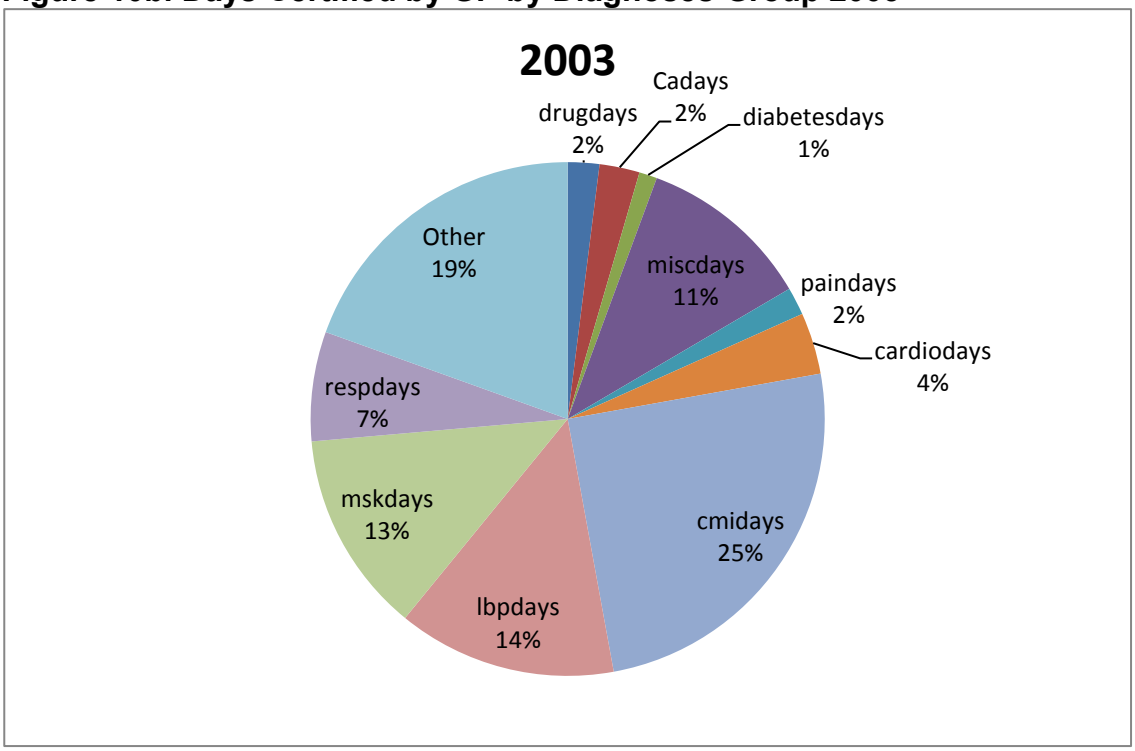


Figure 10b. Days Certified by GP by Diagnoses Group 2003



In terms of GP certification workload, LBP accounted for the same proportion of all days certified in both 1994 and 2003; CMI days certified accounted for an increased proportion, with a quarter of all days certified now attributable to this category.

DISCUSSION

The results demonstrate a modest increase in certification by head of working population, with the overall increase in numbers of certificates issued relating to changes in primary care certification rates. The reduction in certification rates for secondary care and the proportionate increase in rates for primary care may reflect a shift of management of conditions from secondary to primary care during this period. These figures relate purely to adults of working age, rather than including conditions related to older age persons and any potential improvements in community based treatment for conditions such as ulceration, as has previously been suggested in States of Jersey Government Reports (SJSSC, 1995). These figures alone, however, do not explain the previously illustrated increases in costs (figure 1), therefore the changes in certification rates is unlikely to be the main contributing factor.

In relation to changes in days certified the difference is more pronounced. Secondary care days certified again reduced during the study period by a modest 8.53%; this difference was more than compensated for by the significant rise in primary care certified days by head of working population of 43.52%. This increase equates to an average of nearly 35 days per working age adult (34.85) or just over 27 days (27.14) per adult sanctioned by primary care physicians alone. Therefore, although there is a small increase in GP certification episodes (even after controlling for rising population trends), the greatest increase has been in the duration that each of these episodes attracts.

Respiratory conditions attracted more certificates than LBP, MSK or CMI diagnoses throughout the study period and followed the most erratic pattern of all certificate trends. This is perhaps to be expected of a condition category that will vary according to trends in viral infection and seasonal variation. Despite both rises and falls over the study period, proportions of certificates issued for the working population in 2003 did not differ at all from those of 1994 (Figure 5a.) The stability of this condition over the study period suggests it acts as a good control condition in terms of certification behaviour for GPs, when considering changes in other certification trends. In relation to days certified by head of population, Respiratory conditions show a reduction over the decade of 12.21%. This may reflect better clinical management of these conditions over this time period, or may simply reflect altered expectations of work loss sanctioning for the condition by the working population. This change in rate may be a useful watermark which could be expected to be reached for other conditions which respond to a traditional biomedical management model alone.

Rates of certification for the other condition categories did not however match that of our control condition. LBP certification rates increased by 8.33%, which would equate to just over 13% (13.3) of the working population receiving a sickness certificate for this condition if each certificate were written for a different individual. It must be remembered however that many of these certificates will relate to repeat certificates for the same individual claimant over the time course of their certified absence. Similarly, rates of certification for CMI would equate to a fifth (20.2%) of the working population requiring sickness certification for these conditions if each were taken separately. When taken as

a composite group (LBP + MSK), rates would equate to over a quarter (25.5%) of the working population of Jersey in 2003 requiring a sickness certificate for a musculoskeletal condition, if each certificate represented one claim. These figures are only estimates, and likely to be a significant under estimation of the real amounts. A significant number of certificates could not be adequately categorized as they were written for "diagnoses" such as "Pain- unspecified" or "Miscellaneous". A reduction of 5% in "Miscellaneous" certificates issued over the study period may partly explain the rise in CMI certificates, suggesting a possible increased acceptability in writing certificates for CMI diagnoses rather than "Miscellaneous". Additionally, this change is likely to reflect the changing attitudes of the ESSD towards the use of such arbitrary "Ailment" codes.

In terms of days certified, LBP and MSK diagnoses attracted the same average number of days in 1994; LBP increased by 45.53% during the study period, from an average of 21.72 days to 28.27; whilst MSK conditions finished just short of this at 28.16. At the highest point in 2001, MSK conditions certified by GPs attracted on average nearly 30 days per certificate (29.84). Without examining the database from the perspective of the claim, it is not possible to determine the range, mean or standard deviations around this figure; however, signing someone off for, on average, a month at a time with an MSK condition is likely to seriously influence their return to work potential and certainly does not fit with LBP management guidelines (ACC, 1997, Kendall et al., 2009). Durations of certificates for CMI conditions were far longer, starting at an average of 29.46 days and rising to an average of 36.93 days per certificate; again in short term incapacity scenarios, such long durations between reviews,

even for potential medication adjustment, are rarely if ever justified for those who have just stepped out of work.

Finally, in terms of certification and certification caseload, LBP made up 12% of all primary care certification practice in 1994; this remained unchanged during the study period. This suggests that GPs were not sanctioning proportionately more sickness absence episodes for LBP during the study period (a relative levelling off as seen in Incapacity Benefit figures (Waddell, 2004)). CMI did take up a proportionately greater percentage of this caseload however, rising from 9% in 1994 to 17% in 2003. Perhaps more importantly, is the fact that in terms of durations in days of certified absence, CMI, by 2003 accounted for a quarter of all days certified by GPs.

Watson et al (Watson et al., 1998) estimated all claims for LBP during 1994 to cost approximately £1.2 million (£1,287,204) or 10.5% of all wage replacement compensation. This study shows that LBP accounted for 14% of primary care certified days for STI (Sickness and Injury Benefits) during the same time frame. Short term primary care sanctioned work loss alone is responsible for approximately 95% of the overall Short Term Incapacity costs attributable to the condition of LBP. Publication of numerous guidelines and peer reviewed articles on LBP management appears to have had little impact on local GP certification practice during the study period. GP sanctioned STI costs for all conditions rose from approximately £4,600,415 in 1994 to approximately £9,159,936 in 2003. These relate only to the direct costs of benefits paid and do not take account of the subsidized primary health care costs, subsidized

pharmaceutical costs, administrative costs for the SSF or HIS or wider wage replacement additions from employers, lost tax revenues or broader secondary healthcare costs (Waddell et al., 2002, Aylward, 2004). In 1994 the proportion of STI to LTI in Jersey was 48.05%:51.95%. During the study period this shifted to 39.24%:60.76%, which although is a shift towards increasing long-term disability trends as seen elsewhere, it still illustrates that STI is a significant burden; an issue often overlooked in other research, most likely due to problems associated with capture of accurate data (Waddell, 2004).

When considering the dramatic increases in costs seen in figure 1 (153.48% Disablement and invalidity Benefit: 76.99% Sickness and Injury Benefit) (which are only partially explained by the increase in unit costs i.e. amount payable per day (57.15%) or increase in working population numbers (8.62%); but are also likely to be due to the increases in durations of absence for short term incapacity benefits (Sickness and Injury) and increases in those receiving long term incapacity benefits. This reflects the situation seen elsewhere, particularly the UK (Aylward, 2004, Waddell et al., 2002, Waddell and Aylward, 2005), however, the increases in STI seen locally likely suggest that rates of people moving on to LTI benefits have not stabilized in the same way in Jersey as they have done thus far in the UK. The increases during this time period for LBP (45.53% in days certified) are despite the numerous guidelines and publications during the decade highlighting the importance of maintaining normal roles and staying in or returning to work (Waddell and Burton, 2006) and suggest significant work needs to be done in this area.

CHAPTER 4 – BELIEFS ABOUT BACK PAIN: RESULTS OF A LARGE SCALE POPULATION SURVEY OF WORKING AGE PEOPLE IN JERSEY

In order to better understand trends of incapacity for LBP within our working population, it was necessary to establish their underlying attitudes and beliefs towards the condition. In doing so, it was envisaged that we may be able to determine possible influences on sickness absence for the condition and also set baselines against which future population level interventions may eventually be evaluated.

INTRODUCTION

As discussed in Chapter One, significant research attention has been paid to the role that attitudes and beliefs have over health behaviour. If we wish to influence attitudes and beliefs, and subsequently health behaviours, we first need to assess them within our target populations. Beliefs about LBP have been widely studied in the literature (Coudeyre et al., 2007, Crombez et al., 1999, Fritz and George, 2002, Klaber Moffett et al., 2004, Poiraudeau et al., 2006a, Rainville et al., 1993, Riley et al., 1988, Sieben et al., 2005, Swinkels-Meewisse et al., 2003, Woby et al., 2004). They have been investigated in relation to their potential influence on multiple aspects of the condition including the onset of an initial LBP episode(Linton et al., 2000); duration of work absence or sickness certification associated with episodes(Linton et al., 2005, Kapoor et al., 2006, Shiels et al., 2004); outcomes from treatment or intervention(Burton et al., 1999, Johnson et al., 2007, Klaber Moffett et al.,

2004) to the development of chronic disability(Blyth et al., 2007, Swinkels-Meewisse et al., 2006).

Attitudes and beliefs about LBP have also been studied within multiple groups and across different contexts. These have included patients attending pain management programmes(de C Williams et al., 1999); patients with acute and sub-acute conditions in various outpatient settings(Poiraudeau et al., 2006b, Pengel et al., 2007, Kapoor et al., 2006); primary care patients; healthcare practitioners (HCPs)(Burton et al., 1999, Cherkin et al., 1996, Linton et al., 2002), workers in industrialised settings(Symonds et al., 1996) and more recently, although to a much lesser degree the general population (Gross et al., 2006, Klaber Moffett et al., 2000). General public opinions about LBP have been the subject of relatively few studies to date (Gross et al., 2006) and more research into public attitudes has been advocated in order to provide wider population comparisons (Gross et al., 2006, Goubert et al., 2004) and to identify potential opportunities for population level interventions (Wyatt et al., 2004).

There is relatively good consensus within the literature on the role attitudes and beliefs play in the development of disability in patients with LBP who seek healthcare or absent from work (Waddell, 2004, Boersma and Linton, 2005b, Crombez et al., 1999, Linton and Andersson, 2000). However, for public health providers and policy makers, patients are only one part of the overall picture in terms of the burden or potential burden of LBP as a condition(Blyth, 2008). If the overall impact of attitudes and beliefs on disability is to be determined, it is perhaps more prudent to take a wide ranging view of attitudes and beliefs held

across a variety of settings. Looking at both patient as well as HCP attitudes but also public views at large should give a more comprehensive view of the potential role attitudes and beliefs play in the disability process.

Population beliefs have been shown to be incongruent with medical evidence and guideline advice (Gross et al., 2006). Interventions targeted at the population level aim to make an impact on work loss and disability associated with LBP by tackling this incongruence and tailoring health campaigns to challenge those attitudes or beliefs furthest from the evidence base. Identification of characteristics within a population which are related to the most incongruent or negative attitudes and beliefs, may further enable more targeted Public Health initiatives; a view shared by Symonds et al (Symonds et al., 1995) who stated that identification of inappropriate attitudes and beliefs is a prerequisite for effective interventions to limit disability.

Population level interventions for the management of LBP have had variable impact on future disability rates for the condition (Waddell et al., 2007b, Buchbinder et al., 2001a); with campaigns in Scotland managing to influence attitudes but failing to influence future incapacity, but campaigns in Australia managing to influence both. If population based studies are able to highlight population characteristics which better predict negative attitudes and beliefs, then future campaigns will have more precise targets for intervention and potentially greater and sustained impact. The relative influences that specific demographic variables exert over attitudes and beliefs and subsequently development of long term disability within a general population are poorly understood. Evidence to date is often incomplete or conflicting, such as the

potential role of previous experience of LBP symptoms (Werner et al., 2005, Gross et al., 2006), age (Waddell, 2004, Cassidy et al., 1998) or education (Dionne et al., 2001) thus further investigation is warranted.

Tackling the problem of LBP at the population level is likely to have a relatively small overall impact on any one individual, when compared to targeting "high risk" symptomatic patients. However, it could be argued that a smaller impact for a greater number may be as cost effective, if not more, than having a larger impact on a smaller patient cohort (Blyth, 2008), particularly if it is able to prevent progression to long-term work absence. Buchbinder et al (Buchbinder et al., 2001b, Buchbinder and Jolley, 2004, Buchbinder and Jolley, 2007) have been able to demonstrate the positive impact that public health campaigns can have on LBP disability, as well as the sustained impact on public and subsequently health care providers' beliefs. When attempting to reduce the community burden from the condition of LBP population level initiatives, at the very least, provide a further mode of intervention.

The aims of this study were two fold: firstly, we wished to investigate public attitudes and beliefs about LBP and differences between sub-groups of our population in relation to demographic variables such as age, gender, marital status, work status, level of educational attainment and general perception of health status. Secondly, we wished to determine if certain group differences in demographic characteristics were useful in predicting individuals with negative attitudes about LBP.

METHODS

Study Design and Population

Data were collected via a postal survey of residents of the Island. The data formed part of a larger social survey (the JASS). A stratified random sampling technique was used to obtain representative groups from each Island Parish (district). In order to cover the adult population the household member who next celebrated their birthday, and was aged 16 years or over at the time of receipt of the survey, was asked to complete the form. Characteristics of the study cohort as well as sub-groups of the cohort differentiated by their pain reports can be seen in Table 3.

JASS

The JASS contains core questions which cover population demographic variables (year of birth; gender; marital status; where born) and socioeconomic variables (employment status; highest level of educational achievement). In addition questions on current pain experience, location of pain, pain interference with activities in the last week; low back pain history, work absence due to LBP; acceptability of work absence for LBP; as well as a single question on general perception of health, were added (Appendix 2). Over 3,400 households were randomly selected from the States of Jersey Planning and Environment's property register to complete the survey in July and August 2007.

Cohort

Of the 3,400 subjects invited to participate, 1574 (46.3%) responded. As one of the aims of the study was to assess reported differences in history of work absence and attitudes towards work absence, only responses from working age adults were sought for the current study; 1132 (71.9% of respondents) were identified as being of working age (females aged 16-59 and males aged 16-64). Of these, 1047 (66.5%) gave completed responses to the Back Beliefs Questionnaire, and of these 1023 (65%) responded to the "previous history of LBP" question. These 1023 responders formed the "study cohort" (Table 3). No information was obtained from the non-responders, however demographic information received was consistent with information obtained in a previous Census, suggesting comparability with the general population (Davies and Gibaut, 2007).

BBQ

The Back Beliefs Questionnaire (Symonds et al., 1996) (BBQ) is a measure of subjects' beliefs regarding the potential negative outcomes and consequences associated with episodes of low back trouble. The scale comprises 14 items scored on a five point Likert scale (from 1, completely disagree to 5 completely agree). There are nine inevitability statements, along with five statements used as distracters. The one-dimensional scale is calculated by reversing and summing the nine inevitability scores, so that negative attitudes and beliefs are represented by low scores (maximum score 45 minimum 9). It has previously been shown to have adequate internal consistency (Cronbach $\alpha = 0.7$); and

test-retest reliability (ICC 0.87) (Symonds et al., 1996). With our larger sample the internal consistency improved (Cronbach α = 0.809).

Statistical Analyses

All data were analysed using SPSS v.14 for windows software. Descriptive statistics were calculated. To look at group differences the X^2 test was used for nominal data and ANOVAs or t-Tests for interval level data. As groups differed significantly according to their current pain reports, differences in back beliefs for further demographic characteristics were analysed separately for the Current LBP group only. This sub-group was also used in subsequent multivariate analysis. A direct multiple regression analysis was used with BBQ scores as the dependent variable and demographic characteristics as the independent variables. All results are reported as being significant at the ($p<.05$) level.

RESULTS

Characteristics of cohort

Table 3. JASS Sociodemographic Characteristics of Study Cohort

Variable	Study Cohort % (Total *n*)	No Current Pain % (Total *n*)	Current Pain not LBP % (Total *n*)	Current LBP % (Total *n*)
Gender				
Males	47.4 (485)	46.3 (301)	47.8 (86)	50.8 (96)
Females	52.6 (538)	53.7 (349)	52.2 (94)	49.2 (93)
Age				
16-24	5.5 (56)	5.5 (36)	6.1 (11)	4.8 (9)
25-34	15.8 (162)	17.7 (115)	14.4 (26)	10.6 (20)
35-44	28.5 (292)	28.3 (184)	30.0 (54)	28.0 (53)
45-54	28.0 (286)	28.6 (186)	30.0 (54)	23.3 (44)
55+	22.2 (227)	19.8 (129)	19.4 (35)	33.3 (63)
Where born				
Jersey	48.4 (495)	49.4 (321)	49.4 (89)	44.4 (84)
Elsewhere	50.5 (517) *missing 11	49.4 (321) *missing 8	50.0 (90) *missing 1	54.5 (103) *missing 2
Marital Status				
Single	21.2 (217)	21.4 (139)	21.7 (39)	20.6 (39)
Cohabiting/Married	25.0 (256)	25.4 (165)	19.4 (35)	29.1 (55)
Separated/Divorce/Widow	53.3 (545) *missing 5	52.6 (342) *missing 4	58.3 (105) *missing 1	50.3 (95)
Education Group				
No formal qualifications	16.2 (166)	13.7 (89)	17.8 (32)	23.3 (44)
Secondary qualifications	53.6 (548)	31.5 (205)	21.1 (38)	21.2 (40)
Higher qualifications	27.8 (284) *missing 25	52.0 (338) *missing 18	59.4 (107) *missing 3	54.0 (102) *missing 3
Employment Group				
Employer	71.3 (729)	74.5 (484)	70.6 (12.7)	61.4 (116)
Self-employed	13.1 (134)	12.9 (84)	11.1 (20)	14.8 (28)
Retired/Homemaker/FTE	10.0 (102)	9.8 (64)	8.3 (15)	12.2 (23)
Unemployed/Sick	5.4 (55) *missing 25	2.5 (16) *missing 2	9.4 (17) *missing 1	11.6 (22)
Rate Health				
Excellent/Very good	56.0 (573)	66.0 (429)	43.3 (78)	32.8 (62)
Good	33.2 (340)	29.7 (193)	33.9 (61)	45.5 (86)
Fair/Poor	10.3 (105) *missing 5	4.0 (26) *missing 2	22.2 (40) *missing 1	20.6 (39) *missing 2
Acceptability of LBP absence	7.6 (78)	7.7 (50)	8.9 (16)	6.3 (12)
Always/Often	60.6 (620)	61.8 (402)	63.3 (114)	53.4 (101)
Sometimes	30.1 (308)	28.5 (185)	25.6 (46)	40.2 (76)
Rarely/Never	*missing 17	*missing 13	*missing 4	
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
BBQ Score	27.7 (6.56)	28.53 (6.29)	27.43 (6.66)	25.39 (6.77)

Characteristics and LBP beliefs for the entire study cohort as well as specific sub-groups of the study cohort differentiated by their pain reports are shown in Table 3. Table 4. details the study cohort's and the sub-group's pain reports. Lifetime prevalence of LBP for the study cohort was 65.5%, with 36.1% of the study cohort reporting having "Any Pain" at the time of survey. Of those reporting current pain, 31.4% reported neck pain (*n*=116; 11.3% of study cohort); 27.6% reported shoulder pain (*n*=102; 10% study cohort); 9.2% upper back pain (*n*=34; 3.3% study cohort) and 35.2% reported leg pain (*n*=130; 12.7% study cohort). 51.2% of those reporting pain at the time of the survey reported LBP (*n*=189); giving a point prevalence for the study cohort of 18.5%. A further 23.3% of those with current pain (*n*=86; 8.4% of study cohort) reported having pain elsewhere.

Table 4. JASS Study Cohort's Pain Reports

	Study Cohort % (Total *n*)	**No Current Pain % (Total *n*)**	**Current Pain not LBP % (Total *n*)**	**Current LBP % (Total *n*)**
Current Pain				
Any	36.1 (369)	--	--	--
Neck	11.3 (116)		30.6 (55)	32.3 (61)
Shoulders	10.0 (102)		28.3 (51)	27.0 (51)
Upper back	3.3 (34)		6.1 (11)	12.2 (23)
Legs	12.7 (130)		36.1 (65)	34.4 (65)
Lower back	18.5 (189)		--	--
Elsewhere	8.4 (86)		35.0 (63)	12.2 (23)
Previous History of LBP				
Yes	65.5 (670) *missing 6	57.8 (376) *missing 4	59.4 (107)	--

The study cohort was subsequently grouped according to their pain reports:- No Current Pain, Current Pain not LBP; and Current LBP. Significant differences existed between the sub-groups for most demographic characteristics (age, educational attainment, employment group, rating of overall health, acceptability of work absence for LBP, Previous history of work absence and impact of LBP on activities in last 7 days (Table 5.)).

Table 5. JASS Categorical variables differences*

Variable	No Current Pain% (Total *n*)	Current Pain not LBP % (Total *n*)	LBP % (Total *n*)	X^2	Asymp. Sig. (2-sided)
Age					
16-24	5.5 (36)	6.1 (11)	4.8 (9)	20.009	*0.010*
25-34	17.7 (115)	14.4 (26)	10.6 (20)		
35-44	28.3 (184)	30.0 (54)	28.0 (53)		
45-54	28.6 (186)	30.0 (54)	23.3 (44)		
55+	19.8 (129)	19.4 (35)	33.3 (63)		
Educational Attainment					
No formal quals	14.1 (89)	18.1 (32)	23.7 (44)	19.175	*0.001*
High school quals	53.5 (338)	60.5 (107)	54.8 (102)		
Higher Education quals	32.4 (205)	21.5 (38)	21.5 (40)		
Employment Group					
Employer	74.7 (484)	70.9 (127)	61.4 (116)	35.367	*<0.000*
Self	13.0 (84)	11.2 (20)	14.8 (28)		
Home/FTE/Retired	9.9 (64)	8.4 (15)	12.2 (23)		
Unemployed/Sick	2.5 (16)	9.5 (17)	11.6 (22)		
Rate Health					
Excellent/Very Good	66.2 (429)	43.6 (78)	33.2 (62)	1.157	*<0.000*
Good	29.8 (193)	34.1 (61)	46.0 (86)		
Fair/Poor	4.0 (26)	22.3 (40)	20.9 (39)		
Acceptability LBP absence					
Always/Often	7.8 (50)	9.1 (16)	6.3 (12)	10.804	*0.029*
Sometimes	63.1 (402)	64.8 (114)	53.4 (101)		
Rarely/Never	29.0 (185)	26.1 (46)	40.2 (76)		
Previous Hx LBP Absence					
No	63.3 (238)	63.8 (68)	45.9 (85)	16.703	*<0.000*
Yes	36.7 (138)	36.4 (39)	54.1 (100)		
LBP Affect Activity last 7 Days					
Extremely/quite a bit	0.5 (2)	3.7 (4)	20.4 (38)	1.409	*<0.000*
Moderately	4.0 (15)	7.5 (8)	22.0 (41)		
A little bit/Not at all	95.5 (358)	88.8 (95)	57.5 (107)		

*Includes only variables for which differences exist

Of those reporting Current LBP a greater proportion were aged over 55 (X^2(4, N=1019) = 20.009, *p*=0.01); had "No formal qualifications" (X^2(2, N=995) = 19.175, *p*=0.001), were unemployed or sick (X^2(3, N=1016) = 35.367, *p*=0.000), were less likely to rate their health as "Excellent" or "Good" (X^2(2, N=1014) = 1.157, *p*=<0.000), were more likely to report LBP had had a greater impact on their activities in the last 7 days (X^2(4, N=668) = 1.409, *p*=<0.000), were more likely to report a previous work absence for LBP X^2(2, N=668) = 16.703,

p=<0.000); however, were also more likely to feel that it was "rarely" or "never" acceptable to absent from work with LBP (X^2(2, N=1002) = 10.804, *p*=0.029). These groups also differed significantly on their back beliefs as measured by the BBQ (F(2,1019)=17.723, *p*=<0.000) although the magnitude of this difference was small (eta^2=0.03). However, to ensure there was no confounding of further analyses by these statistically significant differences in BBQ scores, further exploration of demographic characteristics and back beliefs were carried out on our Current LBP sub-group separately.

Back pain beliefs for Current LBP sufferers

There was a difference between genders on BBQ scores, which just reached significance (*t*(189)= -2.062, *p*=0.041), with males recording more negative back beliefs than females (Table 6.); however the magnitude of this difference was also small (eta^2=0.02)(Cohen, 1988); to retain sufficient subjects for further multivariate analysis and as the magnitude of the difference was small the remaining BBQ differences for this sub-group were analysed collectively for gender. There were no significant differences between BBQ scores for the different age groups and remaining sub-group differences were analysed collectively for age. Subjects reporting a previous history of work absence due to LBP had significantly more negatively beliefs than those not (*t*(185)= 4.841, *p*=0.000) (eta^2=0.11).

Significant differences in beliefs were found between educational groups (Table 6.) (F(2, 186)=14.647, *p*=0.000), with a large effect size (eta^2=0.14)(Cohen, 1988); with the "No Formal" (NF) group reporting significantly more negative

beliefs than either the “High School” (HS) or “Higher Education” (HE) Groups, NF Vs HS mean diff -3.281 (*p*=0.012); NF Vs HE mean diff -7.420 (*p*=0.000); and the HS Group reporting more negative beliefs than the HE group, HS Vs HE mean diff -4.140 (*p*=0.002).

Table 6. JASS Study Cohort Differences in Total BBQ Scores

Differences in Total BBQ Scores for Study Cohort						
	N	**Mean**	**Std. Dev**	**F (df)**	***Sig.***	**Eta^2**
Any Pain						
No	650	28.53	6.291	17.723 (2)	*<0.000*	0.03
Yes not LBP	180	27.43	6.661			
LBP	189	25.39	6.766			
Differences in Total BBQ Scores for Current LBP Subjects						
	N	**Mean**	**Std. Dev**	**F (df)**	***Sig.***	**Eta^2**
Educational Attainment						
No formal qualifications	44	21.95	5.815	14.647 (2)	*<0.000*	0.14
High school qualifications	102	25.24	6.752			
Higher education qualifications	40	29.38	5.471			
Employment Status						
Employer	116	25.78	6.300	3.278 (3)	*0.022*	0.05
Self-employed	28	24.68	7.247			
Retired/Homemaker/FTE	23	27.70	6.832			
Unemployed/Sick	22	21.82	7.442			
Rate Health						
Excellent/Very good	62	26.58	6.224	4.416 (2)	*0.013*	0.05
Good	86	25.70	6.589			
Fair/Poor	39	22.64	7.404			
Acceptability LBP Absence						
Always/Often	12	18.08	6.855	10.688 (2)	*<0.000*	0.10
Sometimes	101	24.95	6.365			
Rarely/Never	76	27.12	6.483			
LBP Affect Activity last 7 days						
Extremely/Quite a bit	38	22.47	7.611	6.381 (2)	*0.002*	0.07
Moderately	41	24.37	5.416			
A little bit/Not at all	107	26.74	6.661			
	N	**Mean**	**Std. Dev**	**t (df)**	***Sig.***	**Eta^2**
Gender						
Male	96	24.40	6.680	-2.062 (187)	*0.041*	0.02
Female	93	26.41	6.738			
History of LBP Absence						
No	85	27.82	6.095	4.841 (183)	*<0.000*	0.11
Yes	100	23.22	6.729			

The only differences in beliefs by employment category existed for subjects who classed themselves as “Unemployed/Sick/Other” who had significantly more negative beliefs than those who classed themselves as “Retired/Homemakers/or in full time education” (who had the most positive beliefs of all four groups) ($F(3,189)=3.278$, $p=0.022$). The remaining categories did not differ significantly from each other.

Subjects who rated their health as “Fair/Poor” had significantly more negative beliefs than the remaining two health groups ($F(2,187)=4.416$, $p=0.013$); Fair/Poor Vs Good mean diff -3.057 ($p=0.048$); Fair/Poor Vs Very Good/Excellent mean diff -3.940, ($p=0.012$). The remaining categories did not differ significantly from each other.

Those who felt that it was “Always” or “Often” acceptable to absent from work with an episode of LBP had significantly more negative beliefs than the remaining two groups ($F(2,189)=10.688$, $p=<0.000$); Always/Often Vs Sometimes mean diff -6.867 ($p=0.002$); Always/Often Vs Rarely/Never mean diff -9.035, ($p<0.000$). The remaining categories did not differ significantly from each other.

There were also significant differences in beliefs between groups dependent on how much they reported LBP had impacted on their activities in the last 7 days, with those who reported “Extreme” or “Quite a bit” having significantly more negative beliefs than those reporting only “A little bit” or “not at all”

(F(2,186)=6.381, *p*=0.002). Again, the remaining categories did not differ significantly from each other.

Relationships of variables of interest

Zero order correlations between back pain beliefs and demographic variables are shown in Table 7. All correlations with the dependent variable (back beliefs) were small to moderate, ranging between 0.255 to 0.370, indicating that multicollinearity was unlikely to be a problem for our model. Statistically significant correlations were demonstrated between back beliefs and educational attainment (0.370), LBP impact on activities (0.255), history of LBP absence (0.337) and acceptability of work absence (-0.290); suggesting the data is suitably correlated with the dependent variable for examination through multiple linear regression to be reliably undertaken. Additionally, there also existed significant correlations between history of LBP absence and LBP impact on activities (-0.229), acceptability of work absence (0.229), and educational group (-0.284). Again the magnitude of the relationships suggesting multicollinearity was unlikely to be a problem for our independent variables (Pallant, 2005).

Table 7. Zero Order Correlation Coefficients

Zero-order correlations Current LBP sub-group (*n*= 182)				
Variable	**BBQ**	**LBP Affect Activities**	**Accept LBP Absence**	**Educational Group**
LBP Affect Activities	.255**			
Accept LBP Absence	-.290**	-.116		
Educational Group	.370**	.061	-.086	
Previous LBP Absence	-.337**	-.229*	.229*	-.284**

**P<0.01*
***P<0.001*

Multiple Linear Regression

Multiple linear regression was employed to help determine which of the demographic variables could be used to predict back beliefs for those reporting a current episode of LBP. All independent variables entered had Variance Inflation factors less than 10 and tolerance levels that were well above 0.10 (Tabachnick and Fidell, 2001); suggesting they were not unduly influenced by multicollinearity. None of the cases included in the analysis appeared to exert undue influence over the model based on standardised residuals not exceeding less than -3.3 or greater than 3.3., not exceeding the critical values for Mahalanobis' distances (4 variables, X^2 18.47), or Cook's distances (less than 1) (Tabachnick and Fidell, 2001). Homoscedasticity was examined via scatter plots which indicated reasonable consistency of distribution.

Since no *a priori* hypothesis had been made to determine the order of entry of the predictor variables a direct method was used for the multiple linear regression analyses. The four demographic characteristics for which significant differences were found with at least moderate effect sizes ($Eta^2 \geq 0.06$)(Cohen, 1988) were used in our model and produced an R of 0.519, R^2 of 0.270, and an adjusted R^2 of 0.253 ($F(4,181) = 16.334$, $p<0.000$) for the prediction of back beliefs. Together these four predictors shared 9% explained variance and uniquely predicted 18% of the variance (Tabachnick and Fidell, 2001) (Table 8.).

Table 8. Direct Multiple Regression Analysis: Current LBP Cohort Demographics on BBQ Scores

	b	SEb	β	*t*	*Sig.*	sr^2
Constant	21.765	1.829		11.899	*<.000*	
LBP Affect Activities	1.475	.557	.175	2.648	*.009*	.04
Accept LBP Absence	-2.356	.754	-.207	-3.126	*.002*	.04
Educational Group	2.960	.673	.295	4.396	*<.000*	.08
Previous LBP Absence	-2.245	.948	-.166	-2.367	*.019*	.02

Note. R=0.519, R^2=.270, Adjusted R^2=0.253

Sr^2=the squared semipartial correlations indicate the unique variance predicted by the independent variable

DISCUSSION

The lifetime prevalence of LBP reported by subjects in this study (65.5%) is comparable to rates reported elsewhere (Walker, 2000, Papageorgiou et al., 1996); as is the point prevalence (18.5%) (Walker, 2000). We chose only to analyse data from subjects of working age. This may have led to a slight underestimate of both lifetime and point prevalence, however, we were most interested in the views of working age individuals as it is this group that we would wish to target to prevent unnecessarily long durations of work absence with this common musculoskeletal condition. Despite the lack of ability to make direct comparisons with other studies, the results from this survey add to the consensus view that LBP remains the most commonly reported pain condition suffered by working age adults at any one time (18.5% of our study cohort and 51.2% of subjects who reported a current pain problem) (Cassidy et al., 1998, Cassidy et al., 2005).

In order to better understand the potential impact of demographic characteristics on back beliefs and to prevent any confounding of results we initially sub-divided our study cohort according to reports of pain at response: No current Pain, Current Pain not LBP, and Current LBP to determine if there were any significant differences in characteristics by pain report. Our groups differed significantly on a number of demographic characteristics (age, educational attainment, employment status, perceptions of general health, how acceptable they felt it was to absent from work with LBP, LBP impacting on their activities and also previous history of work absence for LBP), suggesting they were not a homogeneous group overall.

There appeared to be inconsistencies within the reports by respondents relating to LBP in terms of its impact on activity, previous work absence and acceptability of work absence. This differed within our three pain sub-groups being most apparent in our Current LBP sub-group. Most respondents within the Current LBP sub-group (78%) reported at most only a moderate impact on their activities in the last 7 days; and just over 40% (the highest proportion) suggested it was rarely or never acceptable to take time out of work for LBP, however they were also more than twice as likely to (53% -v- 21 or 22%) to have reported having taken time off for LBP than the other two groups. It is unclear whether subjects may have had more severe restriction at the time of their work absence or whether despite their reports of how acceptable they felt it was to absent with LBP, they simply had a low threshold for absence at the time of the initial decision to absent. This highlights a need to better understand beliefs about the role of absence in the management of LBP episodes and also the need to see beliefs as being time and context dependent (Waddell, 2004). In order to prevent confounding of further results relating to back beliefs, the responses of the Current LBP group were subsequently analysed separately.

There were statistically significant differences in beliefs across different employment categories as well as by perceived general health, however the effect sizes for these differences were generally small (Eta^2=0.05), therefore these variables were not used within our prediction models in this study. As this was one of the first studies which aimed to look at predicting back beliefs within a general population, we would suggest that any future work conducted with potentially larger numbers should additionally re-evaluate the potential impact of

these variables, particularly given published reports of the relative impact of perceptions of general health on other health conditions (Busija et al., 2007).

Significant differences in beliefs were found according to reported level of educational attainment, with those reporting the least educational attainment also reporting the most negative back beliefs. With regard to reported levels of educational attainment, differences exist between Jersey and the UK. Previously, a high proportion of Islanders reported no formal educational attainment, however this figure is apparently reducing (34% 2001 to 15% 2008); compared to UK figures of 12% (Davis and Gibaut, 2009); this may partly explain the effect for educational attainment in this study and suggests caution in extrapolating these findings to other jurisdictions without further localised research. Research to date has not investigated how changing educational attainment status may subsequently change beliefs relating to LBP. This may be a useful avenue of investigation in terms of determining whether or not the impact of low educational attainment on beliefs is amenable to change and further reinforces the requirement to look at beliefs across the lifespan in order to fully understand influencing factors and life transition events.

Beliefs differed also dependent on how acceptable someone found it to absent from work with LBP; how much they felt LBP had impacted on their activities in the last 7 days and whether or not they had absented in the past with low back pain in expected directions. These four variables were thus used in our model which looked at predicting back beliefs in a sub-group of the general population who reported a current LBP problem.

Within our model, all variables entered contributed significantly to the prediction of back beliefs and overall the model accounted for just over a quarter of the variance in beliefs reported. Those reporting the greatest current level of impact on activities and the lowest threshold for work absence are likely to benefit from the targeting of increased resource to assist with management of episodes of LBP in order to prevent potential negative outcomes associated with these episodes.

Educational group came out as the best single predictor of back beliefs, which supports other published work citing increased educational level as potentially providing a protective influence over the development of LBP problems (Deyo et al., 2006). Educational attainment has been suggested as being a good proxy for Socioeconomic Status (SES) (Heistaro et al., 1998) and again increasing income has also been demonstrated to be related to reductions in health care use for LBP. Differences in beliefs between our educational groups may relate purely to economic status or may also relate to the fact that those with low educational attainment could have more strenuous, repetitive or less satisfying jobs however, relationships between LBP and educational achievement have previously been shown to remain consistent even after controlling for specific occupational factors (Leigh and Sheetz, 1989).

Educational attainment may also be a good marker for other attributes such as intelligence, ease of acquisition of adaptive skills and overall awareness of general risky health behaviours (Dionne et al., 2001), potentially making it less easy for those with episodes of low back pain and low educational level to adapt

to or manage their LBP problem, thus producing a more pessimistic view of the inevitable consequences of LBP in those with least “resource”. At the very least, future public health initiatives relating to LBP would benefit from taking account of educational level in terms of materials produced and also which groups to target.

CONCLUSIONS

There is growing demand for population based interventions to help manage the increasing burden of musculoskeletal conditions (Buchbinder, 2008). In order to ensure the greatest impact of these types of intervention, identification of factors which are likely to influence target audience beliefs could be considered to be a useful starting point. The results of this study suggest that targeting population level information at those with least educational attainment, previous history of work absence and increased reported impact of symptoms on activity may produce a greater overall affect than a generalised broad based approach.

Tackling the burden of LBP is likely to require the resources and input of not only health and social services but also broader services associated with education and access to suitable working and learning environments (Watson et al., 2004), if we are to impact positively on long term disability.

LIMITATIONS

The study used a cross-sectional design, which lends itself to providing descriptive data regarding the current situation in the population surveyed and associations between variables cannot be deemed to be causative. Future

prospective research could look at the profile of beliefs across a longer period of time to determine the degree to which they alter associated with changes in other lifetime characteristics (work status; marital status; onset and/or recovery from episodes of LBP) (Gross et al., 2006).

Additionally, the study was commissioned for a purpose other than for determining the specific outcomes for which the researchers were interested, this may have influenced subjects' responses to the specific health questions investigated in this study. The Jersey Annual Social Survey is administered by the States of Jersey Statistics Unit, this allowed for the largest and broadest population analysis. However, because of the additional content within the Survey relating to broad social issues, both the length of the overall survey but also its perceived purpose may have lead to respondents being less open about disclosing the specific health information required by the researchers. The broad cross-section of responses received however, suggest this was unlikely to have been a significant issue.

The role of educational attainment is difficult to delineate from social deprivation or potential subsequent working roles. Therefore, future studies may wish to look at interactions between educational level, employment sector or specific job characteristics, and estimates of income in order to control for these potential confounding issues.

CHAPTER 5 – THE PAIN ATTITUDES AND BELIEFS SCALE (PABS): INTERNAL CONSISTENCY OF THE FACTOR STRUCTURE WHEN USED WITH A GENERAL PRACTITIONER POPULATION

With the previous chapter providing some detail on our population beliefs, we also sought to identify attitudes and beliefs of our general practitioner population towards LBP. However, in order to do so considerable work was required in terms of rigorously evaluating an appropriate assessment tool. The following two chapters focus on the assessment of the PABS with our local GP population.

INTRODUCTION

Advice given to patients regarding management of their LBP conditions can influence the course of the condition and the overall outcome, independently of and in conjunction with other medical interventions (Rainville et al., 2000). In order to improve the transfer of information to patients and the process of their clinical care, management guidelines have been produced and are now widely available. These highlight the importance of reassurance; the judicious use of diagnostic tests; advocate advising patients to stay active and emphasise the retention of normal roles (van Tulder et al., 2006, Chou et al., 2007, Savigny et al., 2009). Understanding where and why HCPs deviate from guideline management is important in interpreting how their advice is received by their patients and how this may influence patients' outcomes (Corbett et al., 2009, Fullen et al., 2007). As discussed in Chapter 1, the relationship between attitudes and beliefs of HCPs and their subsequent management of LBP

patients has attracted considerable research attention (Coudeyre et al., 2006, Sieben et al., 2009, Bishop et al., 2008, Pincus et al., 2006, Jellema et al., 2005a, Houben et al., 2005a, Ostelo et al., 2003b, Rainville et al., 2000), however the measures used vary and often these have not undergone rigorous testing with their specific target audiences (Bishop et al., 2007).

Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS)

Initially, attempts to survey HCPs' attitudes and beliefs towards pain and disability relied on measures which were originally designed for use with patient populations (Rainville et al., 1995). The Pain and Impairment Relationship Scale (PAIRS)(Riley et al., 1988, Rainville et al., 1993) was one of the first measures used in this context. Work using this measure attempted to determine the extent to which HCPs felt that pain symptoms would invariably lead to disability in chronic low back pain (CLBP) patients (Rainville et al., 1995). The validity and reliability of the measure were, to some extent, implied from its previous use in patient populations but also, further investigated in this original work.

Houben and colleagues (Houben et al., 2004) further reviewed the factor structure of the HC-PAIRS and found it to measure a one-dimensional construct. They suggested the measure did go some way to predicting subsequent treatment recommendations but had limited value given the lack of clear cut off scores or ability to differentiate between therapists' orientations. They found a varied range of scores amongst the HCPs surveyed with the

measure, indicating a broad range of feelings towards the notion that pain justifies impairment or disability, but with the majority of subjects being neutral or uncommitted about this concept. The one-dimensional nature of the construct did not allow for closer scrutiny of inter-individual differences and thus further work created new measures.

Pain Attitudes and Beliefs Scale for Physical Therapists (PABS-PT)

Ostelo and colleagues chose to develop a measure which would more closely resemble constructs investigated with patient populations, such as fear of movement, pain catastrophising and the inevitability of disability associated with LBP (Ostelo et al., 2003b). They also chose to look more broadly at different categories of HCP and focused predominantly on the manual therapies including physical therapists. The Pain Attitudes and Beliefs Scale for Physical Therapists (PABS-PT) (Ostelo et al., 2003b) was found to have two main factors which were suggested to relate to either a biomedical orientation or a biopsychosocial orientation.

PABS was originally developed to therefore to determine the attitudes and beliefs and subsequently the treatment orientation of physiotherapists towards the management of CLBP (Ostelo et al, 2003). Ostelo and colleagues (Ostelo et al., 2003b) reviewed existing questionnaires which looked at patients' attitudes and beliefs towards chronic pain and rephrased them to capture therapists' orientations.

Measures reviewed included the Tampa Scale for Kinesiophobia (TSK) (Kori et al., 1990) and the Dutch version of this measure (TSK-DV) (Vlaeyen et al, 1995); this was designed to measure "excessive, irrational and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or (re)injury" (Kori et al., 1990); the Pain Catastrophising Scale (PCS) (Sullivan et al, 1995) which was designed to measure an exaggerated negative orientation toward pain; the Back Beliefs Questionnaire (BBQ) (Symonds et al., 1996) which is aimed at measuring beliefs about the future course and inevitability of negative consequences associated with episodes of LBP; and the Fear Avoidance Beliefs Questionnaire (FABQ) (Waddell et al, 1993) which looks at patients' beliefs about how physical activity and work affect LBP. In addition to reviewing these measures for relevant items they also added items of their own which they felt relevant to the management of CLBP (Ostelo et al., 2003b).

Ostelo and colleagues started with 37 items, six of which were deleted following expert review, leaving 31 items. These 31 items were made up of eight items from the TSK-DV; two items from the BBQ; two items from the FABQ; and 19 items which the researchers added.

Houben (Houben et al., 2005b) re-examined the factor structure and properties of the PABS-PT following on from recommendations by Ostelo et al that the biopsychosocial factor was "open to improvement". They added 5 additional items aiming to enhance this factor which were phrased by the same experts who constructed the original PABS-PT (Houben et al., 2005a). Houben's team

(Houben et al., 2005b) went on to further refine the PABS-PT measure and investigate its criterion validity against other measures. Following further refinement they reported a measure with 19 items overall, 10 within the Biomedical Factor and 9 within the Biopsychosocial Factor with adequate internal consistency for both factors when evaluated with therapist populations (Cronbach's alpha 0.8 and 0.68 respectively). From the results of their work, they suggested that therapists who have a predominantly biomedical orientation are more likely to feel that pain and disability are a consequence of physical pathology and therefore use a pain contingent approach in their management of patients. Conversely, therapists with a more biopsychosocial approach will more likely take account of not just physical pathology but psychological and social issues affecting the patient and may focus on increasing activity according to a predetermined timeline rather than the patient's symptoms (a time contingent approach).

Use of the PABS-PT with a GP population has been previously reported by Jellema (Jellema et al., 2005a, Jellema et al., 2005b). Jellema and colleagues chose to remove two items based on their wording which suggested that they were more relevant to manual therapists and not GPs but otherwise used the PABS as suggested by Ostelo (Ostelo et al., 2003b). The internal consistency of the measure, when used with this population, was not reported. Additionally, this version of the PABS did not contain the additional items added by Houben et al (Houben et al., 2005a) which have been shown to strengthen the Biopsychosocial factor with therapist populations.

As the development of measures to capture HCPs attitudes and beliefs is still in its infancy, it was the aim of the current study:

1. To assess the internal consistency of the previously defined factor structures of the PABS (Jellema et al., 2005b, Jellema et al., 2005a, Houben et al., 2005b, Ostelo et al., 2003b) with a GP population.

METHODS

General Practitioner Sample

All General Practitioners (GPs) named on the States of Jersey ESSD's "Nominal Roll of Approved Medical Practitioners in Practice Order" updated as of 27th February 2006, resident in Jersey and practising General Medicine were invited to take part in the research study. Ninety-nine (99) invitations to participate were sent out to registered practitioners.

Participants

Of the ninety-eight original invitees, four names were removed from the sample for failure to meet the inclusion criteria of being resident in Jersey and practising General Medicine (two being non-resident; one practising only alternative medicine (homeopathy) and one specialising in dermatology). An additional GP had to be removed from the study for failure to maintain General Medical Council Registration and therefore, being non-eligible for inclusion on the Nominal Roll of Approved Medical Practitioners in Practice Order. One additional GP was added to the register during the invitation stage.

Of the total study population (94 GPs) eighty-five (85) GPs returned their Questionnaires and signed their consent forms agreeing to take part in the research study.

As it was a further aim of the overall research project to attempt to use the responses on the PABS to predict treatment behaviour, it was a requirement that all participants had also seen at least one patient with NSLBP in the three

months prior to data collection and that they had issued sickness certificates for patients during 2005. One of the GPs who agreed to take part and completed their consent form had to be removed from the study cohort as they were newly registered and had not been working in Jersey in 2005 and had not therefore, certified any sickness absence for that year. The study cohort consisted of eighty-four (84) consented GPs. During analyses one GP was identified as being an extreme outlier for sickness certification and was therefore deleted from the study cohort (see chapter 7), the PABS analyses reported are therefore based on the responses of 83 GPs.

Correspondence Pack

A correspondence pack was put together by the research team for all GPs in the study population. Prior to sending out the correspondence packs to all GPs, all documents contained within the pack, with the exception of the questionnaire, were checked for readability and relevance to the local general practice setting by two resident GPs who had agreed to assist the research team. The questionnaire was checked and proof read by the research team prior to sending.

Correspondence packs were sent out to all 94 eligible GPs in April, 2006. Each pack containing: i) a letter from the GPs assisting the research team outlining the purpose of the study and an invitation to their colleagues to take part; ii) a covering letter from the research team as a whole stating the aims of the study and local relevance; iii) an information leaflet providing detail of the study; iv) a modified version of the PABS-PT (Houben et al., 2005b, Jellema et al., 2005a,

Jellema et al., 2005b, Ostelo et al., 2003b) (**PABS**) with a demographic data form and a consent form included within and attached.

PABS

To evaluate attitudes and beliefs about LBP, subjects were asked to complete a modified version of the Pain Attitudes and Beliefs Scale (PABS) for physiotherapists (Jellema et al., 2005a, Houben et al., 2005b, Ostelo et al., 2003b). All items previously validated (Ostelo et al., 2003b, Houben et al., 2005b) were included in the analyses with the exception of two items which referred more specifically to physiotherapists and not GPs ("*It is the task of the physiotherapist to remove the cause of back pain*" and "*Even if the pain has worsened, the intensity of the next treatment can be increased*"); and the one item added by Houben and colleagues to strengthen the biopsychosocial factor which actually loaded on the biomedical factor ("In the long run, patients with back pain have a higher risk of developing spinal impairments") (Houben et al., 2005b). With the addition of four of Houben et al's extra Biopsychosocial items (Houben et al., 2005b) and retention of 29 out of the original 31 items from Ostelo et al (Ostelo et al., 2003b), the measure presented to the study cohort contained 33 items in total.

The items on the PABS are scored on a six point Likert scale where: Totally disagree = 1; largely disagree = 2; disagree to some extent = 3; agree to some extent = 4; largely agree = 5 and totally agree = 6.

Procedure

Two weeks after the initial mailing all non-responders were contacted by telephone to request completion and return of outstanding questionnaires. Two weeks after this telephone reminder, all outstanding non-responders were sent a further letter from the research team as a final reminder, as well as a copy of the information sheet and a further copy of the questionnaire. They were then telephoned again, to make a final request for completion and return of the questionnaires. Any questionnaires received by the research team with missing data were followed up and the participating GP was contacted by electronic mail and by telephone regarding the missing responses. **All** missing responses were subsequently obtained and entered appropriately.

Prior to data entry all consent forms were removed from the Questionnaires, leaving only a GP identifier code. The data was analysed using SPSS v14 for Windows.

Ethics

Written application was made to the States of Jersey, Health and Social Services' Ethics Committee prior to commencement of the study. Both verbal and written consent to conduct the study were given (Reference: PMcC/ap dated 28/2/06).

RESULTS

Normality

Kolmogorov-Smirnov tests were performed for all items, however all items produced significant scores, suggesting violation of the assumption of normality. This is reported as being quite common in larger samples, therefore it is suggested that the shape of the distribution and the normal probability plots be examined in order to gain further evidence relating to the normality of the distribution (Pallant, 2005). Standardised values of skewness were also calculated for each PABS item. Items with a standardised skewness value greater than ±1.96 are suggested to have a response trend that deviates from a normal distribution and should therefore be excluded from an instrument (Field, 2000). Analyses using these criteria with our GP population did not identify any skewed items for deletion.

Inter-item correlations

A measure that assesses a particular construct should contain items that are all related to this construct but which examine different facets of it (Watson et al., 2008). Therefore, each item within each factor of the PABS should be moderately correlated with each other item in the same factor and should also be correlated with the factor total score. Any two items which correlate above 0.70 are likely to be assessing the same aspect of the construct and one should be considered redundant. Examination of all remaining items revealed no redundant items (i.e. no two items which correlated above 0.7).

Item-total correlations

The corrected item-total correlations were calculated for each factor by correlating the score of each item with the total score for that factor, minus the score of each individual item in turn (Watson et al., 2008). Low values (i.e. less than 0.2) are likely to be assessing a different construct from the other items in that measure (Streiner and Norman, 1995) and should therefore be removed. Four items (out of those previously validated and retained for this analyses) from the Biopsychosocial factor produced correlations of less than 0.2 and were removed:-

- "Knowledge of the tissue damage is not necessary for effective treatment";
- "A patient suffering from severe back pain will benefit from physical exercise";
- "Therapy may have been successful even if pain remains"; and
- "Exercises that may be back straining should not be avoided during treatment".

Cronbach's α Coefficient

For the Biomedical factor, 12 items were retained, with one item ("If therapy does not result in a reduction in back pain, there is a high risk of severe restrictions in the long term") being removed as it did not contribute to the total score. The 12 item factor produced a Cronbach's α of 0.79. For the Biopsychosocial factor, five items were retained all of which contributed to the Cronbach's α of 0.602. Table 9 details the final items for both factors.

Table 9. Retained PABS items with GP a Population

Biomedical Factor
Reduction of daily physical exertion is a significant factor in treating back pain.
Patients that have suffered back pain should avoid activities that stress the back.
Pain is a nociceptive stimulus, indicating tissue damage.
The best advice for back pain is: “Take care” and “Make no unnecessary movements”.
Patients with back pain should preferably practice only pain free movements.
Back pain indicates the presence of organic injury.
Sport should not be recommended for patients with back pain.
If back pain increases in severity, I immediately adjust the intensity of my treatment accordingly.
Pain reduction is a precondition for the restoration of normal functioning.
Increased pain indicates new tissue damage or the spread of existing damage.
If patients complain of pain during exercise, I worry that damage is being caused.
The severity of tissue damage determines the level of pain.
Biopsychosocial Factor
Mental stress can cause back pain in the absence of tissue damage.
The cause of back pain is unknown.
Functional limitations associated with back pain are the result of psychosocial factors.
There is no effective treatment to eliminate back pain.
Learning to cope with stress promotes recovery from back pain.

DISCUSSION

The preliminary analyses carried out for this study retained all items (from those previously validated) based on assessment of skewness or kurtosis. Previously, Houben et al (Houben et al., 2005b) and Ostelo et al (Ostelo et al., 2003b) differed on items excluded due to normality, this study retains items from both previous methods. Houben and colleagues (Houben et al., 2005b) used a more conservative approach to assessing normality of distribution than the present study. Their work set the standard Skewness or Kurtosis level of ±1.5 but additionally excluded items where more than 70% of scores were located in the extreme categories (either 1-2 or 5-6). Application of this more conservative method would have resulted in further items being excluded from our measure, which only just attained an acceptable level of internal consistency for the biopsychosocial factor. Future work conducted with a larger GP population would benefit from further reconsidering all 34 items, particularly if sufficient numbers were available to perform Factor Analyses.

Previous studies produced agreement on the deletion of four items, three of which could be said to represent the extreme end of the biomedical spectrum:-

- “Back pain sufferers should refrain from all physical activity in order to avoid injury”;
- “Back pain indicates that there is something dangerously wrong with the back”;
- “Sport should not be recommended for back pain”;

and one which could be said to represent a relatively non-contentious biopsychosocial statement:-

- "The way patients view their pain influences the progress of the symptoms".

This illustrates perhaps, that measures which are originally designed for patient use, don't always readily translate to HCP use as the general viewpoint within medical and allied health professionals may be set more moderately than that of the general population. This view is further validated by reference to our own population level analyses (chapter 4) but also work on population based myths and misunderstandings from other communities (Goubert et al., 2004).

No two items on the measure, as assessed here, correlated above 0.7, suggesting that items, although often related to the other items, were in fact accessing slightly different facets of the constructs investigated. Prior to looking further at the internal consistency of the measure, previous researchers (Houben et al., 2005b, Ostelo et al., 2003b) looked at the factor structure of the PABS with their populations. In order to produce reliable and stable results from factor analysis it is suggested that sufficient sample size is necessary (Tabachnick and Fidell, 2001), (150 – 300 cases). However, more recently the ratio of subjects to items has been suggested as a more appropriate method of determining sufficient sample size for calculations (between 10:1 and 5:1) (Nunnally, 1978, Tabachnick and Fidell, 2001). For the current study, even at the least conservative estimate of 5:1, without further reduction of items there was insufficient sample size to conduct a factor analysis calculation. Previous research by Ostelo and Houben (Houben et al., 2005b, Ostelo et al., 2003b) differed in terms of loading characteristics between the factors. Our results for the biopsychosocial factor remain a subset of both previous reported works (Ostelo et al., 2003b, Houben et al., 2005b). However, for the biomedical factor

our results remain an entire subset of Ostelo's work, but differ from Houben's by the retention of four additional Ostelo items:-

- "Reduction of daily physical exertion is a significant factor in treating back pain";
- "Not enough effort is made to find the underlying organic causes of back pain";
- "Patients that have suffered back pain should avoid activities that stress the back"; and
- "The best advice for back pain is: "take care" and "make no unnecessary movements".

No further item reduction was achieved by assessing the inter-item item total correlations for each factor (on the assumption that the items are attributed to the factors for which they were originally designed). Scales with fewer than ten items may normally have low Cronbach alpha scores (Pallant, 2005), however both factors produced alpha values above 0.6, despite the low number of items within the Biopsychosocial factor, suggesting that the internal consistency of both factors could be considered acceptable with our sample.

The two factors were negatively correlated with each other (as may be expected from measures designed to assess opposing orientations), however, the moderate correlation (r = -0.474 (p<0.0001) could be said to demonstrate that these two subscales are not entirely independent (Watson et al., 2008). Considerable variation exists between studies that use different populations, but also use different cut-off points for statistical analyses. As all the techniques used by researchers to date (Watson et al., 2008, Houben et al., 2005b, Ostelo

et al., 2003b) whom have investigated the PABS with clinicians vary slightly, in either the levels of acceptability of scores (Skewness & Kurtosis) or the stages and types of analyses (i.e. Factor Analysis), the outcomes from investigations are also likely to vary. This is particularly true, when systematic analysis of a measure requires deletion of items at each stage, with the retention of differing items at any stage likely able to significantly alter the outcome. Overall there are a number of differences between the results of this study and previous work (Ostelo et al., 2003b, Houben et al., 2005b), however this needs to be interpreted in the context of both the different groups of clinicians used but also the differences in the statistical methods and interpretations undertaken.

CONCLUSION

The PABS, when used with a GP population, appears to demonstrate reasonable internal consistency. Both the Biomedical and the biopsychosocial factors produced acceptable Cronbach's α scores when used with this population. The biopsychosocial factor would potentially still benefit from the addition of more items to further strengthen its internal consistency when used with GPs. Despite the efforts of previous researchers to strengthen this factor, there remains difficulty in designing questions that aptly reflect a biopsychosocial orientation yet which generate a range of responses across a population. Previous work has examined the factor structure of the measure with paramedical therapists (Houben et al., 2005b), numbers of subjects within the current study precluded similar analyses, however future work with GPs could consider all previously suggested items and conduct further factor analysis for this population, thereby potentially retaining further items.

CHAPTER 6 – TEST – RETEST RELIABILITY OF THE PAIN ATTITUDES AND BELIEFS SCALE (PABS) WHEN USED WITH A GP POPULATION

INTRODUCTION

As previously suggested, there has been a recent surge in interest in the attitudes and beliefs of clinicians who manage patients with LBP. Multiple measures to assess the attitudes and beliefs of HCPs have been described (Houben et al., 2004, Rainville et al., 1995, Ostelo et al., 2003b). Work within the field remains relatively new and as discussed, previous measures used have been adapted from patient tools (Riley et al., 1988, Waddell et al., 1993, Kori et al., 1990) and reworded to capture the orientation of clinicians. The degree to which they have been fully assessed with their new target populations varies (Houben et al., 2004, Rainville et al., 1995) and a criticism of the current proliferation of measures is the lack of validity of some of the measures when used with different populations of clinicians and the lack of robust measurement of their reliability and sensitivity (Bishop et al., 2007). Indeed, it has been recommended that further evaluation of tools currently available is a research priority (Bishop et al., 2007), if we are to avoid the proliferation of tools which basically measure similar constructs (de Vet et al., 2003).

As detailed in Chapter 5, PABS was originally developed to measure physiotherapists' attitudes and beliefs towards the management of CLBP (Ostelo et al., 2003a). Existing questionnaires that examined patients' attitudes and beliefs towards chronic pain were rephrased and used for the development of the measure (Ostelo et al., 2003a). Ostelo and colleagues made several

recommendations regarding the development of the PABS at the end of their initial paper. These included suggesting that it should be assessed against other measures for criterion validity but also that its internal structure could be improved by enhancing the psychosocial factor within the measure (Ostelo et al., 2003a).

The measure was subsequently reviewed and further developed by Houben and colleagues (Houben et al., 2005b). They assessed the PABS with a broader range of clinicians in addition to physiotherapists, including chiropractors, manual therapists and McKenzie therapists. They compared it against other external measures of attitudes and beliefs including the Photograph Series of Daily Activities (PHODA) (Kugler et al., 1999), the HC-PAIRS (Rainville et al., 1995), an adjusted version of the BBQ (Symonds et al., 1996) written to capture HCPs' beliefs (the BBQ-HC) and the TSK (Kori et al., 1990) adjusted to capture the concerns therapists have regarding movement and (re)injury for their patients (the TSK-HC) (Vlaeyen et al., 1995). This was an initial attempt to gain some criterion validity for the PABS measure. Houben and colleagues also attempted to enhance the psychosocial aspect of the measure by adding further items to this factor (Houben et al., 2005b); one of which was retained during our review of the internal consistency of both factors (Chapter 5).

The PABS was found to measure up favourably against these associated measures. It was suggested that a limitation of this comparison would be that some of these associated measures (TSK-HC and the BBQ-HC) themselves

were not validated and had been altered to address therapists' rather than patients' views. We would add to this possible limitation that it would be expected to see some relationship between the PABS and the BBQ and the TSK as these were measures from which the PABS itself was originally devised (Ostelo et al., 2003a). Although Houben and colleagues (Houben et al., 2005b) did remove the exact items taken from each of these measures prior to their correlation analyses, the influence that both measures may have exerted on the team that created the measure, in terms of orientation and phrasing of the additional 24 items which they added independently, cannot be measured.

However, despite these limitations, there remained a strong correlation between both factors of the PABS and the HC-PAIRS (both significant at the $p<0.001$ level) and it was also found that both factors of the PABS were significant predictors of perceived harmfulness as measured by the PHODA and additionally by suggested treatment recommendations given for case vignettes. The addition of further items to enhance the psychosocial factor also improved its internal consistency (increasing from α0.54 to α0.68), thereby strengthening this element of the measure (Houben et al., 2005b). With the reviewed structure determined for GPs in chapter 5, the alpha coefficient remained acceptable (α0.602) (for explanation of all deletions see appendix 4).

Houben and colleagues suggested that the type of treatments offered by HCPs varies widely across disciplines and that it is unlikely therefore, that a single measure of treatment orientation can be developed that is applicable to all disciplines (Houben et al., 2004). The PABS was originally developed only for

physiotherapists but was shown to be equally relevant to other therapy disciplines and also to have a strong correlation with the HC-PAIRS which has predominantly been evaluated with physicians (Rainville et al., 2000, Houben et al., 2004) but also general community health care workers (Rainville et al., 1995). It has also subsequently been used to measure the beliefs of GPs before and after a minimal intervention strategy (Jellema et al., 2005a). Jellema and colleagues made minor adjustments in keeping with the change of discipline being measured, namely removing the items which specifically referred to physiotherapy (Jellema et al., 2005a), but did not evaluate the test-retest reliability or the internal consistency of the PABS with this specific population.

As the comparisons made with other measures have been shown to be relatively favourable (Houben et al., 2005b) and that some of these alternative measures were more relevant to GPs (HC-PAIRS (Rainville et al., 2000, Houben et al., 2004)), there could be said to be some degree of validity for the PABS when used with this population. Additionally, as Chapter 5 details, the internal consistency of the measure has been shown to be adequate when used with GPs (Watson et al., 2008). However, the test - retest reliability of the measure assessed over time with any population had not been formally reported in the literature.

It was the aim of this study therefore to assess the test – retest reliability of the PABs as detailed in chapter 5 (Watson et al., 2008, Ostelo et al., 2003b, Houben et al., 2005b, Jellema et al., 2005a) with a general practitioner

population. As the findings of recent research (Watson et al., 2008, Sieben et al., 2009) have been a departure from the general consensus of results relating to HCP attitudes and beliefs and predicted behaviour, the research team were keen to further ensure the stability and sensitivity of the measure used, particularly with a GP population.

Test retest reliability (reproducibility) is an assessment of the stability of a measure overtime (Rousson et al., 2002, Lexell and Downham, 2005). It determines whether the measure is able to produce reliable results or whether it is significantly influenced by the situation or the state of the subject at the time (Rousson et al., 2002). Reproducibility has been defined as "the ability to measure attributes in a consistent manner when administered on several occasions to stable subjects" (Beckerman et al., 2001). Assessing the reliability and sensitivity of a measure may involve a number of different statistical techniques. These may include evaluating the relationship between two sets of scores; evaluating the differences between repeated sets of scores; determining the level of agreement between scores (Bland and Altman, 1986); or assessing the level of inherent variability between repeated measurements (see chapter 8). We chose to use a combination of these statistical methods as it has generally been agreed within the literature that a **set** of statistical methods is required for assessing reliability and sensitivity of measurements rather than a single statistical test (Lexell and Downham, 2005, Ageberg et al., 2007).

Without test retest reliability or reproducibility, it would not be possible to assess the degree to which the measure is sensitive enough to detect clinical change in

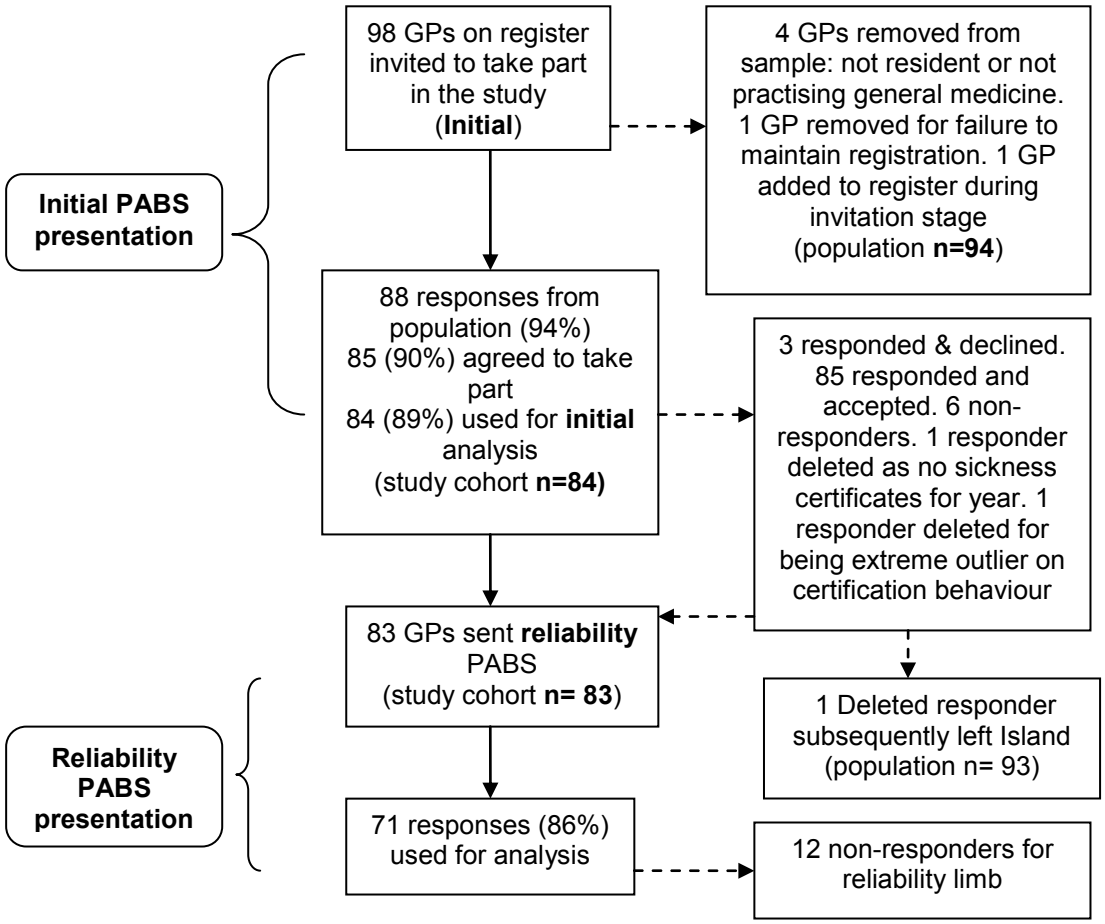
the subjects' responses as the result of targeted interventions (Beckerman et al., 2001).

METHODS

General Practitioner Sample

All General Practitioners (GPs) who agreed to participate in the original study by the research group (Watson et al., 2008) and who completed and returned the original questionnaire sent out in May/June of 2006, were invited to take part in the reliability limb of the study conducted in August/September of 2006. Fig.11 describes the recruitment and dropout rates for each limb of the study.

Fig.11 Recruitment and Drop out rates Initial and Reliability Presentations of PABS



To assess the test-retest reliability of the assessment tool as robustly as possible, the following statistical methods were used:-

1. Retest correlation coefficients – assessment of agreement between sets of test results Pearson's *r* or intraclass correlation coefficient ((ICC) = between-subject variance / (between subject variance + within subject variance)) or the "relative reliability" (Ageberg et al., 2007); Fleiss (Fleiss, 1986) recommends ICC values above 0.75 for excellent reliability and values of between 0.4 and 0.75 for fair-to-good reliability, values below 0.4 suggestive of poor reliability. However, an ICC only produces a value of between 0 and 1 which does not relate to the values of the original measure used, therefore it is more difficult to interpret clinically (Ageberg et al., 2007) and would not be suitable as a standalone measure of the instruments' retest reliability.
2. Assessment of changes in the mean – to assess for any random or systematic change in the results between the two test situations (Ageberg et al., 2007, Lexell and Downham, 2005, Bland and Altman, 1986) the following indices were recorded: mean difference between the test occasions with the standard deviations, the standard error of the mean difference and the 95% confidence intervals (95% CI) and the Bland & Altman plots of the 95% limits of agreement (LOA) were plotted. Systematic bias can be estimated from these methods, for example, if values on the reliability presentation were always greater than those on the initial presentation then the mean difference would be positive and the reverse would be true if they were smaller, suggesting a systematic shift in attitudes between the test occasions. If zero is included in the

95% CI, no significant systematic change in the mean is present. The Bland and Altman LOA graphs also allow visual assessment for other systematic biases and magnitude of the inherent variability within the measure.

Research Pack

A Research Pack was put together by the research team for the cohort taking part in the reliability limb of the study. The research packs were sent out to all 84 eligible GPs in August/September, 2006. Each pack contained: i) a covering letter from the research team as a whole, thanking subjects for their participation in previous research to date and stating the original participation rate and the aims of the reliability limb of the study; ii) an information leaflet providing detail of the reliability limb of the study; and iii) a repeat of the original questionnaire, a modified version of the PABS-PT (Houben et al., 2005b, Jellema et al., 2005a, Ostelo et al., 2003b) (**PABS**) with a demographic data form and a consent form included within.

Sociodemographics

Subjects were asked to record their gender; amount of clinical hours worked each week as a GP; amount of years they had been practising as a GP; an estimate of the number of patients they saw with LBP per month and also if they had ever suffered with low back pain themselves.

PABS

To evaluate attitudes and beliefs about low back pain, subjects were asked to complete the modified version of the Pain Attitudes and Beliefs Scale (PABS) as detailed in Chapter 5. This retained 12 items within the biomedical factor of the measure and 5 items within the psychosocial factor (table 9).

Procedure

For the reliability limb of the study the cohort were sent a correspondence pack. Following initial mailing, at two weeks all non-responders were contacted by telephone to request completion and return of outstanding questionnaires. Two weeks after this telephone reminder, all outstanding non-responders were sent a further letter from the research team as a final reminder, as well as a copy of the information sheet and a further copy of the PABS. They were then telephoned again, to make a final request for completion and return of the PABS.

All GPs in the cohort had seen at least one patient with non-specific low back pain in the three months prior to the receipt of their reliability questionnaires.

Any questionnaires received by the research team with missing data were followed up and the participating GP was contacted by electronic mail and by telephone, regarding the missing responses. **All** missing responses were subsequently obtained and entered appropriately. Prior to data entry all consent forms were removed from the Questionnaires, leaving only a GP identifier code. This code was matched with the previous data for the same

identifier code, thus producing two potential data sets for the demographic data and the PABS questionnaire for each GP. Data from the questionnaires were entered into an SPSS v14 for Windows, data file.

Ethics

Written application was made to the States of Jersey, Health and Social Services' Ethics Committee prior to commencement of the initial study investigating GP attitudes and beliefs about LBP. Written consent to conduct the study was given (Reference: PMcC/ap dated 28/2/06).

RESULTS

Cohort

Participation and dropout rates for the study cohort of GPs are described in Figure 11. For the initial presentation of the PABS all GPs practicing in Jersey were invited to take part (95), of these 84 agreed to take part and met the inclusion criteria (the initial cohort). Of the initial cohort 27% were female and 74% reported a history of LBP. One subject was deleted from the initial cohort for being an extreme outlier thus leaving 83 subjects for the reliability limb. Of these, 71 returned their reliability measures (86%). The analysis of the reliability of the PABS with a GP population is therefore based on the responses of these 71 GPs.

Descriptive statistics

Table 10. contains the descriptive statistics of the number of hours worked, the number of years practising as a GP and the estimated number of LBP patients seen each month by the reliability cohort.

Table 10. Characteristics of GPs in Reliability Study

	Minimum	Maximum	Mean	Std. Deviation
Number of hours worked per week	4	80	40	13
Years practicing as GP	3	40	18	9
Approximate number of LBP patients seen per month	2	80	18	14

Table 10. also illustrates the range of the GPs within the cohort, both in terms of the number of years they had been practicing as well as the variability of working practice in terms of hours worked each week. There was also considerable variability in terms of the number of LBP patients seen each month

within the cohort, illustrating that the cohort used represented a diverse mix of practising GPs.

Table 11. details the PABS scores for each presentation of the measure. Time one, Initial presentation and time two at 3 months following initial presentation (Reliability Presentation (Rel)).

Table 11. GP PABS responses Reliability Study

	N	Minimum	Maximum	Mean	Std. Error Mean	Std. Deviation
Initial Presentation						
PABS Biomedical	84	20	55	36.48	.825	7.564
PABS Biopsychosocial	84	10	24	18.29	.296	2.709
Reliability						
PABS Biomedical	71	17	50	35.52	.844	7.111
PABS Biopsychosocial	71	12	25	18.24	.299	2.515

Reliability

Retest correlation coefficients

The scores for the PABS Biomedical Factor (PABS Med) and the PABS Biopsychosocial Factor (PABS BPS) from the reliability limb of the study were plotted against their initial presentation scores for each factor respectively. Figs. 12 and 13 illustrate the cluster of scores around the X=Y line. These simple scatter plots provide an easily interpreted graphical view of the relationship between the two sets of scores.

The closer the results to the X=Y line the more the two sets of scores agree. The strength of the relationship between the scores is quantified by the Pearson's *r* score which for the PABS Med factor was 0.806 and for the PABS BPS factor was 0.653, both of these are significant at the 0.01 level.

Fig. 12 PABS Initial Biomedical Scores plotted against Reliability Scores

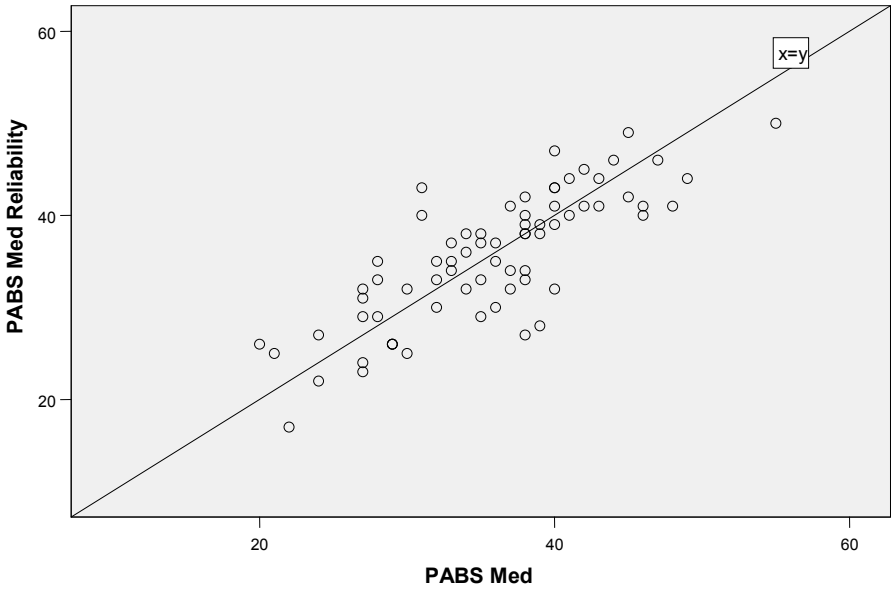


Fig. 13 PABS Initial Biopsychosocial Scores plotted against Reliability Scores

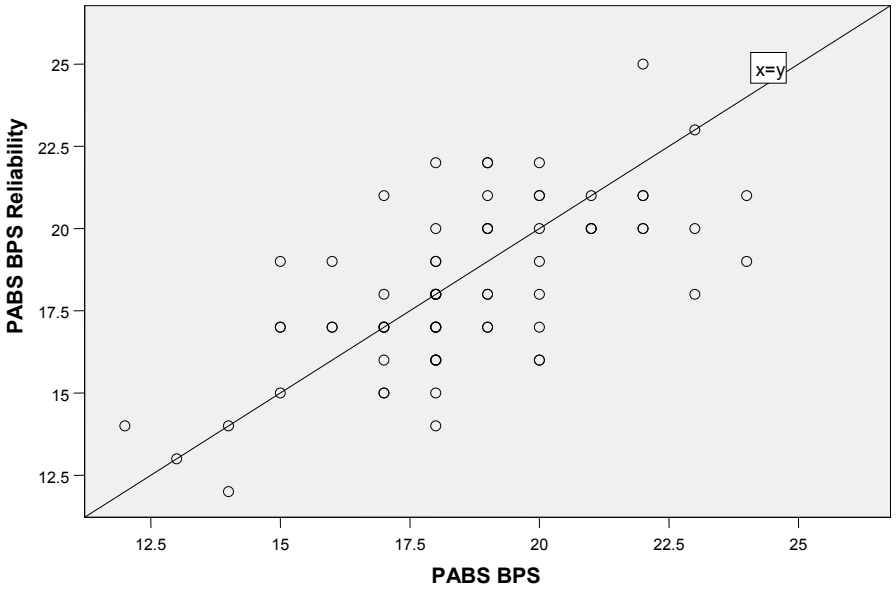


Table 12. Correlation Coefficients for PABS Initial and Reliability Presentations

	Pearson's *r* Correlation	Sig.	Intraclass Correlation	Sig.	95% Confidence Interval	
					Lower	Upper
Biomedical	0.806	.000	0.806	.000	0.706	0.875
Biopsychosocial	0.653	.000	0.653	.000	0.496	0.768

ICC = between-subject variance / (between-subject variance + within-subject variance)

Table 12. shows the test-retest correlation coefficients for the data. The ICC and the Pearson's *r* are the same for both the Biomedical factor and the Biopsychosocial factor, this is a common finding when measurements of the same subjects are taken on two occasions and analysed (Bland & Altman, 1999). The strength of the relationships between the scores on both test occasions are quantified by these correlation scores which for the PABS Biomedical factor was 0.806 and for the PABS Biopsychosocial factor was 0.653, both of these are significant at the 0.01 level.

Changes in the mean

The mean difference between test scores for the PABS Biomedical and Biopsychosocial factors from initial presentation (Initial) and reliability presentation (Reliability) and the standard deviations of the mean differences (SD_{diff}) with 95% CI, and 95% LOA are given in Table 13.

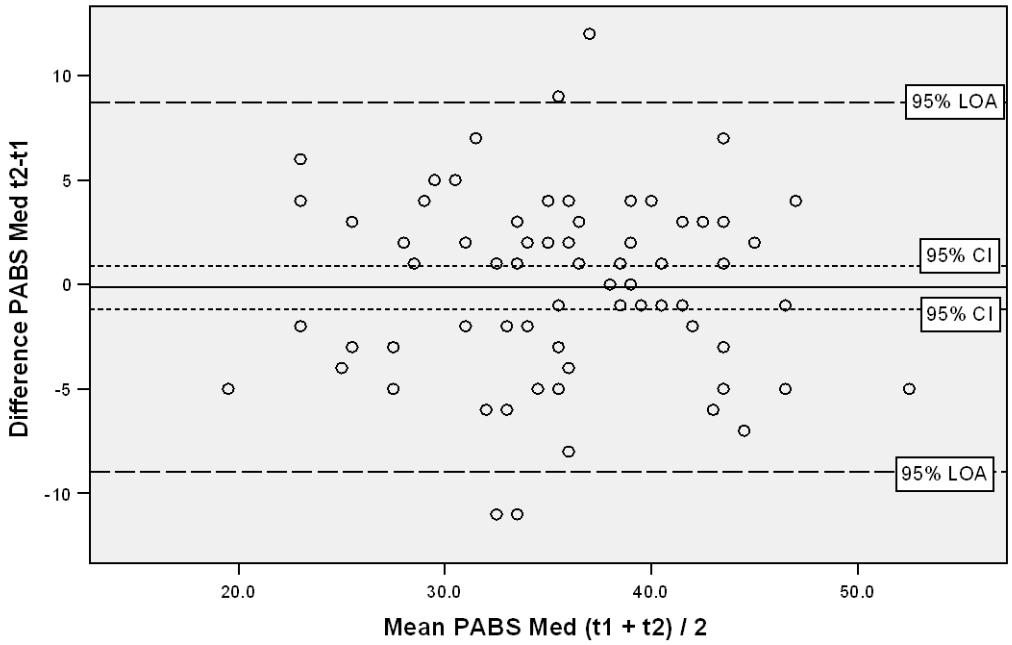
Table 13. Test-retest reliability of the PABS factors with a GP Population

	Initial Mean (SD)	**Reliability Mean (SD)**	**Mean difference (SD_{diff})**	**95% CI Lower / Upper**	**95% LOA Upper / Lower**
Biomedical	36.48 (7.564)	35.52 (7.111)	-0.15 (4.420)	(-1.20) - (0.89)	(8.69) – (-8.99)
Biopsychosocial	18.29 (2.709)	18.24 (2.515)	-0.35 (2.085)	(-0.85) – (0.14)	(3.82) – (-4.52)

The mean difference and 95% CI for the mean difference revealed no systematic change between the initial and reliability presentations for either the Biomedical factor or the Biopsychosocial factor (zero is included in the interval for both factors) (Ageberg et al., 2007).

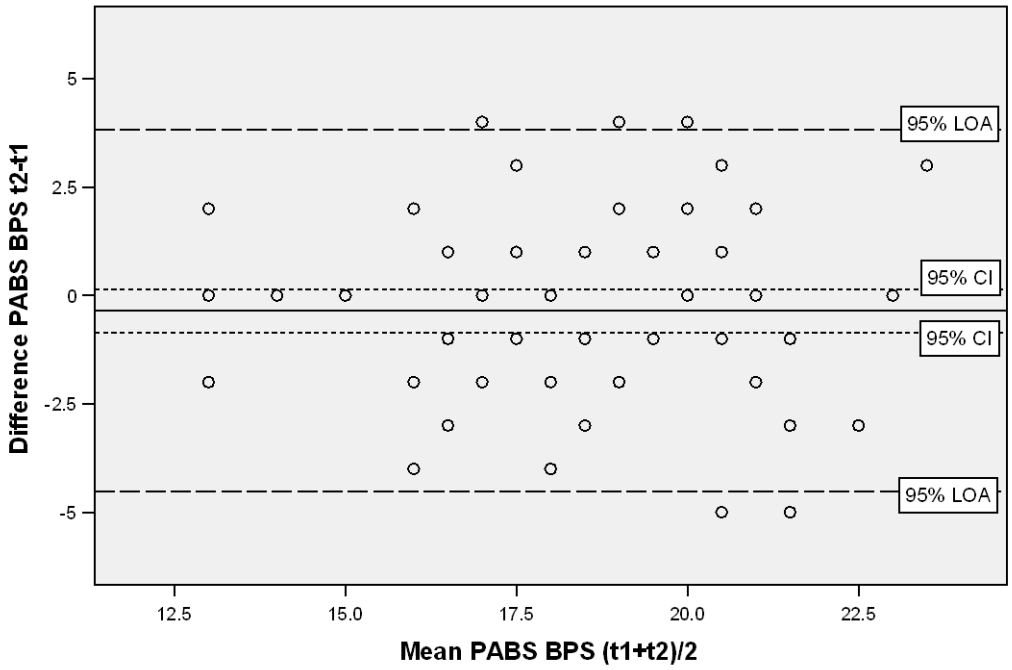
To further explore the changes in the mean the Bland & Altman LOA Graphs were plotted (Fig. 14 and 15 for the Biomedical and Biopsychosocial factors respectively). The differences between test occasions (reliability presentation score minus initial presentation score) are plotted against their means for each subject together with the 95% CIs and the 95% LOA (i.e. mean difference ± 1.96 SD_{diff}) (Bland and Altman, 1986). From the graphical representations it is easy to see that for both factors the mean difference is close to zero (the unbroken line in both figures), and zero falls within the 95% CI lines (small broken lines for each graph). The Bland & Altman LOA Graphs also make it possible to look for other systematic biases. In both figures the differences do not increase with their means, (show heteroscedasticity) or indeed appear to present any systematic pattern of change with their means. For the Biomedical factor 94% of scores fell within the 95% LOA and 93% of the scores for the Biopsychosocial factor.

Figure 14. Bland & Altman LOA Graph for PABS Biomedical Factor



The mean difference between scores on the measure taken from initial and reliability presentations is represented by the unbroken line in between the 95% CIs. This is also very close to zero for the Biomedical factor (-0.15). Only four respondents had scores which fell outside the 95% LOA for this factor.

Figure 15. Bland & Altman LOA Graph for PABS Biopsychosocial Factor



For the Biopsychosocial factor, again the mean difference between scores on the measure taken from initial and reliability presentations is represented by the unbroken line in between the 95% CIs. For the Biopsychosocial factor this was (-0.35). Five respondents had scores which fell outside the 95% LOA for this factor.

DISCUSSION

It was the aim of the current study to assess the test-retest reliability of the PABS with a GP population. As all GPs were practising within one small community, it was necessary to achieve a high response rate in order to gain as broad a view of beliefs as possible and also to ensure that the study cohort was representative of the Island's GP population. Of the 94 GPs in our population, 84 (89%) were included for the initial presentation and 83 for the reliability limb of the study (one had to be deleted as being an extreme outlier). Of the 83, 71 (86%) participated in the reliability limb of the study. This represents an excellent response rate, as response rates for other GP surveys into beliefs about LBP can range from 37 – 52% (Rainville et al., 2000, Rainville et al., 1995).

To gain information regarding the degree of test-retest measurement agreement, systematic or random change and variability of the PABS with this population, several statistical techniques were used.

The scatter plots (Fig.12 and 13.) provide a clear graphical representation of the cluster of scores for both factors around the X=Y line, and the positive correlation between the two sets of PABS scores for each factor.

Both the correlation coefficients used, ICC and Pearson's *r*, produced the same results (Biomedical 0.806, Biopsychosocial 0.653); a common finding when measurements of the same subjects on two occasions are analysed (Holmback et al., 1999).

The Pearson's *r* values suggest that there is a strong relationship between the test scores for our repeated measurements for both factors (Cohen, 1988). However, there are inherent problems associated with using this correlation coefficient as a standalone measurement of retest reliability. This method does not take into account systematic bias and does not provide information on the magnitude of the differences between the paired responses of each subject from initial and reliability presentations (within subject variability) (Bland and Altman, 1986).

The ICC values also therefore suggest a strong relationship between the test scores for our repeated measurements for both factors ($P<0.01$) (Cohen, 1988); taking account of the 95% CIs for both factors, our ICC values represent good to excellent reliability. The ICC, derived from analysis of variance, does take account of bias and would only produce a result close to one (representing a perfect relationship), if there was good agreement between the paired scores for each subject (Bland and Altman, 1986). The ICC represents the ratio of variance between subjects and the total variance (Beckerman et al., 2001). However, a limitation of only using a correlation coefficient as a measure of reliability would be that a score close to one could also be produced if there was a consistent but systematic bias in scores from one presentation to another. Therefore, we also looked at the 95% CI of the mean differences, which revealed no systematic change between the initial and reliability presentations for either factors (zero is included in the confidence interval for both factors). However, neither of these tests provides information regarding the size of the differences between the two scores. It is necessary to be aware of the **size** of

the within-subject differences between test scores, to be able to determine what constitutes a change associated with intervention and not simply variance.

For comparability between two sets of test scores, it has been advocated that Bland & Altman graphs showing 95% CI and 95% LOA are used (Bland and Altman, 1986, Ageberg et al., 2007). These are considered preferable because they focus on the *differences* between the two sets of scores, as a way of determining whether the two sets of scores *agree sufficiently closely* (Bland, 2000). If both sets of scores were perfectly matched (i.e. our GPs recorded exactly the same response each time) the mean difference would be zero, on our graphs it is easy to see for both factors the mean difference (solid line) is very close to zero, which suggests little evidence of overall bias using this method (Bland, 2000). The 95% LOA for each were 8.69 to -8.99 and 3.82 to -4.52 for the Biomedical and Biopsychosocial factors respectively, which encompassed 94% and 93% of our reliability study population. As suggested, there is no reason to assume heteroscedasticity from the graphs and indeed if we attempted to quantify this, we can use a correlation coefficient to determine whether any relationship exists between the differences and the mean scores for both test occasions. For the Biomedical factor this would be $r = 0.006$, P= 0.959 and for the Biopsychosocial factor this would be $r = -0.015$, P=0.903, confirming these assumptions.

CONCLUSIONS

Taken as a comprehensive set of statistical measures, we can be reasonably happy that the PABS has demonstrated good reliability with our GP population,

which has not previously been reported in the literature (Bishop et al., 2007). This is despite the relatively long period of time between initial presentation and the reliability presentation of the measure, of three months. Reproducibility, does not only relate to the measurement instrument, but is also dependent on the design of the reproducibility study (Beckerman et al., 2001). Usually test-retest analysis is performed within a short space of time. We did not expect anything to change within the subjects in the intervening 3 months but the simple effect of measuring attitudes and beliefs and the awareness in the community that a change in service provision was being discussed, could have lead to a gradual change in beliefs at this stage, therefore suggesting we should have expected greater variance than would have been found if measured at a shorter interval. It is possible therefore, that if there had been a shorter duration between test presentations, the width of our 95% CI and our 95% LOA may have been reduced, thus making the measure more sensitive to detecting change.

The results of both this chapter and the former, allow for greater confidence in using the PABS with GP populations for interventional studies (Watson et al., 2008, Bowey-Morris et al., 2010).

CHAPTER 7 – PAIN ATTITUDES AND BELIEFS OF GENERAL PRACTITIONERS AND THEIR RELATIONSHIP TO SICKNESS CERTIFICATION FOR LOW BACK PAIN

With preliminary analyses of the PABS measure suggesting it has adequate internal consistency and measurement reliability when used with GPs (Watson et al., 2008, Bowey-Morris et al., 2010); it was thus possible to use it in relation to our sickness certification data to determine if GP attitudes and beliefs about LBP influenced their decisions with regard to sick listing patients with the condition.

INTRODUCTION

As highlighted in previous chapters, preliminary evidence would suggest that HCPs with more fear avoidant (Coudeyre et al., 2006, Poiraudeau et al., 2006b) or biomedical orientations (Houben et al., 2004, Ostelo et al., 2003b, Houben et al., 2005b, Bishop et al., 2008) (a high score on the biomedical subscale of the PABS) may be more restrictive in their recommendations to their patients with regard to guideline advice particularly in relation to advice regarding activity and work and therefore contribute to the process of disability. The ability to generalise these results has been however, limited. These previous studies have relied on an assessment of clinician behaviour by proxy i.e. the use of case vignettes. The authors do report that one of the main limitations of the work carried out so far into HCPs attitudes and beliefs and subsequent treatment recommendations is the lack of real clinical settings, rather than case vignettes (Bishop et al., 2008). Jones et al note that without comparison of

recommendations on vignettes with those of real patients, validity of measures used to measure these attitudes and beliefs cannot truly be determined (Jones et al., 1990). Also, it has been suggested that only using vignettes leaves the clinician with a lack of visual cues of patient's pain behaviour which they would gain in the clinical setting and which may strongly influence their recommendations (Rainville et al., 2000). Whether or not the relationships previously reported between HCPs' attitudes and beliefs and recommendations on case vignettes remain robust when investigating measures of actual clinical behaviour, had not previously been reported in the literature.

As previously suggested the sanctioning of work absence for NSLBP remains a contentious issue in light of evidence relating to the risk of prolonged disability and guidelines recommending "maintenance of normal roles" despite pain. Previous analyses of trends of incapacity for the condition (Chapter 3) also suggest that the problem continues to grow in Jersey. Thus it was the aim of this study to assess the relationship between attitudes and beliefs of HCPs about NSLBP and their subsequent sickness certification behaviour for this condition. It was a further aim to determine whether or not sickness certification behaviour is specific to beliefs about a specific condition (in this case LBP) or whether it is a more generalised phenomenon, whereby some HCPs may be more likely to sanction work absence regardless of the condition. This is particularly relevant given that large variations in the practice of issuing sickness certificates exists between clinicians (Tellnes et al., 1990). If HCP certification for LBP is clearly explained by beliefs about LBP, then to reduce certification for LBP interventions directed at changing these beliefs would be

warranted. If, however, certification for LBP is better explained by HCPs' overall propensity for sanctioning work absence then interventions directed only at LBP beliefs may be less effective than those aimed at targeting the factors which drive sickness certification in general (Watson et al., 2008).

As there are likely to be many differences both intra-discipline as well as inter-discipline in terms of treatment orientation and possible treatment recommendation, it was decided to limit the investigation of the influence of attitudes and beliefs to one discipline. A measure previously used to assess therapists attitudes and beliefs (the PABS) has undergone preliminary review and assessment with a GP population (chapters 5 & 6) and it was decided that only GPs attitudes and beliefs would be used for this study. This decision was further strengthened by virtue of the fact that GPs and physicians are solely responsible for medically certified work loss in Jersey and not other therapists (Chapter 2).

Additionally, as it has previously been suggested that years of training and gender may also play a role in determining treatment recommendations (Haldorsen et al., 1996), GPs were also required to report their years as a qualified GP, their gender, as well as the personal experience they have with back pain patients in terms of numbers treated. Haldorsen (Haldorsen et al., 1996) found that both personal experience but also years in practice influenced practitioners propensity to sanction sick leave.

The aims of the current study were:

1. To assess the influence of GPs attitudes and beliefs regarding NSLBP on a measure of actual clinical behaviour, the issuing of sickness certificates for short term incapacity (STI);
2. To further assess the specificity of this relationship by comparing sickness certification behaviour for LBP with other common symptom related conditions categorised by Common Mental Illness (CMI) and Respiratory Disorders (RDs); and
3. To assess the influence of various GP demographic variables on this relationship.

METHODS

As this study was a continuation of the study reported in chapter 5, which evaluated the internal consistency of the two factor structure of the PABS when used with a GP population, the same subjects and questionnaire data were used for both elements.

Sociodemographics

Subjects were asked to record their gender; amount of clinical hours worked each week as a GP; amount of years they had been practising as a GP; an estimate of the number of patients they saw with low back pain per month and also if they had ever suffered with low back pain themselves.

PABS

The PABS as amended and described in Chapter 5 and 6 was used for the analyses. The PABS scores were based on the remaining 12 items retained in the Biomedical Factor and the 5 items retained in the Biopsychosocial Factor.

Procedure

All GPs who agreed to participate in the study had seen at least one patient with non-specific low back pain in the three months prior to the receipt of their questionnaires. Prior to data entry all consent forms were removed from the questionnaires, leaving only a GP identifier code. This code was matched with the appropriate code for each GP contained within the Social Security sickness certificates database for 2005.

Social Security Data

Data obtained from the States of Jersey Employment and Social Security Department (ESSD) for use in the study related to Short Term Incapacity Allowance (STIA) only. Any new and continuous period of incapacity for work, up to one year in duration can result in an ongoing claim for STIA. After one year if the recipient is not deemed fit to return to work they will attend a Medical Board Review at the ESSD and if deemed appropriate convert on to Long Term Incapacity Allowance (LTIA). Any certificates issued by GPs which were not forwarded to the department to form the basis of a claim were not included in the study. As described in chapter 2, the exact number of certificates issued which did not form part of a claim is not known as this information remains only within each GP Practice. However, it is not usual practice for a GP to issue a certificate which is not intended to be used to form part of a claim. As previously mentioned, GPs in Jersey work as private practitioners and therefore any visit to a GP will cost an individual a minimum of twenty-five pounds (£25). There is a social support mechanism for those who are eligible and who cannot afford medical treatment, however, this is means tested and is not often available to those who are employed.

All sickness certificates which result in a claim for STIA are received by the ESSD; any claims submitted with missing data generate a query and are manually checked by ESSD staff (Stafford, 2007). The database computer system is designed to answer queries on: certificates, individual clients and their claims or the issuing general practitioner. The data available on each area is therefore limited to that type of query. The research team received downloaded

data on all certificates issued which formed part of an STIA claim and which were received by the Department for the year 2005 (01 January – 31 December).

Descriptions of data fields

The original data files contained the following information:

1. **Ailment Description**, this relates to an ailment code, a list of which has been produced specifically for the ESSD for use within the Island (Stafford, 2007, Watson et al., 2008)(appendix 1). This consists of a number and a letter relating to any one of 241 different listed conditions, including broad description categories such as Miscellaneous, Infection and Pain (unspecified). This is a required field.
2. **Certificate Ailment Description**, this relates to the additional information provided by the issuing GP relating to the specific condition and often provides more detailed information of the patient's presenting condition, this is not a compulsory field.
3. **Examination date** – this relates to the date the patient was seen by the GP, this is a compulsory field
4. **Doctor's name** – this is a pre-printed number code for each GP which appears on sickness certificates issued to GPs who are working in General Practice. It is a unique identifier for each GP who is eligible to issue certificates. This is a required field and appears pre-printed on all certificates.
5. **Doctor's code** – this is the hand printed name of the issuing GP as it appears on the issued certificate, this is a compulsory field.

Certificates of interest

Only certificates issued by the cohort of participating GPs were of interest to the current research study. Certificates issued by non-participating GPs or physicians were sorted and deleted from the analyses. Certificates issued to the Jersey General Hospital for use by Secondary Care physicians for patients seen within the secondary care system have one Doctor's Name code which is distinct from those used for primary care physicians and these were also deleted.

Conditions

The research team categorised Ailment descriptions into broad condition categories, those of interest for this study included:

Respiratory conditions – All respiratory tract disorders were included (Ailment Descriptions or Certificate Ailment descriptions which related to:- Asthma; Bronchitis; COAD/COPD; Cold/influenza; Congestion; Emphysema; Laryngitis; Pharyngitis; Pleurisy; Pneumonia; Sinusitis; Sore Throat; Tonsilitis; Tracheitis; URTI).

Non-specific low back pain conditions – This group included all those diagnoses labelled with NSLBP attributions including:-Back Pain; Lumbago; Pain – back; Spondylitis; Spondylosis. Diagnoses relating to sciatica, intervertebral disc prolapse, injury to back; or injury to spine; rheumatologic disorders or back surgery were excluded.

Common mental illness- Conditions grouped together as common mental illness were:- Agoraphobia; Anxiety; Bereavement; Debility; Depression; Exhaustion; Grief; Mental Illness; Nervous Disorder; Nervous Exhaustion; Post-

natal depression; and Stress. Excluded from this category were bi-polar disorders, substance addiction, eating disorders and hospitalisation for any mental illness.

Cleaning of data

Prior to analyses the database of STIA certificates for 2005 (the "database") was cleaned in order to ensure that the largest number of certificates possible could be retained where possible within the inclusion criteria and used for the analysis phase.

When ailment description (specific ESS condition code) and certificate ailment description (written detail provided by the GP) did not match up, where possible the ailment description was adjusted to a more specific code. Where possible generic codes for infection; pain (unspecified); virus infection and miscellaneous were also changed according to the more specific detail provided by the GP in the certificate ailment description section if they fell within the above categories; thereby enabling their inclusion in the analyses.

RESULTS

The same study cohort and data used in Chapter 5 were used for these analyses.

GP Demographics

Analysis of our GP population revealed that 26.5% were female and the majority (75%) reported having had low back pain themselves. The cohort population varied widely in terms of practice and worked a range of hours per week from 5 to 98 (mean 40 SD 16), seeing an average of 15 LBP patients per month (SD 12). They also varied widely in terms of experience having worked as a GP between 2 and 40 years (mean 18 SD 9).

Within each condition category there were specific Ailment Descriptions which were included and excluded (see above and appendix 1 for full details). Conditions within the Specific low back pain category (Disc, prolapsed intravertebral disc; Pain – nerve/sciatica) and the Back Injury category (injury back; injury to back and injury to spine) were not included in the analyses of certificates for NSLBP and only accounted for 551 and 165 certificates respectively for the entire study cohort for the study period.

Table 14. Details of Sickness Certificates for the Study Cohort

Total number of certificates prior to cleaning	44, 612
Deleted hospital, other physician and locum GP codes	4,956
Total certificates deleted for exclusion conditions	17,090
Total for all GPs for inclusion certificates	22,566
(Total certificates adjusted for inclusion after condition adjustment)	(725)
Total certificates deleted for non-cohort GPs	3,370
Total NSLBP certificates issued for cohort	4280
Total Respiratory Disorder certificates issued for cohort	7891
Total CMI certificates issued for cohort	7025

Relationships of variable of interest - Zero Order Correlation Coefficients

Zero-order correlations between the GP variables and the certification behaviour demonstrated significant correlations between the hours worked, years as a GP and the number of certificates issued; the longer a person had been a GP the more certificates they issued, likewise the more hours the GP worked the more certificates they issued. There were significant correlations between certification rates for all three groups of conditions. There was no relationship between the number of NSLBP patients seen per month and the number of certificates issued for NSLBP (table 15).

In relation to the PABS scores, the zero order correlations demonstrated that GPs who have been working longer were more likely to score highly on the Biomedical factor. The opposite relationship was demonstrated for the Biopsychosocial factor; with those who had qualified more recently scoring higher on this factor. No relationship existed between the scores on either the Biomedical factor or the Biopsychosocial factor and the number of certificates issued for NSLBP.

Table 15. Zero Order Correlations for GP cohort variables

	Years as GP	Hours worked	NSLBP pts/month	Resp certs	CMI certs	NSLBP certs
Hours worked	0.326**					
NSLBP pts/month	0.034	0.321**				
Resp certs	0.223*	0.424**	0.192			
CMI certs	0.244*	0.495**	0.179	0.469**		
NSLBP certs	0.273*	0.303*	0.112	0.434**	0.699**	
PABS Biomedical	-0.224*	-0.013	0.054	0.076	0.060	-0.048
PABS Biopsychosocial	0.278*	-0.078	-0.150	0.146	-0.061	0.067

certs – Certificates; Resp - Respiratory

** P <0.01*

*** P<0.001*

Multiple Regression Analysis

Hierarchical multiple regression analysis was performed to enable us to control for specific GP variables within the model (Pallant, 2005)(table 16). This demonstrated that GP variables (hours worked; years as GP; LBP patients a month) accounted for 19% of the variance in certificates issued for NSLBP; however, only hours worked by the GP was significant (β=0.321; *t*=2.83; *p*=<0.01). The analysis also confirmed that the PABS subscales (Biomedical and Biopsychosocial) did not add significantly to the explanation of the variance in the issuing of certificates for NSLBP after entering the GP descriptors on the first step. The number of certificates issued for both CMI and respiratory conditions were entered as variables on the third step and these both added significantly to the explanation of variance in NSLBP certification (β=0.426; *t*=4.23; *p*=<0.001) and (β=0.366; *t*=3.75; *p*=<0.001) respectively. Overall the final model explained 54% of the variance for the number of NSLBP certificates issued (table 16).

Table 16. Hierarchical multiple regression predicting number of Certificates issued by GPs for NSLBP

Independent variables	**β**[a]	***t*-Value**	**Total R^2**	**R^2 Change**	***F* Change**
Step 1			0.19	0.19	6.10**
Hours worked	0.321	2.83*			
Years as GP	0.134	1.24			
NSLBP pts/month	0.117	1.09			
Step 2			0.23	0.04	2.26
PABS Biomedical	0.204	1.78			
PABS Biopsychosocial	0.220	1.83			
Step 3			0.54	0.31	24.79**
Respiratory certificates	0.366	3.75**			
CMI certificates	0.426	4.23**			

[a] Standardised regression coefficient
* *P≤ 0.01*
** *P≤ 0.001*

DISCUSSION

The lack of prediction ability of responses on either the PABS Biomedical or PABS Biopsychosocial factors in the issuing of sickness certificates for NSLBP after controlling for the specific GP factors i.e. number of NSLBP patients seen per month, time as a GP and hours worked, is somewhat surprising given the results of other published studies(Houben et al., 2005b, Linton et al., 2002, Bishop et al., 2008). The issuing of sickness certificates is only one aspect of clinical behaviour which may influence prognosis and patient outcomes. It may have been useful to have a criterion measure of clinical behaviour, in particular another behaviour that relates to guideline advice such as the requesting of radiographical investigations, in order to determine if this related purely to the behaviour assessed or was more attributable to the fact that this behaviour took place in an actual clinical encounter rather than merely in relation to vignettes. Houben and colleagues (Houben et al., 2004) suggest, as do Rainville et al (Rainville et al., 2000), that symptom severity is strongly correlated to work recommendations, unfortunately we have no information relating to the specific patient within this study therefore future studies would benefit from combing both patient and GP factors to determine their relative influences on prediction of sickness certification.

The lack of a significant relationship or predictive ability may also demonstrate how complex the decision to issue a sickness certificate is (Hussey et al., 2004, Ford et al., 2000, Haldorsen et al., 1996). GPs may have known their patients for many years and built up close relationships with them; previous studies have found that GPs viewed the maintenance of their relationship with their patient as

more important than challenging cognitions about illness and work (Campbell and Ogden, 2006, Chew-Graham and May, 1999). Many reported being willing to relinquish the role of "gate-keeper" to social insurance funds as they felt it threatened these relationships with their patients (Hussey et al., 2004). Their relationship with the patient is continuous, unlike other health professionals who can put time limitations on treatment or indicate that their treatment is not appropriate and this may add to the feeling that colluding with the patient in the short term is justified to maintain this longer term relationship.

Again, in previous studies of GP management of CLBP some GPs reported that they would issue a sickness certificate because the patient would only go and seek one from another GP if they did not (Chew-Graham and May, 1999, Hussey et al., 2004). Locally, a small qualitative review of GPs attitudes towards sickness certification revealed similar results (Stafford, 2007). Whether or not this has happened in practice or if it is merely a concern of GPs, particularly within the local private practice setting, has not been reported.

GPs have reported recognising that they collude with their patients in sanctioning work absence, suggesting that they find it difficult to challenge patients' attributions or modify their (the patients') explanatory models of pain ((Chew-Graham and May, 1999). In this respect, GPs with a psychosocial orientation might collude in the patient's biomedical view of their problem to avoid confrontation and to maintain a good working relationship. The GP may therefore consider more information in coming to a decision than simply the signs and symptoms of the current condition or their own perspective. They

usually have detailed knowledge of patients' social backgrounds and previous work history. One qualitative study (Campbell and Ogden, 2006) demonstrated that GPs are more likely to feel sympathy towards a patient who has family problems and are less likely to see them as "work shy" irrespective of the presenting condition. They were also more likely to have sympathy and more likely to issue a sickness certificate if the patient had "psychological problems" as a primary or secondary condition. In this scenario biomedically orientated GPs might be swayed by the psychosocial presentation of the patient rather than the examination findings.

The lack of association between the PABS and certification behaviour might further be explained by the difference between the implicit and explicit beliefs of our GPs. Experimental studies have demonstrated a lack of relationship between the reasoned explicit attitude, such as assessed by a questionnaire, and the implicit or "automatic" attitudes held (Houben et al., 2005a). Although within Houben's study there was some relationship between implicit attitudes to back pain and recommendations about treatment via video, these were not consistent and the authors recognised that this might not reflect what happens in real clinical scenarios (Houben et al., 2005a). It has been proposed that implicit attitudes may better reflect spontaneous behaviour and that explicit attitudes may relate more to controllable or reasoned behaviour (Greenwald and Banaji, 1995), however this has not to date been tested in clinical practice and in particular within brief (typically 10 minutes in Jersey) GP consultations. The lack of relationship may also be due to a lack of a relationship between assessed attitudes and certain clinical behaviours in general. The final step in

the analysis appears to demonstrate that some GPs have lower thresholds for issuing sickness certificates that others and this is reflected across the board in the two other illness categories investigated. This demonstrates that it is potentially the GPs perception of his/her role in sickness certification versus maintaining people at work per se rather than disease specific attributions about work that influence certification. If GPs have a low threshold for issuing sickness certificates then patients themselves are potentially more likely to absent from work might gravitate to such GPs in a system which allows them to choose their own GP. However, we must be careful if this interpretation, those GPs with high certification rates may disproportionately serve patients from certain social and cultural groups where work absence is known to be higher (Main et al., 2005).

One of the difficulties presented to GPs in relation to the sanctioning or not sanctioning of work absence for LBP is the lack of often identifiable pathology in the many cases. Indeed, as previously suggested, psychosocial factors are much better predictors of absence from LBP and a host of other conditions than the pathology or the intensity of the symptoms (Waddell, 2004). In this respect, LBP shares common predictors of work absence with other common conditions such as common mental illness conditions and seasonal respiratory disorders (influenza and the common cold). The GP can only make decisions based on the patients' report of how severely the symptoms affect their ability to work, making the analysis of both GP and patient factors concurrently a useful forward direction.

CONCLUSIONS

Future studies into attitudes and beliefs about LBP and recommendations about work must also consider the influence of patients' attitudes on the outcome and the dynamic of the consultation.

Interventions aimed at reducing sickness certification for LBP may benefit from targeting GP sickness certification in general rather than specifically LBP.

LIMITATIONS

The Biopsychosocial factor has only demonstrated acceptable internal consistency with a GP population (chapter 6) and therefore may not have been robust enough to determine relationships within this study. However, the Biomedical factor was robust and still could not predict numbers of sickness certificates issued.

In only looking at the number of certificates issued we have not addressed the important issue of the duration of certified absence. Sanctioning absence of longer duration or repeated absence certification might be more closely related to attitudes and beliefs than certification for a short duration; future work would benefit from delineating this relationship by relating the PABS factors to duration of certified absences.

It should be remembered, as stated above, that sickness certification is only one clinical behaviour and indeed only one of the more extreme measures of activity restriction potentially recommended by GPs. In using this as the main variable of interest in this study we have not addressed other more subtle

recommendations on activity and restriction which may have been given, such as advice to rest or stay active.

Sickness certification rates and GP beliefs were not gathered concurrently. There is no evidence that the GP beliefs might have changed between 2005 and early 2006, there was no intervention occurring at this time to change GP beliefs and no guidelines on the management of LBP were issued during this period. Also, there was no evidence that previously issued guidelines had had an impact on GP certification up to this point (chapter 3). To have attempted to assess beliefs at the same time as recording sickness certification might have drawn attention to the GPs beliefs and influenced their behaviour; however it should be noted that timing may have influenced our results.

The numbers in the study were relatively small for this type of analysis (Tabachnick and Fidell, 2001) which may have inflated the R^2 but should not have substantially affected the lack of predictive value of the PABS or the importance of certification for other conditions in predicting certification for NSLBP.

Finally, these results may only be representative of the health care system that exists in Jersey. Different health care systems where the GP does not normally sanction sickness absence so early (required for greater than two days absence) or where the GP is not in private practice may demonstrate different results.

CHAPTER 8 – THE INFLUENCE OF A MINIMAL INTERVENTION STRATEGY ON GENERAL PRACTITIONERS' TREATMENT ORIENTATION TOWARDS THE MANAGEMENT OF PATIENTS WITH LOW BACK PAIN

The following chapter details a minimal intervention strategy (MIS), which was employed to act as a catalyst for a change in GPs' attitudes and beliefs towards LBP management, prior to reassessment. The indices of change which were subsequently established and used to evaluate its impact are also described.

INTRODUCTION

As discussed in previous chapters there is some preliminary evidence to suggest that HCPs with more biomedical orientations, when assessed with case vignettes, may make recommendations to their patients which would advocate restriction of movement and activity in the management of their LBP condition (Houben et al., 2004, Ostelo et al., 2003b, Houben et al., 2005b). The degree to which this translates to the clinical setting requires further investigation (Watson et al., 2008), however it does suggest that if we are to promote less restrictive recommendations we would need to encourage HCPs to advance a more biopsychosocial philosophy.

Houben et al (Houben et al., 2005b) make the suggestion that a practical application of the PABS could be to evaluate the effectiveness of educational courses. Jellema and colleagues, using the PABS, have previously published research looking at the potential influence of a minimal intervention strategy (MIS) to change GPs attitudes and beliefs with regard to the treatment of LBP

(Jellema et al., 2005a). The degree to which we can be confident of their findings is influenced by the degree to which we can be certain that the measure they used is reliable and sensitive enough to detect such change (Chapters 5 & 6). As previously suggested, following a systematic review of measures currently available to assess HCPs attitudes and beliefs, a significant criticism of all reported measures, is their lack of reported assessment of reliability and sensitivity (Bishop et al., 2007).

Responsiveness or sensitivity to change has been defined as the ability of a scale or measure to detect clinically relevant changes over time (Guyatt et al., 1987). Guyatt and colleagues describe responsiveness in relation to the typical variation within-subjects, between repeated test measures (Guyatt et al., 1987); therefore reproducibility has a direct influence on the responsiveness of a measure. If we want to be able to determine the direct influences of any intervention, it is necessary to be aware of these variations and the amount of measurement error contained within the instrument itself. Chapter 6 reports the retest reliability or reproducibility data for the PABS when used with a GP population. This data forms the basis for further work designed to evaluate the degree to which the measure is sensitive enough to detect change in subjects' responses following intervention specifically targeted towards shifting treatment orientations.

It was the aim of the current study to investigate the sensitivity of the measure (PABS) to detect a shift in the beliefs of GPs from a more biomedical orientation to a more biopsychosocial orientation, following a minimal intervention strategy

(MIS), aimed at encouraging a biopsychosocial approach to the understanding and management of LBP. The following analyses were performed:

1. Paired sample *t* tests – to assess for any statistical differences between the mean scores for both factors between initial and post-MIS occasions; a significance level of (*P<0.05)* was set before analysis;
2. Assessment of real change – this includes reference to the Bland & Altman 95% Limits of Agreement (LOA), to determine if changes in scores post intervention fall outside these 95% limits. It is suggested that the smaller the range between the LOA, the more sensitive the measure is at detecting change (Ageberg et al., 2007);
3. Assessment of measurement variability – to quantify the actual size of the variability between the two sets of measurements or the "within-subject variation", or "typical variation" (Lexell and Downham, 2005) the following indices were used: ***standard error of the measurement*** (SEM) = √within-subject variance = √(total variance) (1- ICC); and SEM% = (SEM/mean) x 100. Any change after an intervention that is smaller than the typical variation would need to be interpreted with extreme caution. To evaluate if the change scores represent clinically important changes a reference range which takes account of this measurement variability can be calculated; the ***smallest real difference*** (SRD) = 1.96 x SEM √2; and 95% SRD = mean difference between the two test occasions ± SRD. If the difference in score for a subject after an intervention is outside this reference range then it can be said to represent a "real" change in score likely to be attributable to the

intervention and not inherent variability. Again, the smaller the reference range the more sensitive the measure is to detecting "real change" (Lexell and Downham, 2005). A sample size of at least 30 to 50 subjects has been suggested in order to form practically useful 95% SRD ranges and SRD% (Hopkins, 2000).

4. Analyses involving 95% LOA and 95% CIs for SRD will be shown in relation to the entire matched initial and post-MIS data (post-MIS group). As regression to the mean can present a problem when considering group differences, performing these analyses only on the post-MIS group may fail to detect any group shift in beliefs if we always include those GPs for whom no shift were possible (i.e. those already scoring highly on the biopsychosocial factor). Therefore, these analyses were repeated on a subset of our post-MIS group who responded in an entirely negative orientation (Totally disagree, Largely disagree or Disagree to some extent) toward each item of the biopsychosocial factor (which would produce a total score of ≤15) on the initial presentation of the PABS (the "subset") to determine the most sensitive and appropriate method of detecting shifts in orientations of GPs. Results are therefore reported and discussed in relation to either the post-MIS group or subjects or the "subset". Results from these calculations will then be discussed in relation to subjects' real changes in scores to describe any potential real change in beliefs following the MIS intervention.

METHODS

General Practitioner Sample

Following on from the original and reliability limbs of the study, all practicing GPs in the Island of Jersey (94) were also invited to participate in a two hour presentation and question session on "The modern management of non-specific low back pain" (the MIS). Dates for sessions were forwarded to all 16 primary care practices. In total 12 presentation sessions were held in 2007 with a maximum number of attendees at any one session being 11 and a minimum being one. Three local practices (the pilot group) commenced in January 2007 (representing approximately 25% of the total GP population). The remaining GPs were recruited to the MIS over twelve weeks, commencing between five and seven months after the initial pilot group. Fig.16 describes the full recruitment and dropout rates for **all** limbs of the study.

Procedure

Again, all GPs participating in the MIS had seen at least one patient with NSLBP in the three months prior to completion of their final PABS questionnaire. This was presented at the end of their two hour session and participants were requested to complete before leaving, without conferring with their colleagues. Any questionnaires received with missing data were followed up and the participating GP contacted by telephone as well electronic mail regarding missing responses. Again all missing responses were subsequently obtained and recorded. Although all GPs were invited to attend the MIS sessions, only the initial cohort were asked to complete the post-MIS PABS, as

a previous response on the PABS was necessary for the detection of a shift in beliefs.

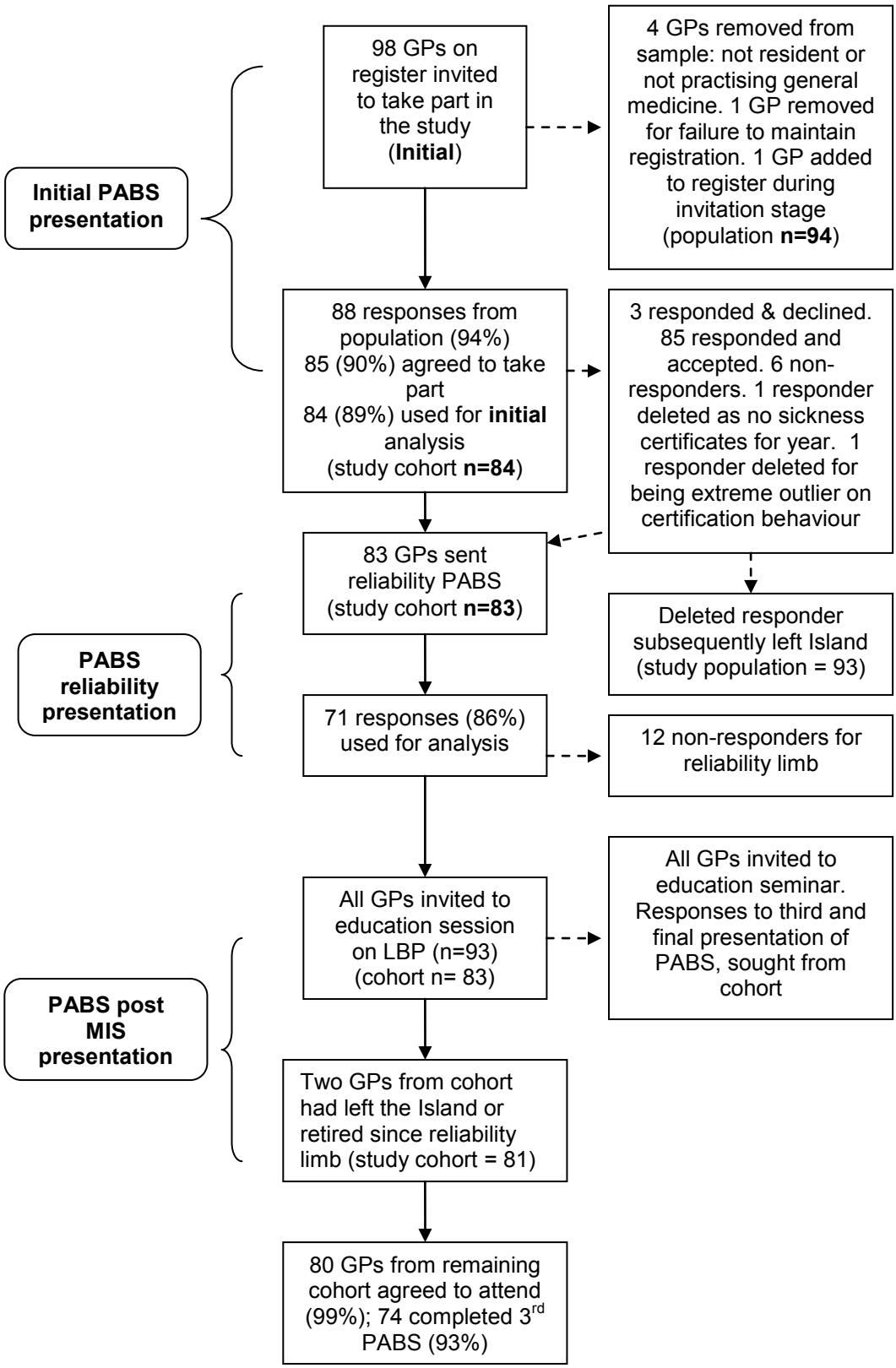
Minimal intervention strategy (MIS)

As part of the on-going project to change the management of LBP within the Island of Jersey, all GPs were invited to the MIS (see Appendix 5). The focus of the presentation was to highlight the current trends of incapacity benefit payment for the condition of LBP within the Island; to highlight problems with maintaining a biomedical management perspective and to suggest the benefits of a biopsychosocial management orientation; illustrate alternative biopsychosocial concepts and assessment techniques. The presentation contained a review of four main topics: trends in disability, including the role of iatrogenic factors; the role of work in maintaining health; current guidelines on the diagnostic triage and treatment for LBP; and the introduction of a new service initiative – the Back Assessment Clinic (BAC) – a specific LBP triage clinic. Participants were encouraged to ask questions at any time during the presentations and were provided with handouts of the presentation slides, summaries of triage guidelines and an algorithm for the management of patients with NSLBP and copies of The Back Book (Burton et al., 1999). All presentations were given by members of the same clinical group which included two consultant anaesthetists with an interest in pain management and two senior physiotherapists.

Ethics

Written application was made to the States of Jersey, Health and Social Services' Ethics Committee prior to commencement of the study investigating GP attitudes and beliefs about LBP. Written consent to conduct the study was given (Reference: PMcC/ap dated 28/2/06).

Fig.16 Recruitment and dropout rates for the MIS presentation of PABS



RESULTS

From the initial presentation of the PABS we were able to determine that 27% of the cohort was female and 74% reported a history of LBP. All of the Island GPs were invited to participate in the MIS (93), (the population). Two of the original cohort subsequently retired or left the Island and two new GPs were added to the States of Jersey Register of General Practitioners. Of the 81 GPs left from the original cohort who were invited, 80 (99%) agreed to attend and 74 (93%) completed their Post MIS PABS. There were no differences in demographic or PABS scores on initial presentation between those that completed the MIS and those that subsequently dropped out (although this represented only nine subjects in total). In addition, there were no significant differences between groups who reported a history of LBP or not therefore responses were analysed together.

PABS Scores

Table 17. shows the PABS scores for each presentation of the measure, including the third presentation, which subjects received between 6 months and 1 year from initial presentation, directly following the 2 hour MIS.

Table 17. GP PABS responses MIS Presentation of PABS

	N	Minimum	Maximum	Mean	Std. Error Mean	Std. Deviation
Initial Presentation						
PABS Biomedical	84	20	55	36.48	.825	7.564
PABS Biopsychosocial	84	10	24	18.29	.296	2.709
Reliability						
PABS Biomedical	71	17	50	35.52	.844	7.111
PABS Biopsychosocial	71	12	25	18.24	.299	2.515
Post MIS						
PABS Biomedical	74	15	42	27.72	.688	5.916
PABS Biopsychosocial	74	13	26	20.64	.309	2.656

Paired Samples t tests

Scores from the initial presentation were then compared with those after the MIS. Table18 gives the paired samples *t* test results for the measure between the initial presentation and after the MIS. After the MIS, the paired samples *t* tests suggest a statistically significant difference in the mean PABS scores for the entire group of subjects who completed both the initial and the post-MIS questionnaires (n=73) (post-MIS group); with a statistically significant reduction in the biomedical factor scores and a statistically significant increase in the biopsychosocial factor scores.

Table 18. Paired Samples *t* Test for PABS Initial and Post MIS

	Paired Differences							
				95% CI of Mean difference				
	Mean	**SD**	**SEM**	**Lower**	**Upper**	***T***	**Df**	**Sign. (2-tailed)**
PABS Biomedical Initial:post-MIS	-8.88	6.27	0.73	-7.41	-10.34	-12.10	72	<0.000
PABS Biopsychosocial Initial:post-MIS	2.44	2.65	0.31	-3.06	-1.82	-7.86	72	<0.000

Changes in the mean

After the MIS the 95% CIs of the mean differences revealed systematic changes between initial and post-MIS presentations for the biomedical factor (both the upper and lower limits show a negative trend and zero is not included in the interval), suggesting an overall drop in these scores. For the biopsychosocial factor there exists a systematic change in the opposite direction (both the upper and lower limits show a positive trend and again zero is not included in the interval), suggesting an overall increase in these scores between the two test occasions.

Indices of Measurement variability and "Real Change"

As it was the aim of the MIS to provide a stimulus to shift GPs toward a more biopsychosocial orientation, change scores post-MIS were assessed against indices of "real change". Table 19 contains descriptions of the indices used to assess within subject variation.

The SRD for the biopsychosocial factor was 4.09 (8.66 biomedical), we then used this SRD to calculate an error band which relates to the uncertainty of the difference between the two scores (Beckerman et al., 2001). For our biopsychosocial and biomedical factors these error bands were 3.74 to – 4.44 and 8.51 to -8.81 respectively; similar to the 95% LOA(8.69 to –8.99 and3.82 to -4.52) but slightly less conservative.

Scores from the initial presentation and following the MIS were then compared for the post-MIS Group, but also separately for the "subset" who were selected according to their scores on the initial PABS Biopsychosocial factor to control for any ceiling effect (table 20). For the post-MIS group the mean differences in scores were -8.88 and 2.44 for the biomedical and biopsychosocial factors respectively. These increased to -9.58 and 5.25 when we analysed the "subset" separately.

Table 19. Indices of Measurement Variability and "Real Change"

	Mean (SD) Initial	Mean (SD) Reliability	Mean Difference (SD_{diff})	95% CI Mean Difference	ICC (95% CI)	95% LOA	SEM	SRD	95% SRD
Biomedical	36.48 (7.56)	35.52 (7.11)	-0.15 (4.42)	-1.20 to -0.89	0.81 (0.71 to -0.89)	-8.99 to 8.69	3.13	8.66	-8.81 to 8.51
Biopsychosocial	18.29 (2.71)	18.24 (2.52)	-0.35 (2.09)	-0.85 to -0.14	0.65 (0.50 to -0.77)	-4.52 to 3.82	1.47	4.09	-4.44 to 3.74

Intraclass correlation coefficient (ICC);
Limits of agreement (LOA);
Standard error of the measurement (SEM) = √within-subject variance = √(total variance)(1-ICC);
Smallest real difference (SRD) = 1.96 x SEM X √2;
95% SRD = mean difference between the two test occasions ± SRD

Table 20. Changes in the Mean Scores: "Post-MIS Group" and the "Subset"

	"Post-MIS Group" (n= 73)			"Subset" (n=12)		
	Mean Difference (SD_{diff})	SEM Difference	95% CI	Mean Difference (SD_{diff})	SEM Difference	95% CI
Biomedical	-8.88 (6.27)*	0.73	-10.34 to -7.41	-9.58 (5.79)†	1.67	-13.26 to -5.90
Biopsychosocial	2.44 (2.65)	0.31	1.82 to 3.06	5.25 (1.36)†	0.39	4.39 to 6.11

*Scores outside of SRD bandwidths only;
†Scores outside more conservative LOA bandwidths

DISCUSSION

Chapter 6 provides a full discussion of the reliability assessment of the PABS when used with a GP population. Immediately after the MIS the 95% CIs of the mean differences between initial and post-MIS scores revealed a systematic change for both the biomedical and biopsychosocial factors. In addition, statistically significant differences in the mean scores for the post-MIS group were demonstrated by the paired samples *t* tests, for both factors. Taken on their own, these measures could be reported as suggesting a significant change in scores across test occasions. However, reporting systematic change in scores does not allow for an assessment of the degree of change and paired samples *t* test results do not take account of the inherent variability within subjects between test occasions. Therefore, to be sure of "real change" in scores further reference to the indices of measurement variability after MIS were also made.

The responsiveness or sensitivity of the measure to detect change requires different assessment, although this is specifically related to its reproducibility (Beckerman et al., 2001). The SEM can be used to calculate the SRD for both factors (Beckerman et al., 2001) and the 95% SRD bandwidths, which are very similar to the Bland & Altman LOA (Lexell and Downham, 2005) but use the mean error from the analysis of within-subject variation. The SRD has been suggested to represent the smallest measurement change that can be interpreted as a real difference, taking account of the fact that the measurement error makes the observed vale of a measure differ from its true value (Beckerman et al., 2001).

For the biomedical factor the mean difference score for the post-MIS group fell outside the 95% SRD lower bandwidth but just inside the 95% LOA lower bandwidth. Thus depending on which measurement indices we use and how conservative we chose to be in our interpretation of the results, this could be suggestive of a significant change in scores, outside of typical error for this factor for the post-MIS group. The mean difference for the biopsychosocial factor after the MIS fell short of the upper limit of both the 95% LOA and 95% SRD levels, suggesting no significant shift in the post-MIS group as a whole when we take account of measurement variability; albeit suggesting a trend of change in the anticipated direction.

As previously suggested, regression to the mean can present a problem in this respect. The difficulty with the above sensitivity calculations are that they do not take account of the meaning of the real scores which the subjects recorded before and after intervention. As we used a six point Likert scale, it is possible to divide our cohort between those who responded in either a negative orientation towards the item (totally disagree, largely disagree or disagree to some extent) and those who responded in an equal but positive orientation. If we separate our post-MIS group according to their responses on the initial presentation of the PABS, focusing on the biopsychosocial factor, any subject scoring less than or equal to 15 could be described as having an entirely negative biopsychosocial orientation (our “subset”, table. 20). Using this subset we see that the mean difference on test scores from initial presentation to post MIS are now outside the relevant 95% SRD bandwidths, but they are also outside the more conservative 95% LOA relevant bandwidths. Thus if we focus

purely on the subset, which we could describe as “those requiring the greatest shift”, we see that the PABS is sensitive enough to detect a change in beliefs after intervention even using the more conservative measurement indices.

Participants were required to complete their final PABS questionnaire at the end of the MIS prior to leaving. Under these conditions it could be suggested that subjects may have felt obliged to alter their answers to be in line with the emphasis of the presentation. There is a possibility in this context that “social desirability” could lead to response bias. However, it should be noted that subjects were not paid for their participation and did not stand to gain financially or otherwise from their participation in the study. Also, as there was still a reasonable spread of scores following intervention (rather than simply a shift to “completely agree”) and the fact that there was a significant delay in time between completion of the initial PABS measure and the final post MIS measure (making it unlikely that subjects remembered their initial answers to the retained items and adjusted these specifically), it is likely that the change scores may reflect actual changes in attitudes held at the time of final measurement. This potential short term “real” shift in beliefs following such a minimal intervention is all the more interesting given previous results (Jellema et al., 2005a). The numbers in this subset (n=12), are however small and this would limit their wider applicability. Whether or not these changes in beliefs would be maintained or indeed translate into any change in clinical behaviour requires further investigation.

Future studies that aim to evaluate the level of impact of specific interventions would be better served by using a comparable control group, but it is likely that the PABS as a measure, given the results of this study, would be a suitable tool for this evaluation.

Other attempts to determine the effects of targeted interventions on attitudes and beliefs of GPs report different results. Jellema et al (Jellema et al., 2005a) found that a MIS aimed at promoting a behavioural (or Biopsychosocial) orientation to the management of LBP produced a shift away from a Biomedical orientation, but no shift towards a Biopsychosocial framework. They report that this may have been due to the lack of power of their intervention. Given the results from the subset, it may well be that they failed to detect a biopsychosocial shift as they included all GPs in their analyses, even those for whom a shift of beliefs may not have been possible (i.e. they may have already been "on message"). It is impossible to directly compare these results with those of Jellema et al; it could however be suggested that the method of separating the initial study population by their results in each factor of the questionnaire, as described in this study, may be a more appropriate method for detecting *shifts* in beliefs following training.

CONCLUSIONS

As the findings of recent research (Watson et al., 2008) (chapter 7) have been a departure from the general consensus of results that HCP attitudes and beliefs predict treatment behaviour, it is all the more important to ensure the stability and sensitivity of measures used, particularly with GP populations. The addition

of the extra indices of measurement variability within this chapter goes some way to improving assessment of the PABS' when used with GP populations.

From the previous investigations in Chapters 5 & 6, it is reasonable to suggest that the PABS demonstrates adequate stability and reliability when assessing attitudes and beliefs of GPs. The method of determining clinically relevant change will need further consideration as will investigation of cut-off scores for determining where shifts of beliefs have reliably occurred. It should be remembered that indices that indicate responsiveness are only indicators of what could be constituted as being "clinically important change". Just because scores exceed limits of variability and error and are outside what would normally be seen by 95% of the population if no change had occurred, it does not mean that these changes in scores represent a real shift in attitudes held. A five point change in a measure, even if it is in the direction deemed desirable could still represent a relatively small shift in attitudes if taken over 5 items, albeit suggesting an average shift in the desired direction. How much this observed changes relate to changes in practice behaviour would warrant further investigation, particularly in relation to specific clinical behaviour such as the issuing of sickness certificates (Watson et al., 2008).

CHAPTER 9 – INVESTIGATING DECISIONS TO ABSENT FROM WORK WITH LBP: COMBINING PATIENT AND GP FACTORS.

Thus far we have investigated general population beliefs which included Current LBP sufferers. However, these may differ from those who are current sufferers but who also seek medical attention. Additionally, we have investigated GP beliefs but found no relationship between their attitudes and beliefs as measured by the PABS and their issuing of sickness certificates for LBP. It was felt that the initial consultation could provide additional information about any potential interaction of beliefs between patients and their GPs in the clinical setting. The following chapter describes a study which investigated this potential interaction.

INTRODUCTION

Low back pain (LBP) remains one of the commonest reasons for absenting from work in Jersey and most western economies (Waddell et al., 2002). Earlier studies demonstrated that LBP accounted for 10.5% of all Social Security Sickness Benefit costs (Watson et al., 1998). Only a small proportion of people (3%) went on to long-term work absence due to LBP however they represented 33% of all wage replacement costs (Watson et al., 1998). Understanding factors which lead to long-term incapacity may therefore better enable prevention (Waddell et al., 2007a, Shiels et al., 2004). Not everyone with LBP will seek help (Waxman et al., 1998) or take time off work. Determinants of who does and who does not decide to absent from work following consultation have received little attention.

In Jersey self-certified work loss is only possible for two days; sickness benefit payments for durations longer than this are only made on receipt of a sick certificate from a doctor and the majority of sick notes for LBP are issued by General Practitioners (GPs)(>97%) (Morris, 2010). Factors which influence GPs' decisions surrounding sickness certification can therefore be investigated early in Jersey. The clinical management of LBP by GPs is of particular interest when considering societal costs because they act as the main "gatekeepers" for social insurance benefits in Jersey and most social insurance systems (Hussey et al., 2004, Ford et al., 2000, Sawney, 2002).

Most research to date has focused on the predictors of poor outcome, i.e. duration of work absence (Kapoor et al., 2006, Steenstra et al., 2005a). Important determinants of duration of disability or return to work are: *personal factors* (age, gender, ethnicity, educational level, depression, fear of movement); *disease-related factors* (self-reported pain and disability); previous *sick leave history* and *patients' own perceptions of their ability of return to work* (Krause et al., 2001, Lotters and Burdorf, 2006, Kuijer et al., 2006). Psychological factors have been shown to play a significant role in patient outcomes and the timing of assessment of these factors is likely to affect their relative influence (Linton, 2000). Research has yet to demonstrate how these factors interact with each other in people who remain in work despite having pain and how they are distinct from those who absent from work.

Numerous guidelines have emphasised the importance of remaining in work for successful management of LBP (van Tulder et al., 2006, Waddell and Burton,

2001, Chou et al., 2007) and remaining in employment has been shown to enhance the health status of individuals (Waddell et al., 2007a, Waddell and Burton, 2006). At worst the failure to return to work can result in employees losing their jobs with the inherent threats to health and well-being this brings (Aylward, 2004, Waddell and Burton, 2006).

The possible influence of health care providers' (HCPs) beliefs on patients has also been investigated (Rainville et al., 1995, Linton et al., 2002). These interactions may reinforce or contest negative attitudes and beliefs held by patients (Chew-Graham and May, 1999, Waddell, 2004); as well as influence patients' subsequent behaviour, i.e. to absent from or stay in work with LBP. In this model, if a GP and their patient share negative beliefs about physical activity and work then certification for work absence is more likely (Houben et al., 2005a). To date this theory has only been tested on hypothetical "paper patients" (Bishop et al., 2008, Corbett et al., 2009) with no evaluation of these interactions in clinical practice. If it is possible to identify in which circumstances a person might receive a sickness certificate this might lead to interventions to reduce certification rates and work absenteeism thereby assisting work retention. The aim of this study was to investigate patient and GP factors which determine sickness certification for LBP.

METHODS

Sample

GPs already involved in on-going research into the determinants of LBP disability in Jersey were invited to participate in this study (Watson et al., 2008, Bowey-Morris et al., 2010, Morris et al., 2010). Participating GPs were asked to invite all consecutive patients presenting to them with a *new episode* of LBP. Patients were required to be employed and not sick-listed at the time of initial consultation.

Procedure

GPs and subsequently their patients were recruited in a staggered format between May/June 2008 to August 2009. GPs were only required to consent a maximum of 20 patients each, in order to encourage participation. GPs were asked to recruit equal numbers of patients who they had and had not given a sickness certificate to for LBP. The recruitment phase continued until June 2009.

During initial consultations for new episodes of LBP patients were asked to participate in the study by their consulting GP. If verbal consent was obtained from the patient the GP was requested to provide them with a questionnaire pack and to instruct them to read the enclosed information leaflet and complete the questionnaire, in their own time, prior to returning it to the research team directly in the stamped addressed envelope provided. The questionnaire packs were distributed to participating GPs following their consent to be involved in the

study. Due to ethical considerations the research team had no direct contact with the patients recruited by the GPs involved.

Patient inclusion criteria were: Aged 18 and over; LBP as primary complaint; employed at time of consultation (either part-time or full-time). Exclusion criteria: Patients presenting with Red flags as identified by the RCGP guidelines (RCGP, 1996); inflammatory disease; neoplasm; pregnancy; psychiatric co-morbidity (e.g.: bi-polar disorder); alcohol or drug addiction.

The questionnaire pack

The questionnaire pack contained a patient information leaflet detailing the aims and purposes of the study; a patient consent form and the questionnaires described below. The questionnaire contained items relating to consultation information (name of GP seen, whether they were issued a sick certificate or not); patient demographic information (gender, age, where born, marital status), employment group (working for an employer or self-employed and working full-time or part-time), employment sector (Public or Private sector), area of work (Wholesale and Retail; Agriculture and fishing; Hotels, restaurants and bars; Electricity, gas, water and manufacturing; Other services; Public sector, all Health and Education; Construction and tradesmen; Transport and communications; Finance), years spent in education, back pain history (duration of symptoms, previous work absence for LBP) as well as specific measures: the Brief Pain Inventory Intensity Subscale (BPI-I); the Roland and Morris Disability Questionnaire (RMDQ), the Back Beliefs Questionnaire (BBQ); the Hospital

Anxiety and Depression Scale (HADS) and the Fear Avoidance and Beliefs Questionnaire (FABQ).

BPI

Pain intensity was measured using the BPI Intensity subscale; the BPI has been shown to be a reliable and valid measure of Pain for use in LBP populations (Tan et al., 2004, Keller et al., 2004). The BPI Intensity subscale asks patients to rate their current pain intensity and also pain over the last week at its "worst", "least" and "average" using a numeric scale of 0 to 10. Scales are anchored with the phrases "no pain" and "pain as bad as you can imagine"; these ratings are combined to give a composite index of pain severity (Cleeland and Ryan, 1994).

RMDQ

The RMDQ is a health status measure designed to assess physical disability due to LBP (Roland and Morris, 1983, Deyo, 1986). Derived from the Sickness Impact Profile (SIP), subjects indicate which, if any, of 24 statements describe them today and are related to their current pain (e.g. "I stay at home most of the time because of my pain"). Scores range from 0 – 24, with higher scores indicating greater perceived pain related disability. It has been found to be a valid and reliable measure for assessing self reported disability among persons presenting with LBP (Roland and Fairbank, 2000).

BBQ

The Back Beliefs Questionnaire (Symonds et al., 1996) (BBQ) is a measure of subjects' beliefs regarding the potential negative outcomes and consequences associated with episodes of low back trouble. The scale comprises 14 items scored on a five point Likert scale (completely agree, agree to some extent; neither agree nor disagree; disagree to some extent; and completely disagree). There are nine inevitability statements, along with five statements used as distracters. The one-dimensional scale is calculated by reversing and summing the nine inevitability scores, so that negative attitudes and beliefs are represented by lower scores (maximum score 45 minimum 9). It has previously been shown to have adequate internal consistency (Cronbach $\alpha = 0.7$); and test-retest reliability as measured by the ICC statistic (ICC 0.87)(Symonds et al., 1996).

HADS

The Hospital Anxiety and Depression Scale is a self reported questionnaire that rates the severity of seven symptoms of anxiety and seven symptoms of depression over the previous week (Zigmond and Snaith, 1983). The HADS was designed for use in people with physical illness, it therefore omits somatic symptoms of psychological disorder that could confound the results (such as "loss of appetite" and "sleep disturbance"). Each of the 14 items is scored 0-3, with high scores representing high levels of the symptom. A score of 11 or above on either scale indicates probable anxiety or depressive disorder. In view of the high correlation between the subscales (Keeley et al., 2008), both a

combined HADS total score as well as independent subscale scores were used for the main analyses.

FABQ

The Fear-Avoidance Beliefs Questionnaire (FABQ)(Waddell et al., 1993) contains 2 subscales: the FABQ-Phys assesses attitudes and beliefs related to general physical activities (4 items: 2, 3, 4, 5; score range: 0–24), and the FABQ-Work assesses attitudes and beliefs related to occupational activities (7 items: 6, 7, 9,10,11,12,15; score range: 0–42). Each item is scored from 0,“completely disagree,” to 6, “completely agree.” For both subscales, a low score indicates low fear-avoidance beliefs. The measure has been shown to have good test-retest reliability and validity (Waddell et al., 1993).

GP Characteristics

Previous recordings of GP characteristics (Bowey-Morris et al., 2010) were also added to the database including GP gender; amount of years they had been practising as a GP; and also if they had ever suffered with low back pain themselves. The number of years in practice as a GP had previously been linked to increased sick certification in this population (Watson et al., 2008) and a personal experience of back pain had been suggested to influence beliefs about back pain but the effect on sickness certification has not been assessed.

PABS-GP

To evaluate attitudes and beliefs of our GPs about LBP their scores on an adapted version of the Pain Attitudes and Beliefs Scale for physiotherapists (the

"PABS-GP") were added. The PABS-GP (Watson et al., 2008, Bowey-Morris et al., 2010) was adapted from the versions by Ostelo et al (Ostelo et al., 2003b) and Houben et al (Houben et al., 2005b). Each item of the PABS-GP is scored on a six point Likert scale from 1 "totally disagree" to 6 "totally agree". PABS-GP consists of two subscales: a 12 item biomedical subscale (score range 12-72) and a 5 item psychosocial subscale (score range 5-30). Scores for each subscale are totalled, with high scores on either subscale representing a greater level of agreement with this orientation.

Statistical Analyses

Data was examined for normality of distribution. Differences between the groups (Sick Listed –v- Non-Sick Listed) for demographic characteristics as well as each of the included questionnaires were investigated by parametric and non-parametric analyses as appropriate. The ability to identify group membership (sick listed or non-sick listed) was tested using a logistic regression analysis.

Ethics

Permission to undertake this study was granted by the States of Jersey, Health and Social Services' Ethics Committee prior to commencement. All of the participants who were recruited gave their informed written consent.

RESULTS

A convenience sample of 34 GPs agreed to take part during the recruitment phase and recruited 126 patients in total before the pilot deadline of 31 August 2009. Of the 126 patients, 7 were excluded (5 retired and 2 not working for other reasons); leaving a patient study cohort of 119.

Cohort

Patient characteristics and results of the psychometric screening for the entire patient study cohort as well as those that were sick listed by their GP and those that were not are shown in Table 21.

Table 21. Patient Characteristics

Variable	Study Cohort % (Total *n*)	Sick Listed % (Total *n*)	Non-Sick Listed % (Total *n*)
Gender			
Males	58.0 (69)	64.5 (40)	50.9 (29)
Females	42.0 (50)	35.5 (22)	49.1 (28)
Where born			
Jersey	47.9 (57)	54.8 (34)	40.4 (23)
Elsewhere British Isles	43.7 (52)	33.9 (21)	54.4 (31)
Portugal	5 (6)	8.1 (5)	1.8 (1)
Elsewhere Europe	1.7 (2)	1.6 (1)	1.8 (1)
Elsewhere World	1.7 (2)	1.6 (1)	1.8 (1)
Marital Status			
Single	24.4 (29)	30.6 (19)	17.5 (10)
Cohabiting/Married	61.3 (73)	54.8 (34)	68.4 (39)
Separated/Divorced/Widowed	14.3 (17)	14.5 (9)	14.0 (8)
Duration			
< 2 weeks	26.9 (32)	32.3 (20)	21.1 (12)
> 2 weeks < 3 months	37.8 (45)	35.5 (22)	40.4 (23)
> 3 months < 6 months	9.2 (11)	8.1 (5)	10.5 (6)
> 6 months	26.1 (31)	24.2 (15)	28.1 (16)
Employment Group			
Employer	85.7 (102)	85.5 (53)	86.0 (49)
Self-employed	14.3 (17)	14.5 (9)	14.0 (8)
Employment Sector			
Private Sector	75.6 (90)	72.6 (45)	78.9 (45)
Public Sector	23.5 (28)	27.4 (17)	19.3 (11)
Previous History of LBP Absence			
Yes	58.8 (70)	80.6 (50)	35.1 (20)
No	41.2 (49)	19.4 (12)	64.9 (37)

No self-employed subjects worked part-time, therefore it was not possible to analyse the independent influence of full versus part-time work, and employment group is therefore described in terms of "working for an employer or self-employed" only. Additionally the nine "area of work" categories were not reported due to low or absent numbers in some categories.

GPs

GP characteristics are detailed in Table 22. The majority of GPs participating in the current study were male (91%) and had a previous history of LBP (82%). They represented a broad range of qualification in terms of years in practice as a GP (mean 18.82 *SD 9.24* (2 – 40)); Biomedical Orientation (mean 28.29 *SD* 7.13 (15 – 41)); and Biopsychosocial Orientation (mean 21.24 *SD* 2.84 (17 0 26)). Data from the MIS population is provided for comparison.

Table 22. GP Characteristics Convenience Sample –v- Post MIS Population

Variable		Post MIS Population % (Total *n*)	Convenience Sample % (Total *n*)
Gender	Male	73 (62)	91 (31)
	Female	27 (23)	9 (3)
LBP History	Yes	77 (65)	82 (28)
	No	23 (20)	18 (6)
		Mean (SD)	**Mean (SD)**
Years in practice as a GP		18.74 (9.94)	18.82 (9.24)
PABS Biomedical		27.72 (5.92)	28.29 (7.13)
PABS Biopsychosocial		20.64 (2.66)	21.24 (2.84)

Differences between sick-listed and non-sick listed patients

Differences within variables between those sick listed and those not are shown in Table 23. Groups differed on response to a previous history of work absence for LBP, with more patients issued a sickness certificate at this consultation having absented in the past with LBP.

Table 23. Variables differences Sick listed (Yes) and non-sick listed (No)

Categorical Variables		Sick listed % (Total *n*)	Non-sick listed % (Total *n*)	X^2	Asymp. Sig. (2-sided)
Gender	Female	35.5 (22)	49.1 (28)		
	Male	64.5 (40)	50.9 (29)	1.742	*0.187*
Employ Group	Employer	85.5 (53)	86.0 (49)		
	Self-employed	14.5 (9)	14.0 (8)	0.000	*1.000*
Employ Sector	Private	72.6 (45)	80.4 (45)		
	Public	27.4 (17)	19.6 (11)	0.600	*0.438*
Duration	< 2/52s	32.3 (20)	21.1 (12)		
	> 2/52s < 3/12s	35.5 (22)	40.4 (23)	1.939	*0.585*
	> 3/12s < 6/12s	8.1 (5)	10.5 (6)		
	> 6/12s	24.2 (15)	28.1 (16)		
Previous History LBP	No	19.4 (12)	64.9 (37)		
	Yes	80.6 (50)	35.1 (20)	23.601	*0.000*
Marital Status	Single	30.6 (19)	17.5 (10)		
	Cohabiting/Married	54.8 (34)	68.4 (39)	2.990	*0.224*
	Separated/Divorced/ Widowed	14.5 (9)	14.0 (8)		

Continuous Variables		N	Mean	Std. Dev	t (df)	*Sig.*
Age	Yes	62	45.19	10.41		
	No	57	46.04	11.98	0.41 (117)	*0.683*
BPI	Yes	62	20.39	7.17		
	No	55	16.96	6.61	-2.67 (115)	*0.009*
RMDQ-A	Yes	61	13.22	4.67		
	No	56	11.34	5.12	-2.08 (115)	*0.040*
BBQ	Yes	61	27.27	7.48		
	No	55	29.13	6.69	1.40 (114)	*0.164*
HADS Anxiety	Yes	61	8.15	3.79		
	No	56	7.80	3.58	-0.50 (115)	*0.616*
HADS Total	Yes	61	13.34	6.27		
	No	56	13.04	6.00	-0.27 (115)	*0.787*
FABQ Physical	Yes	61	14.21	5.89		
	No	57	13.17	5.06	-1.03 (116)	*0.305*
FABQ Work	Yes	60	21.85	10.68		
	No	56	12.61	10.43	-4.71 (114)	*0.000*

		N	Mean Rank	Sum of Ranks	*Z*	*Asymp Sig. (2 tailed)*
Years Education	Yes	48	41.85	2009.00	-2.502	*0.012*
	No	49	56.00	2744.00		
HADS Depression	Yes	61	58.35	3559.50	-0.217	*0.828*
	No	56	59.71	3343.50		

For the continuous measures (Table 23.), there were no differences between our groups for age (*t* 0.41 (*df* 117) *p=0.683*); back beliefs (*t* 1.40 (*df* 114) *p= 0.164*); anxiety (*t* -0.50 (*df* 115) *p=0.616*); depression (*Z*=-2.502 *Asymp. Sig. 0.828*); or fear of physical activity in general (FABQ-PA) (*t* -1.03 (*df* 116)

p=0.305). However, the groups differed significantly on Pain intensity (20.39 –v- 16.96)(*t* -2.67 (*df* 115) *p= 0.009*), with those sick-listed reporting significantly more pain. Sick-listed patients also recorded higher scores on the self-perceived disability measure (13.22 –v- 11.34)(*t* -2.08 (*df* 115) *p= 0.040*); and the fear of work subscale from the FABQ (21.85 –v- 12.61)(*t* -4.71 (*df* 114) *p< 0.000*). Those that were issued a sickness certificate also reported significantly less time spent in education (*Z*=2.502 *Asymp. Sig. 0.012*).

Prediction of work absence

The relative influences of patient as well as GP characteristics on subsequent decisions relating to work absence were tested through different models to predict sick-listing. Three separate Direct Logistic Regression analyses were performed on Sick Listing for LBP as the outcome. GP factors only (years in practice as a GP; Biomedical Orientation and Biopsychosocial Orientation and personal history of LBP); patient factors for which differences existed between those sick listed and those not (years in education; previous history of work absence for LBP; pain intensity; perceived disability and FABQ-work scale); and combined GP and patient factors which were significant as predictors in both previous models. Results of the tests of the three models against constant-only models were statistically significant in all cases (Table 24.): GP only (X^2 (20.94, *df 4*, *p* <.000), Patient only (X^2 (29.94, *df 5, p <.000)* and GP and Patient (X^2 (52.99, *df 4*, *p*<.000), indicating that the predictors, as sets, in each model reliably distinguished between those who subsequently required sick-listing and those who did not. The variance in sick-listing for LBP accounted for by the models is also illustrated in Table 24. (Cox & Snell R^2 =0.18; Nagelkerke R^2

=0.23); (Cox & Snell R^2 =0.27; Nagelkerke R^2 =0.36) and (Cox & Snell R^2 =0.39; Nagelkerke R^2 =0.52) respectively. The ability of the models to correctly classify subjects is also reported, with percentage accurately classified (PAC) ranging from 69% to 82%.

Table 24. shows regression coefficients, Wald statistics, Exp(B) or odds ratios, and 95% confidence intervals for the "Exp(B)" or odds ratios for the predictors in all three models. According to the Wald criterion GP Biomedical Orientation or GP personal history of LBP; Patient years in education, pain intensity and perceived disability did not significantly add to the prediction of sick-listing in our respective models.

However, Years in practice as a GP and GP Biopsychosocial Orientation; Patient previous history of LBP absence and fears about work did. Patients reporting a previous history of LBP absence were more than six times as likely than those with no previous work absence for LBP to receive a sickness certificate (OR 6.03; 95% CI, 2.01 – 17.46; and those seeing a GP with a more Biopsychosocial orientation less likely (OR 0.72; 95% CI, 0.56 – 0.93). As suggested, fears about work and years in practice as a GP were also significant predictors of sick-listing (*p=0*.004) and (*p=0.001*) respectively. However, the odds ratios of 1.08 and 0.89, suggest little change in the likelihood of not absenting on the basis of a one-unit change in either FABQ work score or years in practice as a GP.

Table 24. Logistic Regression Analyses of Sick Certification for LBP

GP Variables Only

Predictor	B	*SE*	Wald	*df*	*Sig.*	Exp (B) OR	95% CI Exp (B) Lower	Upper
Years in practice as GP	-.084	.029	8.44	1	.004	.92	.87	.97
GP PABS Biomedical	.020	.033	.35	1	.552	1.02	.96	1.09
GP PABS Biopsychosocial	-.297	.108	7.53	1	.006	.74	.60	.92
GP history of LBP	.052	.879	.00	1	.953	.95	.17	5.32

Test	X^2	*df*	*Sig.*
Omnibus tests of model coefficients	20.94	3	*0.000*
Goodness-of-fit test-Hosmer & Lemeshow	5.48	7	*0.602*

*Note: Cox and Snell R^2 =**0.175** ; Nagelkerke R^2 = **0.233***

Model Summary		**Predicted Sick Listed LBP**		**Percentage Correct**
Observed		**No**	**Yes**	
Sick certified	No	37	17	**68.5**
	Yes	17	38	**69.1**
Overall Percentage				**68.8**

Patient Variables Only

Predictor	B	*SE*	Wald	*df*	*Sig.*	Exp (B) OR	95% CI Exp (B) Lower	Upper
Years in Education	-.105	.080	1.72	1	.190	.90	.77	1.05
History LBP Absence	1.308	.508	6.63	1	.010	3.70	1.37	10.00
Patient BPI Total	.068	.047	2.10	1	.147	1.07	.98	1.17
Patient RMDQ-A Total	-.005	.063	.01	1	.936	1.0	.88	1.13
Patient FABQ Work Total	.054	.025	4.69	1	.030	1.056	1.01	1.11

Test	X^2	*df*	*Sig.*
Omnibus tests of model coefficients	29.94	5	*0.000*
Goodness-of-fit test-Hosmer & Lemeshow	6.47	8	*0.595*

*Note: Cox and Snell R^2 =**0.270** ; Nagelkerke R^2 = **0.360***

Model Summary		**Predicted Sick Listed LBP**		**Percentage Correct**
Observed		**No**	**Yes**	
Sick certified	No	35	12	**75.4**
	Yes	12	36	**75.0**
Overall Percentage				**74.5**

GP and Patient Significant Variables Combined

Predictor	B	*SE*	Wald	*df*	*Sig.*	Exp (B) OR	95% CI Exp (B) Lower	Upper
Years in practice as a GP	-.122	.035	11.73	1	.001	.89	.83	.95
GP PABS Biopsychosocial	-.333	.131	6.49	1	.011	.72	.56	.93
History of LBP Absence	1.796	.543	10.96	1	.001	6.03	2.08	17.46
Patient FABQ Work Total	.073	.026	8.22	1	.004	1.08	1.02	1.13

Test	X^2	*df*	*Sig.*
Omnibus tests of model coefficients	52.99	4	*0.000*
Goodness-of-fit test-Hosmer & Lemeshow	9.69	8	*0.287*

*Note: Cox and Snell R^2 =**0.391**; Nagelkerke R^2 = **0.521***

Model Summary		**Predicted Sick Listed LBP**		**Percentage Correct**
Observed		**No**	**Yes**	
Sick certified	No	38	4	**81.1**
	Yes	5	36	**83.3**
Overall Percentage				**82.2**

DISCUSSION

The results of this study demonstrate a clear interaction between patient and GP factors in determining the likelihood of being sick-listed for LBP.

Differences between groups

Our two groups (sick listed –v- non-sick listed) did not differ in terms of gender or age and therefore all further analyses were conducted for all subjects collectively rather than analysing separately by sex or by age. Potentially larger numbers may have produced more differences and it would be useful therefore to further analyse these factors in larger studies as they have previously been reported to affect prognosis for sickness duration (Steenstra et al., 2005b). This illustrates the importance of analysing the relative contribution of these different demographic factors across the time course of the condition, as they appear to exert a different level of influence on outcomes dependent on the specific outcome being evaluated: initial decision to absent; duration of subsequent absence; or ultimately failure to return to work (Waddell, 2004).

No self-employed subjects reported working part-time therefore it was not possible to separate Employment Group by full or part-time working and all subjects were analysed by Employment Group only. This may have contributed to the lack of differences found between groups for this variable.

Reports of history of previous absence differed significantly between the two groups (X^2 0.41;*p .000*); however with the small numbers contained within the current study other categorical variable differences can not entirely be ruled out.

Further exploration of demographic variable differences as well as area of work differences would be useful in a larger study. Our two groups also differed significantly on pain intensity with the mean difference between the groups (3.43) being clinically significant (Keller et al., 2004). This was despite the wide variability in terms of duration of current symptoms and also lack of difference between the groups in terms of the same. Those receiving a sick certificate reported higher levels of pain; perceived a greater level of disability due to their LBP symptoms and reported more fear avoidance with regard to work; although interestingly not to physical activity in general. For our subjects it appears that at the point of decision making about sick certification from work fears are, to a large degree, work specific. Again this illustrates the utility of assessing these characteristics sequentially over time as the same does not necessarily remain true with duration of symptoms (Al-Obaidi et al., 2005, Boersma and Linton, 2005a).

Both Employment Group and Employment sector reflect the general population mix as described in the Jersey Annual Social Survey (Davis and Gibaut, 2007); anecdotally it was felt that perhaps those that were self-employed would be less likely to absent from work than those working for an employer but this was not found to be the case in this study ($X^2 = 0.438$). As previously stated, if larger numbers of patients had provided greater variability in terms of hours worked it may have been possible to additionally look at differences dependent on working part-time or full-time. This may have contributed to our lack of differences found between those who reported working for an employer versus working for themselves.

Despite reports of high Public Sector absence (Waddell, 2004) this study did not find that being employed within the Public sector made absence more likely. However, duration of absence was not determined by this study and this may prove different in different employer related occupational health schemes. Investigating variables that impact on duration of absence, from this initial time point, would also be useful and thus future studies would benefit from a follow-up period.

There were no significant differences between our groups on beliefs about the inevitable consequences of LBP (BBQ). As symptoms persist beliefs about future abilities and consequences may become more significant contributing factors to prognosis. Despite sufficient sample size to conduct the current analyses (>100 subjects) (Stevens, 1996); as further predictive analyses were to be conducted the research team determined the sample size too small to separate our groups by duration of symptoms as this would have left insufficient subjects in each category for the direct logistic regressions (Tabachnick and Fidell, 2001). This may prove useful for future work as timing of assessment has been highlighted as being critical to our understanding of the relative and changing influence that certain factors can exert (Linton, 2000). Also, Symonds reported both previous history, number of spells and length of time off work were all related to increasing reports of negative beliefs and current levels of pain (Symonds et al., 1996). Future studies could potentially look for the time points at which shifts in these beliefs occur and identify the changing factors which may predict “increased pessimism”.

Our groups also differed significantly in terms of years spent in education with those who subsequently received a sickness certificate having spent less time in education than those who did not. Deyo et al (Deyo et al., 2006) reported that educational level may provide a protective influence over the development of LBP problems and Alavinia and Burdorf (Alavinia and Burdorf, 2008) found positive associations between low educational level and withdrawal from the labour market; however both these studies were cross-sectional in nature and therefore it is not possible to determine cause and effect. Our results may relate to the fact that those with lower educational attainment had more strenuous, repetitive or less satisfying jobs and thus felt less able to continue in their work with their symptoms. However, relationships between educational level and LBP have previously been shown to remain consistent even after controlling for specific occupational factors (Leigh and Sheetz, 1989). It would be useful in larger studies to have more information on area of work, job characteristics as well as income to attempt to delineate the specific roll of education above and beyond that of purely socioeconomic status or work demand. Prospective studies would also allow for investigation of causative factors.

Prediction of work absence

Exploratory analyses were carried out using GP variables, patient variables and then combined GP and patient variables to predict subsequent sick-listing with only significant predictors retained from each level of the analyses to ensure sufficient power to conduct the prediction modelling (50 + 8*n*; where *n*= number of variables in the equation)(Tabachnick and Fidell, 2001). The biomedical

orientation of the GP did not add to the model but the Biopsychosocial orientation remained significant and appears to reduce the likelihood of sick-listing. There is a considerable difference in the degree to which the two factors assist with the prediction of sickness absence. This is also likely to relate to Years in practice as a GP, as previous work (Chapter 7) has shown a negative correlation between years in practice and a biopsychosocial orientation, although both variables remain significant predictors in our final Combined model. This would suggest that it is more advantageous to encourage a biopsychosocial orientations than to necessarily challenge purely biomedical ones; the influence of training on GP subsequent behaviour requires greater research (Crawford et al., 2007, Jellema et al., 2005a). As this is the first exploratory analyses of these factors in clinical practice, rather than patient vignettes (Bishop et al., 2008, Bishop et al., 2007), it would be prudent to retain both orientations in future studies to determine if with larger GP and patient samples the associated but opposite relationship were to be found with biomedical orientations and sick-listing.

Patient factors which did not add to the prediction model included pain intensity, perceived disability and level of education. The relative influence of pain intensity and perceived disability appears complex. Both have previously been shown to be predictive of duration of sickness absence (Lotters and Burdorf, 2006); however in this study they are not predictive of decisions relating to initial absence. Both factors require further investigation across the time course of the condition, but also in terms of their relationships with other variables. Both pain intensity and disability are factors which concern clinicians to various

degrees (Rainville et al., 2000). Further research should be concerned with their independent influences, above that of other psychological variables such as fear or catastrophising (Boersma and Linton, 2006), in order to assist decision making on behalf of both patients and their clinicians during initial consultations.

GP variables alone did account for a significant proportion of variance in sick-listing (between 18% and 23%); as did patient factors alone (between 27% and 36%), however the greatest amount of variance in subsequent requirement for sick-listing was explained by combining those factors from both GPs and their patients (the interaction) (up to 52%). The GP model as a standalone was relatively weak in terms of both sensitivity (69%) and specificity (67%). The patient model improved both the sensitivity (75%) as well as specificity (75%) for predicting sick-listing. The most sensitive and specific model for predicting who will be sick listed on initial consultation is found by combing both GP and patient factors (sensitivity 81% and specificity 83%). These novel findings justify further research into the interaction between patients and their GPs at the point of initial decisions about absence, in order to assist with an improvement in patient management for this condition.

This demonstrates that increased rates of sickness certification are influenced by both GP and patient variables. Some of these are possibly amenable to interventions. Previous absenting is a risk for future sickness certification and long term sick leave (Dekkers-Sanchez et al., 2008) and supports the guidance to help people with back pain to remain in work (Waddell and Burton, 2006).

The influence of high fear avoidance in patients could be addressed in the clinic or during other interactions with health care practitioners and even in the work place (Gheldof et al., 2006, Kendall et al., 2009). The significant effect of a low score on the biopsychosocial factor of the PABS-GP indicates the importance of encouraging GPs to embrace a more functional model of back pain rehabilitation encouraging a wider view of prevention of disability through appropriate education and training.

CONCLUSIONS

This study is the first to consider both GP and patient factors in relation to sickness certification at initial consultation. History of previous work absence for LBP was the most significant predictor of requirement for current sick-listing; this has major implications for GPs who initially manage these patients. Investigation of patient as well as GP factors in a sample of general practice patients allows for greater generalisibility then results obtained from specific work environments. The data from this study emphasises that in order to reduce work-loss systems must try and avoid sickness certification in the first place, reduce fears of working with back pain in the workplace and throughout the community. Furthermore, there should be a focus on changing sickness certification practice by GPs through promoting a biopsychosocial or functional approach to the management of the condition, rather than purely challenging a biomedical approach.

LIMITATIONS

For this study a convenience sample of GPs, taken from wider work currently being undertaken in the Island (Bowey-Morris et al., 2010, Watson et al., 2008) was used. This limited the recruitment of patients but also limits its generalisability. Due to ethical consideration, the team were not able to approach patients and GPs were asked to recruit and gain consent in the clinic during a limited consultation time and this undoubtedly affected recruitment. The GPs who took part were representative of the Island GP population as a whole in terms of variability of years in practice and responses on the PABS-GP measure, although the proportion of males was higher than the general population. Differences in sickness certification rates have been reported by GPs based on their gender (Brage and Reiso, 1999) although we found none (Watson et al., 2008). This may influence the generalisability of our findings.

Due to small numbers of patients in each area of work category (wholesale and retail; hotels, restaurants and bars; finance etc) we were also unable to analyse the relative influence of area of work. Larger numbers of subjects across each of the area of work categories would enable inclusion of this variable in future analyses. Also specific work demands were not assessed within this study and may be useful as additional patient variables. It may prove to be the case that work demands i.e. heavy manual work versus sedentary office work, account for the variance attributed to pain intensity, in that those with heavier work demands are more likely to absent with high pain than those with lighter work demands but high pain intensity.

Although patients were recruited on the basis of presenting with a new episode, there existed significant variability in terms of duration of LBP history. To fully investigate the relative influence of duration of symptoms on subsequent decisions to absent again, we would need larger numbers in each duration category.

Jersey operates a universal health and social system for all residents, there is no requirement to demonstrate a work-related condition to access healthcare or wage compensation. Our findings pertain to those countries which operate similar systems and one should be cautious in extrapolating the findings to other systems (e.g. workmen's compensation).

CHAPTER 10 – THE IMPACT OF CHANGES BY ESSD AND H&SS ON SHORT TERM INCAPACITY TRENDS

Finally, in order to draw together all the research outcomes to date, we looked again at our trends in sickness certification to see if any potential changes in management approach for the condition of LBP combined with the research projects previously described relate to any changes in sickness certification during the project timeframe. Chapter 2 gives a clear rationale for the necessity to look broadly over time to determine changes in trends in relation to incapacity benefits. It also highlights the lack of change in negative trends associated with short-term incapacity on the Island despite the proliferation of guidelines relating to LBP management. Following the introduction of the BAC and the roll-out of the MIS aimed at shifting management orientation of GPs towards LBP review of trends was deemed warranted.

INTRODUCTION

Research work conducted in Jersey in 1996 and published in 1998 (Watson et al., 1998) highlighted increasing trends of incapacity benefit payments for LBP. In 1994, the one year incidence of new claims for back pain causing more than two days work absence was reported as 5.6%, similar to that estimated for the UK at the time; and the one year prevalence as 6.3%; which was estimated to cost £1.29 million in direct wage replacement costs alone; or 10.5% of all such benefit costs for the Island (Watson et al., 1998). Despite published guidelines (and reviews) for the management of LBP proliferating over the proceeding decade (van Tulder et al., 2006, AHCPR, 1994, CSAG, 1994, RCGP, 1996,

ACC, 1997, Koes et al., 2001); at the beginning of 2006 no change in clinical management pathways for LBP had been made in Jersey.

Prior to initiatives launched in 2007; LBP patients were assessed by GPs and their further management depended largely on the preferences of the individual GP involved. Often patients were signed off work for long periods of time (chapter 3), with no specific reactivation plan. Patients may be referred to multiple secondary care clinicians simultaneously (physiotherapy; orthopaedics; rheumatology; pain clinic), with some GPs reporting that they felt the "medical board" was the main body responsible for initiating conversations regarding return to work in difficult cases (Stafford, 2007). Unfortunately, the medical board process is not initiated until 364 days on incapacity has already passed. This was despite growing evidence suggesting that patients with symptoms lasting more than 4 – 6 weeks have rapidly reducing rates of return to usual activities including work (Frank et al., 1998); but that timely, coordinated and focused interventions could potentially lead to significant reductions in work absence and potentially costs associated with these patients (Bevan et al., 2009). The importance of these initial work absence episodes and their potential relevance to long term work disability in Jersey has been highlighted in Chapter 3; this previous study of short term incapacity trends in Jersey revealed an increasing propensity for sickness certification but more worryingly a significant increase (77%) in durations of absence.

Those who are still off work in the sub-acute phase are suggested to have a 10-20% risk of long term incapacity; therefore it is this phase that should attract

targeted interventions and most healthcare resources (Waddell, 2004). Prior to a Health & Social Services (H&SS) initiative to tackle the management of LBP in Jersey, no discernible implementation of LBP guideline management protocols in primary care was evident, particularly in respect of reducing episodes and durations of work absence due to the condition.

In order to address this perceived deficit in optimal management within the Island, a stepped care management approach to LBP was implemented (Von Korff and Moore, 2001, Kendall et al., 2009). Initially, attitudes and beliefs of GPs towards the condition were assessed during 2006 (Watson et al., 2008, Bowey-Morris et al., 2010). An educational program with supportive materials for General Practitioners based on RCGP and New Zealand guidelines was rolled out in 2007 (Bowey-Morris et al., 2010) (Chapter 8) achieving a 98% coverage of local practicing GPs; supportive material for LBP patients (the "Back Book") was also provided free of charge (Burton et al., 1999) to all GPs. Additionally, a LBP Triage Service to assist with management of patients with persistent problems (Dey et al., 2004) (the "Back Assessment Clinic" - BAC) was also implemented over the course of 2007 (3 practices (covering approximately 25% of the Island population) in the January, followed by full Island roll out by 3rd quarter 2007). The BAC offers: an hour long assessment session with a senior Physiotherapist; structured exercise and advice regarding returning to normal activities; Back Classes (Klaber Moffett et al., 2004) where necessary (although attendance at these is encouraged); and BAC access to specialist Pain Clinic and vocational rehabilitation support for patients not responding to usual care (Kendall et al., 2009). The influence of the

educational component on recorded beliefs of GPs is detailed in Chapter 8 (Bowey-Morris et al., 2010); any potential impact on clinical behaviour, in terms of certification practice, prior to this study had not previously been measured.

In addition to H&SS initiatives to tackle LBP management, ESSD also implemented changes to the entire Incapacity benefit system in October 2004 and again in January 2008. Any analyses of the impact of H&SS initiatives would therefore need to take account of the potential confounding impacts of social security system changes in order to attempt to determine any independent influence of H&SSD research and initiatives.

The States of Jersey ESSD implemented a new incapacity benefit regime on 1 October 2004 (Stafford, 2007). The previous system was thought to be confusing, in that benefit entitlement was partly dependent upon whether the incapacity was an “illness” or an “accident”. Jersey had two contributory benefits payable for incapacity due to illness (Sickness Benefit payable up to 364 days and Invalidity Benefit payable after 365 days); and two for incapacity due to an accident (Injury Benefit, again up to 364 days and Disablement Benefit, the only “in work” benefit payable before the regime change, payable as a percentage of “loss of faculty”, after initial receipt of Injury benefit for 364 days) (Stafford, 2007). It was suggested that the distinction between the perceived “causes” of conditions could sometimes lead to people with similar medical conditions being treated differently by the system. Accordingly, the “new” incapacity benefit system no longer distinguishes between the origins of any incapacity. There was no change made to the duration of these benefits,

the new system merely combines all short term incapacity together under the umbrella Short Term Incapacity Allowance (STIA). Additionally a change was made to long term benefits (Disablement and Incapacity Benefit); which constituted the main focus of the ESSD system change. In order to simplify and make receipt of these benefits more equitable, regardless of the "cause" of the incapacity, Long-Term Incapacity Allowance (LTIA) became the sole disablement benefit based on recipients' percentage loss of mental or physical faculty (a Baremas system - (Pozzo et al., 2002)). The benefit is paid as compensation for a 'loss of faculty' and recipients can work and retain entitlement to the benefit; previously this was not possible for recipients on Incapacity Benefit. An invalidity pension (subsequently the Incapacity Pension) was also introduced for cases where "the likelihood of someone returning to paid work was negligible"(Stafford, 2007). A concern was expressed by the ESSC (SJSSC, 1995) that the old incapacity benefit system was being used to disguise both unemployment and early retirement. They felt that this was due to the dichotomous nature of sickness benefit; defining recipients as either fit for work / not fit for work. It was hoped that the reformed system would address this problem, but no additional changes to the short term incapacity payments were planned or implemented. It was reported that "*The payment of benefits for short periods of incapacity for those with minor aliments and injuries was seen as largely non-problematic" (SJSSC, 1995)* However, evidence reported earlier (Chapter 3) makes clear that this assertion was likely to be inaccurate and at the very least overly optimistic.

Finally, the States of Jersey, through the ESSD and co-ordination with other

States departments, replaced the old Parish Welfare system and various other non-contributory benefits with an Income Support scheme, which went live in January 2008. This unified many disparate and uncoordinated benefits previously administered by different States departments under one umbrella and for the first time provided a “jobseekers” allowance for those who qualified for support and were unemployed but seeking work.

Consequently, this study aimed to:

1. Determine the relative influences of the Social Security System Change; the H&SSD Initiatives; and the introduction of Income Support on:
    - **a.** Total costs and Total costs by Working Population;
    - **b.** Certificate totals and total number of days certified for primary and secondary care;
    - **c.** Certificate totals and total number of days certified for our conditions of interest: LBP; CMI; Resp; and MSK.

Specifically in relation to the H&SSD initiatives it was hypothesized that they would have the greatest impact on durations of certified absences rather than number of certifying episodes (i.e. days certified rather than number of certificates issued), in line with the BAC management algorithm.

METHODS

All GP practices on the Island were invited to attend educational sessions on "The Modern Management of Low Back Pain" (Chapter 8). These were provided by a team of Consultants and Physiotherapists from the local Pain Management Department. Attendance was registered and all non-attendees, following initial invitation, were contacted and offered additional sessions to ensure comprehensive cover of all GPs practicing in Jersey (98% coverage achieved) (Bowey-Morris et al., 2010). Referral access to the BAC was dependent on attendance at one of these sessions.

Details of the content of the sessions are given in Chapter 8. All GP attendees were given copies of the "Back Book" (Burton et al., 1996); referral forms for the BAC (which contained tick box reminders of the RCGP guidelines for diagnostic triage of "Red Flags" as well as "Yellow Flags" as well as a section explicitly asking about duration of work absence and discussed return to work date); and a laminated poster of an algorithm for the "Management of acute low back pain" as suggested by Kendall and colleagues (Kendall et al., 1997), adjusted to allow for the local protocol for display in individual GP consultancy rooms. Patients failing to respond to usual GP management alone at four weeks or patients who have been signed off work for two weeks and do not have a return to work date or plan should be referred to the BAC Triage Team. Use of the new service was however discretionary.

Research into attitudes and beliefs of GPs towards NSLBP began in May of 2006 and continued throughout the BAC rollout period (Bowey-Morris et al.,

2010). The BAC Service was initially piloted with three GP practices (covering approximately 25% of the Island population) from the beginning of January 2007 to end of June 2007 to ensure protocols and procedures were adequate for volumes of patients referred. The BAC Service was then rolled out across the rest of the Island's Primary Care Practices in a staggered format, achieving 98% coverage by the end of the 3rd Quarter 2007.

Social security data with regard to sickness certification was monitored for the period up to 31 December 2008 inclusive and was downloaded from the ESSD; and prepared and cleaned for analysis. For the purposes of this study only incapacity for the first year and payable by either Sickness/Injury Benefit or subsequently STIA was fully assessed, however where applicable total costs are described. As for the study described in Chapter 3, any certificates issued by GPs which were not forwarded to the department to form the basis of a claim were not included. Again, the exact number of certificates issued which did not form part of a claim is not known however, as previously stated these are likely to be very small.

Descriptions of data fields and Certificates of interest

These remained the same as those described in Chapter 3.

Conditions

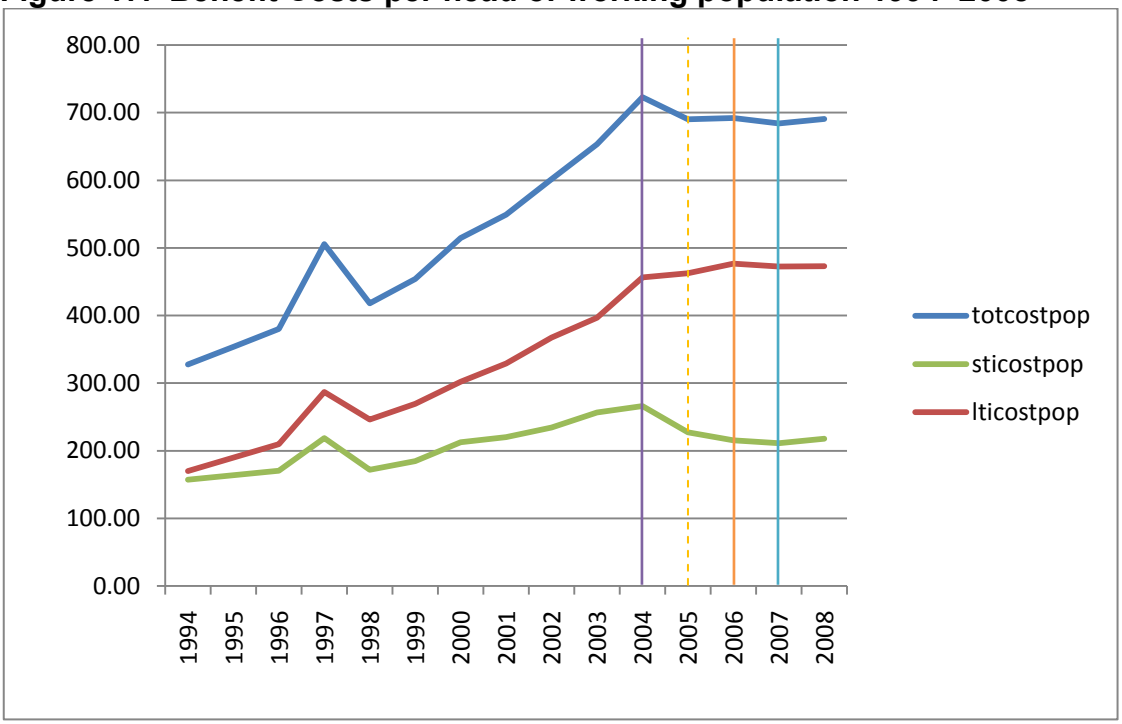
The categories of interest for this study remained the same as those for the Trend Analysis detailed in Chapter 3. Again, as Respiratory conditions appeared to demonstrate both stable certification practice and a reduction in

durations, which may be expected of conditions which respond most positively to a biomedical approach, the impact of both changes (H&SS and ESSD) on respiratory conditions will be used as a benchmark.

RESULTS

Trends for all benefits continued to rise to a peak in 2004. The introduction of the Social Security System Change is illustrated with purple lines throughout, the year the research commenced including measurement of GP attitudes and beliefs in dashed yellow and the stepped launch of the BAC initiative is shown in solid yellow; income support is shown in light blue. Figure 17 shows the total Incapacity Benefit costs as well as STI and LTI separately for the working population.

Figure 17. Benefit Costs per head of working population 1994–2008

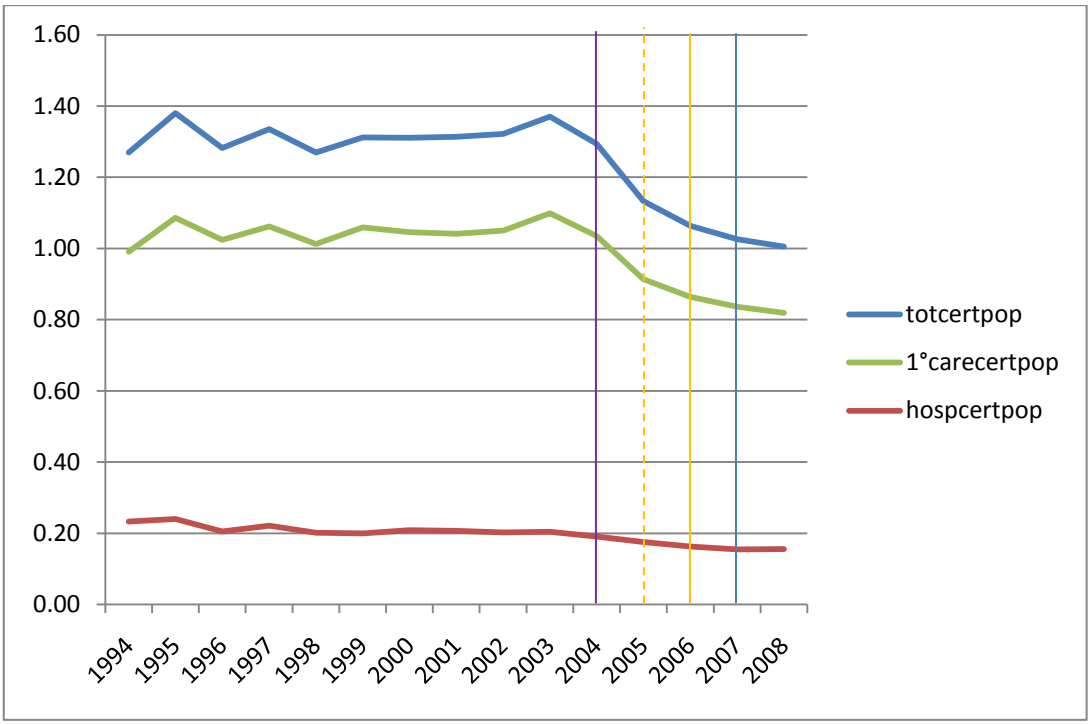


totcostpop – Total incapacity benefit costs by head of working population;
sticostpop – Total Short term incapacity benefit costs by head of work population;
lticostpop – Total Long term incapacity benefit costs by head of working population

As stated in Chapter 3, the significant departure in trends associated with the increase and then decrease between 1996–1998 is largely attributable to an accounting adjustment, without which the trend would show a consistent rise

from 1994 to 2004. Figures 18 and 19 show how these changes in costs relate to changes in certification and also days certified for primary and secondary care.

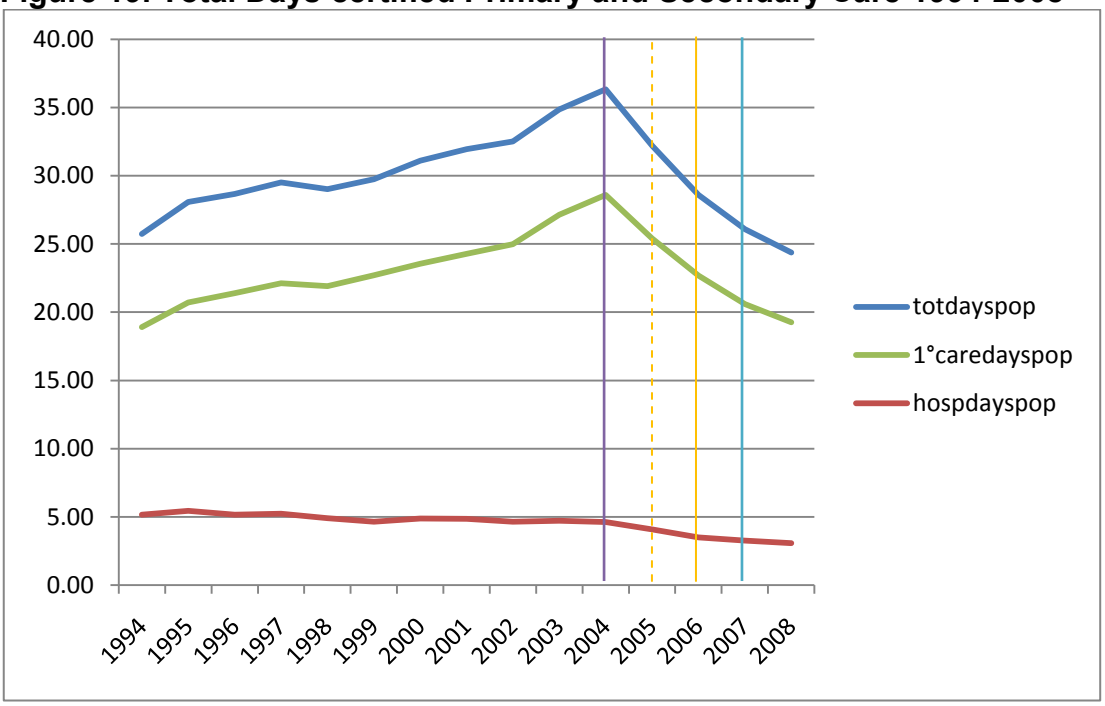
Figure 18. Total Certificates Issued Primary and Secondary Care 1994–2008



totcertpop – Total Certificates issued by head of working population
1°carecertpop – Total Primary Care certificates issued by head of working population
hospcertpop – Total Secondary Care certificates issued by head of working population

Total numbers of certificates issued by head of working population continued to rise from 1994 to 2003; between 2003 and 2004 this trend changed and the figure fell by 5.84%. This was made up of a 6.36% decrease in primary care certificates and a 5% decrease in secondary care certificates. By 2008 certificate rates had fallen by a further 21.7%, made up of a 20.39% decrease from primary care and a 15.79% decrease from secondary care.

Figure 19. Total Days certified Primary and Secondary Care 1994-2008



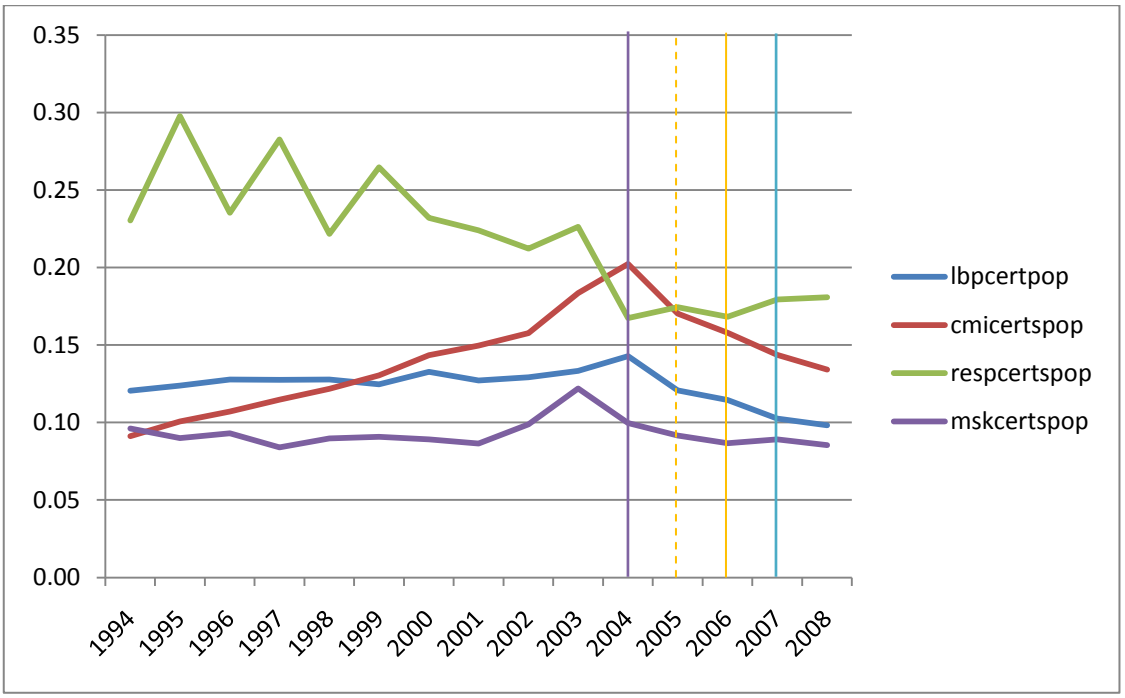
totdaypop – Total days certified by head of working population
1°carecertpop – Total Primary Care days certified by head of working population
hospcertpop – Total Secondary Care days certified by head of working population

Between 1994 and 2004 the total number of days certified as a proportion of the working population rose by 41.18% (35.39% 1994-2003 and a further 4.28% increase 2003-4). This final increase was due to a 5.31% increase in days certified by primary care, compared to a 1.69% decrease in days certified in secondary care. By 2008 total days certified (in comparison to 2004) had fallen by nearly a third (32.97%), this change was made up of a 32.58% reduction in days certified in primary care and a 33.62% reduction in days certified by secondary care.

Changes in certification rates by head of working population for our conditions of interest are shown in Figure 20. Total numbers of certificates issued by head of working population fell between 2003 and 2008 for all condition categories.

For the condition of LBP, this was made up of a 7.52% increase from 2003-4; followed by a 31.47% decrease from 2004 to 2008. A similar pattern was found for CMI which rose by 10.38% from 2003-4 and subsequently reduced by 33.66% from 2004 to 2008. MSK certificates had peaked in 2003 and subsequently reduced by a total of 30.33% by 2008. Total certificates issued for Respiratory conditions fell sharply between 2003-4 (26.11%) and then followed an erratic pattern of rising and falling, ending 8.38% above the low 2004 level but 19.91% below the 2003 level.

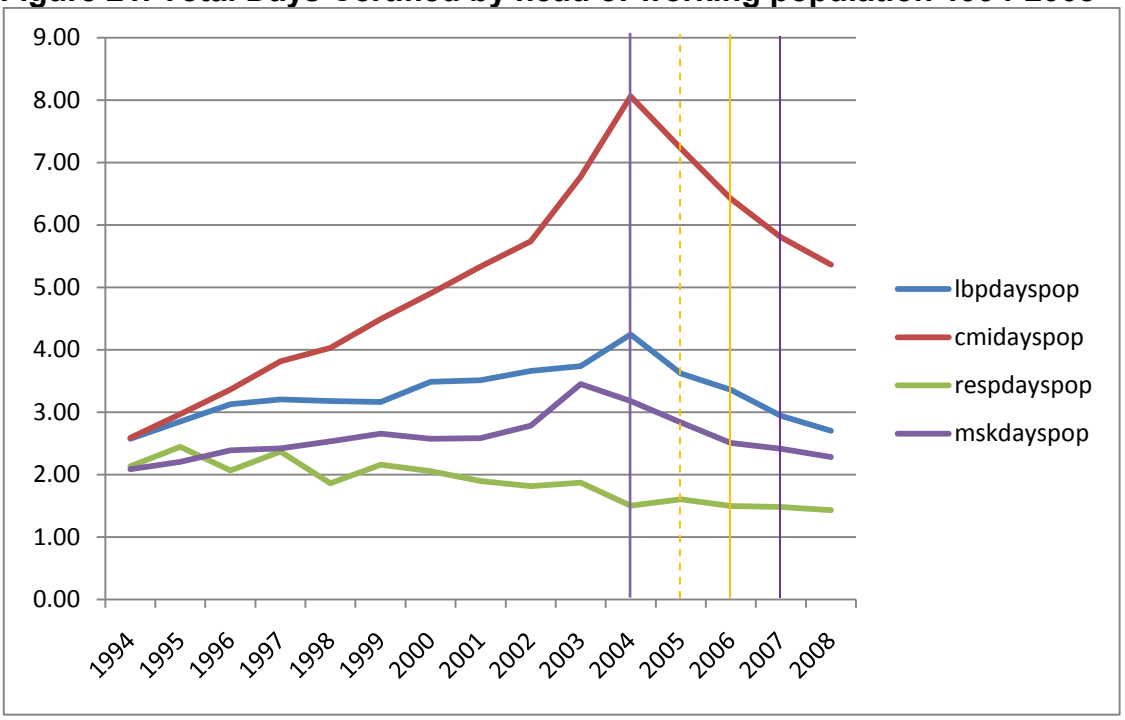
Figure 20. Total Certificates issued by head of working population 1994-2008



lbpcertpop – LBP certificates issued by head of working population;
cmicertspop – CMI certificates issued by head of working population;
respcertspop – Respiratory certificates issued by head of working population;
mskcertspop – MSK certificates issued by head of working population

Changes in days certified by head of working population for LBP, Respiratory, CMI and other MSK conditions are shown in figure 21.

Figure 21. Total Days Certified by head of working population 1994-2008

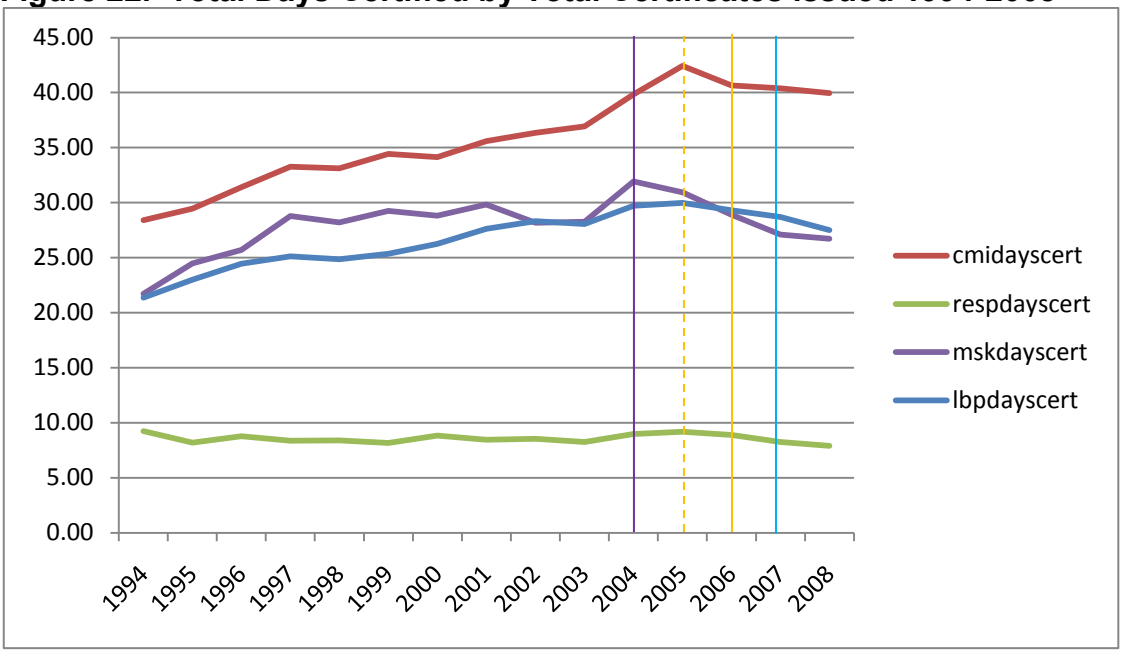


lbpdayspop – LBP days certified by head of working population;
cmidayspop – CMI days certified by head of working population;
respdayspop – Respiratory days certified by head of working population;
mskdayspop – MSK days certified by head of working population

LBP days certified initially increased to their peak in 2004 (a 13.64% increase on 2003) before decreasing by 36.47% to 2008; CMI days certified followed the same pattern and increased by 19.05% to 2004 before decreasing by 33.50% to 2008. MSK conditions had peaked in 2003 and subsequently reduced by 33.91% to 2008. Again, respiratory conditions were most erratic but showed a 23.53% overall reduction between 2003 and 2008.

In order to see the proportionate decreases in durations of certified episodes (average number of days per certificate), it is necessary to control for the absolute changes in numbers of certificates. Therefore, total days certified are shown in relation to total certificates issued, figure 22.

Figure 22. Total Days Certified by Total Certificates issued 1994-2008



cmidayscert – CMI average days per certificate;
respdayscert- Respiratory average days per certificate;
mskdayscert – MSK average days per certificate;
lbpdayscert – LBP average days per certificate;

Durations of certified episodes increased for LBP and CMI condition codes until 2005, MSK conditions peaked in 2004. Durations for Respiratory conditions also increased up to 2005, however taken against the longer backdrop, it can be seen that even at their peak in 2005 (9.20) durations of certification for Respiratory conditions were still below that of 1994 (9.25). CMI diagnoses continued to attract the longest durations per certificate, however this reduced from a peak of 42.43 days per certificate in 2005 to 39.96 by 2008 (a reduction of 5.82%). This still remains 8.02% higher than for 2003 (36.93); and can be seen in relation to the 30.05% increase seen over the decade 1994-2003. LBP diagnoses attracted average certificate durations of nearly 30 days at their peak however reduced to 27.52 by the end of 2008 (a reduction of 8.21%), bringing this just below the average for 2001. Average certificate durations for MSK

conditions reduced by the greatest amount from their peak in 2004 to 2008 (16.26%).

Figures 23a. and 23b. illustrate the proportions of certificates (a) as well as days (b) certified by GPs for different diagnoses in 2004. LBP accounted for 14% of all GP certificates issued (static from previous study, Chapter 3) and 15% of all days certified. CMI accounted for 20% of certificates and 28% of days certified.

By 2008 LBP accounted for only 12% of certificates issued (figure 23a.) and 14% of days certified (figure 23b.), and CMI accounted for only 16% of certificates issued but still attracted 28% of all days certified by GPs.

Figure 23a. Certification by GP by Diagnoses Group 2004

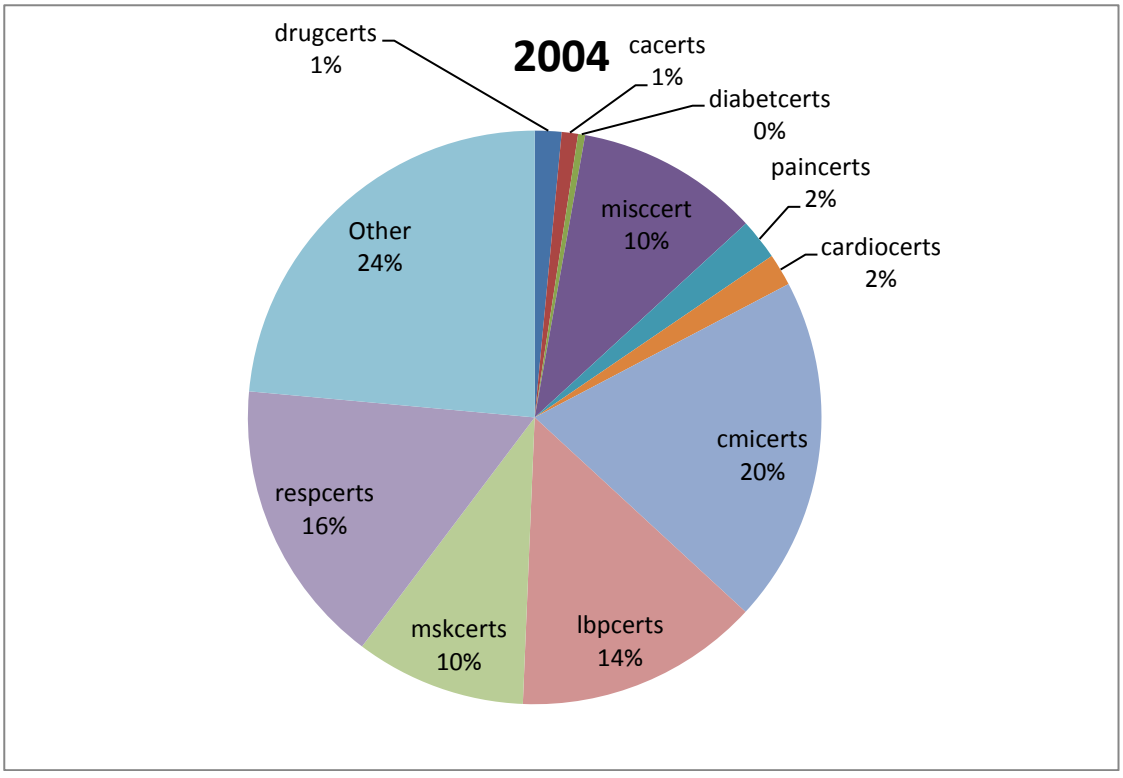


Figure 23b. Days Certified by GP by Diagnoses Group 2004

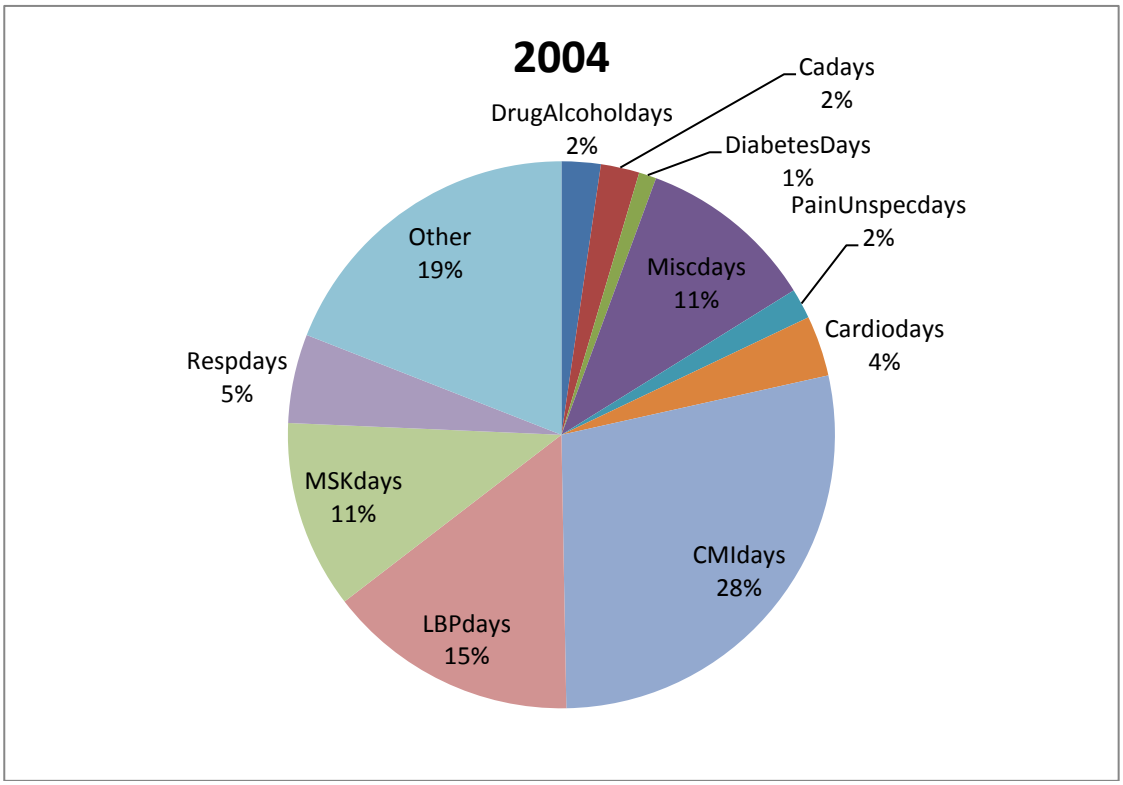


Figure 24a. Certification by GP by Diagnoses Group 2008

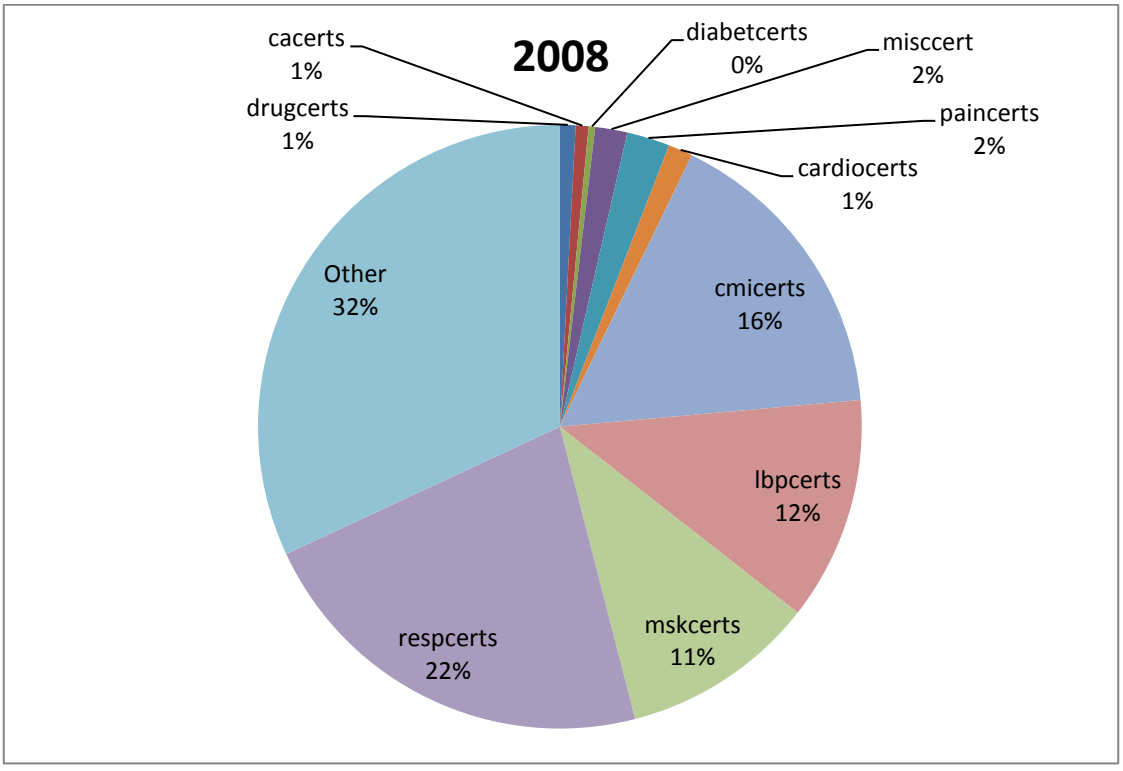
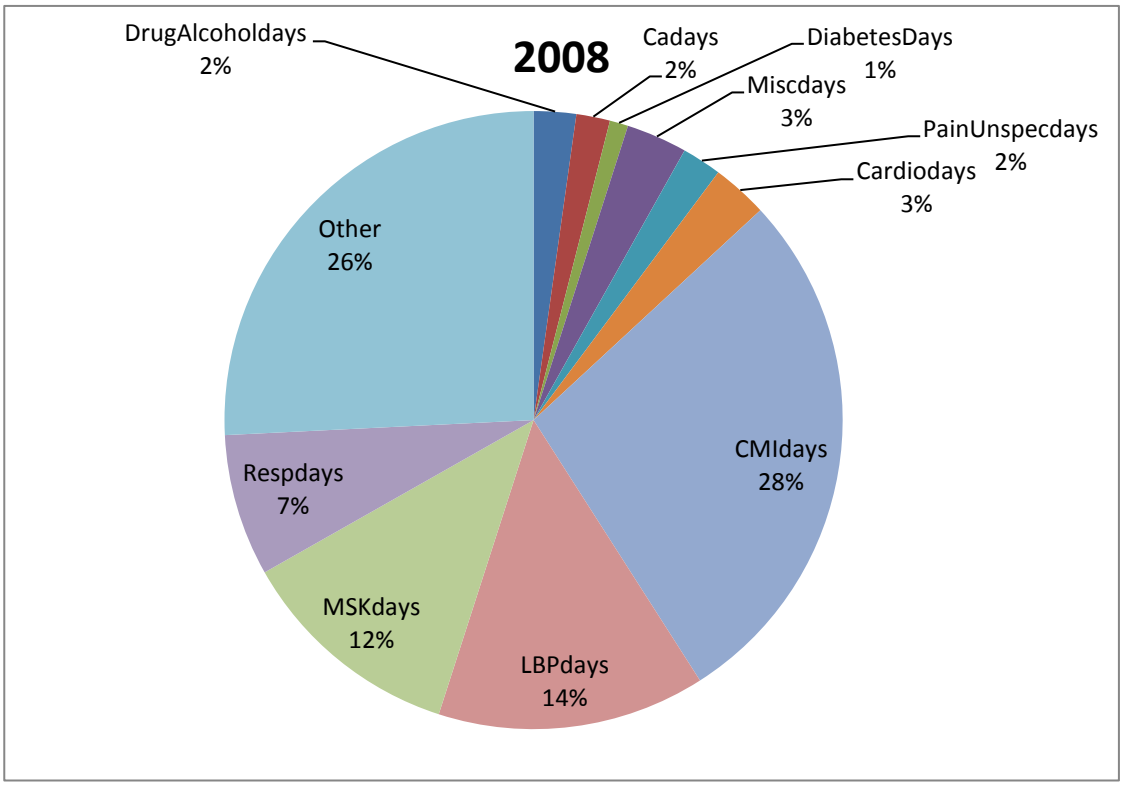


Figure 24b. Days Certified by GP by Diagnoses Group 2008



DISCUSSION

Benefit Costs

Overall trends of incapacity benefit costs continued to increase up until the end of 2004 for both LTI as well as STI claims (between 2003 and 2004 LTI and STI benefits increased by 15.05% and 3.91% respectively). At the peak of these costs (2004 figures) this equated to £723 in direct wage replacement costs per head of working population. The slightly sharper increase in LTI benefits payable for the year ending December 2004 may be attributable to the conversion of recipients from the old benefit categories onto the new LTI benefit categories for the introduction of the new system. Changes to the trend of constant increases in total costs occurred between 2004/5 (ESSD initiative) and again 2006/7 (BAC initiative); these changes are mostly attributable to changes in the STI costs during these times.

The period between 2004 and 2008 saw the slowest increase in LTI benefit costs for over 15 years (11.72% increase in four years) and a reduction in total STI costs of 11.77%. These differences are against the rise to 2004 and the previous decade (1994-2003) of increases of 76.99% and 153.48% respectively. Figure 17 shows the figures comparable to the total working population; overall they show a 4.48% reduction in total benefits (2004 – 2008; £1.6 million), made up of an increase in LTI benefit costs of 3.57% (£809,204) and an associated decrease of 18.23% in STI costs (£2,409,937).

The changes in STI costs following the ESSD System change were larger than expected, as the main thrust of this change in terms of STI benefits was the

unification of the two previously available benefits (Injury and Sickness) but no change associated with entitlement or duration of entitlement. It was envisaged the greatest changes would be most evident in the LTI arrangements as these did engender a change in entitlement and a move away from a presumption of "total incapacity" within the Incapacity Allowance to bring it in line with the "loss of faculty" arrangement for Disablement Allowances thus creating a unified "in-work" benefit for recipients claiming for greater than 364 days. The degree of change in STI benefit costs may well be the result of a combination of factors, including the Social Security Department's increased efforts to convert recipients from STI benefits that had gone over the 364 day period which, despite being the official cut-off date, was not always the administrative date for conversion of benefits or exit from them. Certificates written at the end of a long episode of absence are more likely to be written for the maximum duration (13 weeks) than those at the beginning; therefore if recipients had gone over or were at their 364 days then converting them more promptly or on time may have contributed to the reduction in STI days (and subsequently costs) seen in the results during 2004/5.

Examining the ESSD data from the perspective of the certificate (i.e. running the queries according to the data held on each certificate) does not allow for further analysis of claims exceeding the 364 day period or numbers of claimants who were claiming for longer than 6 months as this would require examination by claimant (i.e. running the queries according to the data held on each claimant and their subsequent claims). Future work may wish to repeat the longitudinal analysis from the claimant perspective as measured by Watson and

colleagues in 1996 (Watson et al., 1998). This would allow up to date and accurate conclusions in relation to those who claim for greater than six months. It would also allow for analysis of changes in reasons for absence during a claim and changes in reasons for absence over prolonged periods for individual claimants. Qualitative studies have suggested that GPs often provide sickness certificates to patients because they feel that if they don't the patient will just see someone else who does (Hussey et al., 2004, Stafford, 2007); additionally it may be that claimants revolve through different diagnoses during long term or repeated claims, examining longitudinal trends of individuals' sickness absence claims would allow further objective scrutiny of these proposed phenomena. The focus of the present work remained the certification behaviour of GPs and therefore the ESSD database was examined from the perspective of the certificate only.

The changes that occur within STI benefits are in the direction anticipated following the H&SSD initiatives. Both the research and the BAC initiative highlighted issues around LBP management and attempted to encourage more Biopsychosocial management approaches to symptom dominated conditions in general. Overall the GP MIS (Appendix 5) did attempt to create a shift in beliefs (Bowey-Morris et al., 2010); which coupled with the provision of the new BAC service may have contributed to the change in incapacity benefits seen within the Island. The change in trends should be seen against the backdrop of sustained increases in costs for the prior 11 year period (figures 17). To determine more specific condition category effects, closer scrutiny of total certification and certification duration was performed.

Primary and Secondary Care total certificates issued

Overall certification rates peaked prior to the introduction of any changes in 2003, however even after controlling for the initial reduction (2003-4 of 5.84%), certification rates continued to fall between 2004 and 2008 by a further 21.7%. Figure 18 illustrates these changes in overall certification figures against the backdrop of the previous decade, highlighting the magnitude of the differences and the change in direction. Changes in total certificates issued occurred for both primary and secondary care, however were most marked within primary care for 2004/5, which may relate to the introduction of the new ESSD system and the shift of claimants from needing certificates for STI benefits to no longer requiring them for LTI benefits – as stated above this would only be related to those who had gone over their 364 day period.

The majority of the change seen in secondary care total certificates issued occurred after the introduction of the BAC initiative and may be partly attributable to this. The introduction of the BAC initiative saw a shift in management within secondary care, namely, that all LBP patients referred to Secondary care were now routed through the BAC, rather than a combination of orthopaedic, rheumatology or pain clinic routes and this could explain the 11.1% drop in certification rates for secondary care in 2005/2006.

The downward trend in certificates issued by primary care continued after the initial 2004/5 change with a further year on year reduction for the next 3 years: 5.49%; 2.33% and 2.38% respectively. This is the first sustained downward

trend seen in numbers of certificates issued from primary care over the 15 year period. With certification rates in 2008 being 20.47% lower than in 1994.

Primary and Secondary Care total days certified

In relation to total days certified the differences are more pronounced. As for Chapter 3, secondary care total days certified continued to reduce prior to the ESSD system change and any H&SSD intervention by 1.69% (2003/4); these changes became more pronounced however, following the ESSD change (11.85%); the commencement of the research project (a further 14.43%) and roll out of the BAC (again, a further 6.57%); and continued after the introduction of IS (by a further 5.18%). These latter changes contributed the greatest proportion to the reduction seen over the 15 year period of 40.43% (10.25% 1994-2003 and 33.62%% 2004-2008).

Changes to Primary care total days certified made up the greatest proportion of change seen over the period (figure 19). Initially, primary care total days certified continued to rise (2003/4) by a further 5.31%, against a backdrop of 43.52% increase over the previous decade. The ESSD system change saw an immediate drop in primary care total days certified of 11.09%. This change in direction of number of days certified was maintained, with the succeeding three years seeing further year on year reductions of 10.78%; 9.13% and 6.46% respectively. Rates of days certified by primary care in 2008 were only 1.90% higher than those seen in 1994, marking a clear change in direction. The period 1994-2004 saw a year on year cumulative 51.14% increase in total days certified whilst the period 2005-2008 saw a cumulative 32.58% decrease. For

the current study, if data had only been available for 2002-2008 the decreases in total certification levels seen just prior to the ESSD, research, BAC and IS changes would have detracted more from the potential size of the impact they may have made. However, reflecting over a 15 year time period, we can be more certain that the shifts in both total numbers of certificates issued and total days certified represent real changes in certification behaviour rather than artefact. In terms of quantifying the potential impact of the research interventions alone, it is possible that some of the change seen at this time was due to a Hawthorne effect (Field, 2000), where the very act of interdepartmental focus on incapacity benefit; as well as research into attitudes and beliefs about LBP and its management may have contributed to a change of GP behaviour in terms of sickness certification in general and subsequently costs. This may be particularly true given that these changes were occurring within a national and international context of scrutiny with regard to sickness certification (Aylward, 2004, Waddell and Aylward, 2005, Waddell et al., 2002). The relative influences of the interventions in terms of general effects across all condition categories, versus those that were specific to LBP were therefore of interest.

Changes in Certification behaviour for Specific Condition Categories

CMI

When broken down into specific condition categories, 2004 saw CMI attract the most primary care certificates by head of working population for the first time (20.2%). This was however short lived as the introduction of the ESSD system change in 2004 saw this reduce (by 15.84%) bringing it back below proportions for respiratory conditions. Certification rates for CMI fell by a cumulative

33.66% between 2004 and 2008 on the background of a 122% increase over the proceeding decade.

LBP

This picture was mirrored by LBP certification rates which at their peak equated to 14.3% of the working population receiving a certificate for LBP. This reduced following the ESSD system change (15.38%) and continued to decrease year on year after this, 4.96%; 10.43% and 4.85%. Rates in 2008 were 18.33% lower than those seen in 1994. The cumulative fall between 2004 and 2008 of 31.47% is again, against a backdrop of a previous decade of increase (19.17%) and in terms of GP behaviour, is better viewed from the perspective of durations of certified absences (days per certificate) rather than certification rates (numbers of certificates) alone (Chapter 3).

MSK and Respiratory

Not all condition categories followed the same trend. MSK certification rates peaked prior to the ESSD initiative in 2003, with the previous decade seeing a 27.08% increase in certificates for these conditions. Rates fell between 2003 and 2004 by 18.03%; and continued to fall to 2006 (8% and 5.43% year on year). They then saw a small increase to 2007 (2.3%) before decreasing again to 2008 (4.49%). Total certificates for MSK in 2008 were 11.46% less than those seen in 1994. Respiratory conditions, again, followed the most erratic pattern of all condition codes rising and falling a number of times during the period 2003 – 2008.

Changes in days certified for Specific Condition Categories

CMI

CMI attracted an average of 42.43 days per certificate in 2004 or the equivalent of 7.22 days per head of working population. This condition category saw a drop in average days certified per certificate to 5.36 days by 2008. This represents a 33.5% decrease 2004-2008 after a 211% increase 1994–2004.

LBP

In terms of days certified, at its peak LBP attracted nearly 30 days per certificate in 2004 (29.98) or the equivalent of 4.25 days for every working person. By 2008 this had dropped to the equivalent of 2.70 days per head of working population; which was only 5.06% higher than 1994 levels. This was against a backdrop of a 65.37% increase from 1994 – 2004 and a 36.47% decrease between 2004 and 2008, which was the largest decrease in days certified by condition category seen in the study. The ability to reflect back over much longer durations, when assessing population level changes, allows for a greater degree of certainty with regard to attributing real change to interventions rather than variations over time. Previously published work from Australia reported significant changes in total days compensated for LBP following a population based educational campaign which also had a reported sustained impact on GP attitudes and beliefs (Buchbinder et al., 2001b). However, analysis of claims were taken year on year just prior to, during the campaign and just after its cessation (3 years); which may have lead to the authors attributing a greater proportion of effect to the intervention rather than natural variation over time (Buchbinder et al., 2001b); follow-up reports of sustained changes in beliefs do

not contain information on compensation payments for the condition (Buchbinder and Jolley, 2005, Buchbinder and Jolley, 2007). The results in this study are obviously more generalised, as were some of the interventions and therefore it is not possible to directly attribute cause and effect. However, as previously stated, the marked change in direction of trends suggests that the reductions in days certified and durations of certified absence are likely to be related to the combined changes implemented by both ESSD & HSSD, even if direct cause and effect cannot be delineated due to the confounding influence of the timings of the initiatives.

MSK and Respiratory

Changes in MSK days certified, to a degree, mirrored those for LBP, reducing from a the equivalent of 3.45 days per head of working population at their peak in 2003 to 2.28 days per head of working population in 2008 (33.91%). Respiratory conditions again follow an erratic pattern of days certified, rising and falling to the end of 2008 at which point they attracted the equivalent of 32.86% less days per head of working population than in 1994 (but 39.66% lower than the highest recorded rate in 1997).

These more generalised effects seen in relation to other condition categories may have partly been influenced by the broad based messages put across in the GP MIS. This highlighted problems associated with prolonged work absence (Bowey-Morris et al., 2010), including the negative impact on pain as well as mental health (Kposowa, 2003). The MIS concentrated on the general negative effects of prolonged sickness absence rather than focusing on LBP

certification alone as previous work highlighted that a general propensity towards sickness certification was the greatest predictor of sickness certification for LBP (Watson et al., 2008). It also put forward similar messages to those seen in other campaigns, i.e. to remain active and stay in or return to work as soon as possible (Buchbinder et al., 2001b, Waddell et al., 2007b). As previously mentioned the Australian study also realised reductions in both certification episodes and durations of claims for LBP (Buchbinder et al., 2001b). Previous researchers did not however comment on any more general effects of their positive messages about remaining in normal roles and activity on other condition categories, in particular MSK. Given the results of our population survey (Chapter 4) and the above results, the potential further benefits of a population based campaign (Buchbinder et al., 2001a) would be worth investigating, particularly as they could now be measured against the detailed trends available. Again, it should be remembered that the ESSD initiative was aimed purely at LTI and not STI but the potential influences described above must be taken into account.

Although it was out with the scope of this study, specific analyses of changes in certification behaviour by individual GPs could assist with delineating the individual influences of the different initiatives. It would be useful to see if those that made the greatest shift in beliefs about LBP following the MIS also made the greatest change in terms of certification for the condition; this would potentially provide more evidence for the effectiveness of the MIS in terms of the changes in trends demonstrated.

Analysis of the proportions of certificates issued by GPs for different diagnostic categories for 2004 to 2008 (figures 23a & b and figures 24a &b) reveal a slight shift in proportions of certificates written for LBP (14% to 12%) and a return to previous levels (14%, from a high of 15%) in days certified. CMI diagnoses accounted for 4% less in terms of total certificates issued but the same proportion of days certified, whilst respiratory and MSK conditions made up larger proportions of the overall totals (respiratory 16-22% certificates and 5-7% days; MSK 10-11% certificates and 11-12% days).

The reduction in durations of certificates issued for LBP can thus be seen in relation to the relatively static proportions of overall certificates issued by GPs and could be described as an improvement in certification practice. The largest adjustment in terms of proportions of certificates and days certified is seen in the reduction for “miscellaneous” as a “diagnosis” (10% certificates and 11% days certified to 2% and 1% respectively); this potentially suggests an overall “tightening up” of criteria for certification by ESSD; which potentially will have pervaded all practice and thus may have influenced all of the above results.

The proportions in terms of overall certification for MSK and CMI are similar to those reported for UK IB claimants (Aylward, 2004) and by the HSE from the Labour Force Survey (HSE, 2010); with the exception of proportions relating to Respiratory conditions as these understandably mostly relate to shorter term absences which have been similarly reported by the CIPD (CIPD, 2009). This suggests that despite differences in systems (Chapter 2) Jersey data is comparable to that of the UK, as found previously (Watson et al., 1998) and

thus these results potentially have broader applicability than just within the local context.

As previously mentioned, the fact that the ESSD, BAC and IS changes all occurred in succession makes it difficult to attribute any change seen to the commencement of one initiative alone. A specific criticism of all field based research is its reduced capacity to control for confounding variables. Ideally, it would have been better to assess the impact of all three initiatives separately; however, this level of control is not possible to achieve in broad population based government projects. The benefits of determining the wider and more generalisable impacts of initiatives occurring in real world social systems can, however, often outweigh these criticisms; providing appropriate reflection is given to these potential confounding issues. The benefit of comparison over much longer timeframes (i.e. a previous decade) does allow for increased confidence in relation to "real" rather than "artefact" differences.

In relation to the changes seen following the introduction of the new Social Security system and also the potential impact of IS, evidence shows that modest adjustment in the gateways to, or amount of benefits payable often have only short term influences on the total amount and cost of claims (Waddell and Aylward, 2005, Waddell et al., 2002). These minor adjustments to systems are eventually overcome by "social and political pressures" (Waddell and Aylward, 2005). On the whole, however, despite frequent minor adjustments to Social Security systems internationally, trends appear to suggest increasing provision for more subjective health conditions, suggesting Social Security

adjustments alone are insufficient for long term overall cost reduction (Waddell et al., 2002, Waddell and Aylward, 2005). Therefore, the changes presented in this study terms of sustained reduction in certification episodes, days certified and durations of certificates may be of particular interest to policy makers and researchers. Interventions which specifically target work rehabilitation (i.e. the BAC initiative) have been shown to have marginally better outcomes (ISSA, 1995) than those that target benefits alone; hence to determine the overall impact of the research interventions and the BAC initiative, trends will need to be monitored over a longer timeframe to allow for adjustments in Social Security provision to be bedded in and reach their equilibrium.

There is a need to exercise caution in terms of interpretation of reasons for absence, these may change and differ overtime i.e. reason for initial absence may be different from reasons for continued absence and may differ again from reasons for failure to return to work; also there is anecdotal evidence that certificate diagnoses do not always accurately reflect conditions presenting to primary care (Stafford, 2007). With the added assistance provided to patients through the BAC, anecdotally clinicians have reported an increase in referrals for patients who have LBP but also other MSK, symptom dominated co-morbidities, as a means of accessing this increased level of co-ordinated and stepped care input. Roll out of similar initiatives for the management of all MSK conditions is now certainly warranted, with the mechanism for monitoring now in place given the £2.4 million savings (18.23% reduction in STI 2005 – 2008 despite increased per day costs associated with each compensated day of sickness) demonstrated above.

CHAPTER 11 – CONCLUSIONS

The aims of this research were both broad in terms of the timeframe of sickness certification trends examined and also the attitudes and beliefs of the different groups investigated: GPs (Watson et al., 2008); general working population (Morris et al., 2010) and LBP patients (Morris and Watson, 2010); but also narrow in terms of the context within which this occurred i.e. Jersey. This is perhaps the greatest strength of the research as it provides in-depth analysis of our local environment and baseline data upon which future interventions to improve the management of LBP can be evaluated locally; but also its overall weakness in terms of the potential generalisability of the results found here with other jurisdictions within the UK and elsewhere. However, Chapter 2 highlights similarities between Jersey and the UK in terms of previous research findings (Watson et al., 1998); thus we would suggest that the data presented here is as likely to be relevant to the rest of the UK as research findings obtained from Birmingham are to Devon. It should also be highlighted that the ability of the local social insurance system to capture data on all episodes of compensated sickness of two days or greater for the whole of the working population is relatively unique (Watson et al., 2008) and thus is a rich source of information on short-term incapacity (less than six months) not available elsewhere.

It should be remembered however that Jersey's universal health and social insurance system for all residents has no requirement to demonstrate a work-related condition to access healthcare or wage compensation. The findings of this research are therefore most pertinent to those countries which operate

similar systems and one should be cautious in extrapolating the findings to other systems (e.g. workmen's compensation).

FUTURE DIRECTIONS

PABS when used with GP populations

Although we were able to demonstrate that the PABS had adequate internal consistency as well as stability (Watson et al., 2008, Bowey-Morris et al., 2010); the biopsychosocial factor may still benefit from further work. Previous attempts to strengthen this factor with additional items have been only partially successful (Houben et al., 2005b), with two of the additional five items not meeting loading criteria for this factor and one loading on the biomedical factor rather than the biopsychosocial. This illustrates the difficulty in wording items to attempt to capture this orientation whilst still attempting to gain a range of responses. It is recommended that all previously defined items (with the exception of the two that specifically related to physiotherapy) be retained in future work which has sufficient numbers to conduct further factor analyses.

In order to retain as many GPs within our study cohort as possible, to enable investigation of relationships between attitudes and beliefs and the issuing of sickness certificates for LBP, a decision was made not to include a case vignette with the PABS as previous research had done (Bishop et al., 2008). It was decided that this would make compliance less onerous on subjects taking part in our test-retest reliability study, which given our relatively small population (98) required significant take up if it were to be deemed representative. This limits our ability to compare our subsequent findings in relation to actual clinical

practice with those that used case vignettes only. Future research may consider retaining both measures of clinical behaviour (i.e. a measure of actual clinical practice as well as self-reported clinical management); which may provide further insight into the differences between implicit as well as explicit attitudes and subsequent behaviour, both clinical but also hypothetical.

Social Security data

Initial trend data (Chapter 3) highlights the lack of adoption of guideline adherence by primary care in Jersey particularly in relation to maintaining individuals with LBP in work. In order to determine the exact impact of the MIS on the individual GPs clinical behaviour in relation to sickness certification, data will need to be broken down into the separate GP codes and analysed according to response on the PABS and any changes in subsequent sickness certification. This work is currently on going and will form the basis of post-doctoral investigation.

Additionally, in relation to incapacity benefit trends, as previously mentioned, future work may wish to repeat longitudinal analysis from the claimant perspective as measured by Watson and colleagues in 1996 (Watson et al., 1998) as this would allow up to date and accurate comparisons in relation to those who claim for greater than six months. Longitudinal analysis of individual claimants would also enable us to determine how many more absenting episodes they subsequently have for the same condition. It would also allow us to determine if they do rotate GPs or sickness codes as is often suggested; as well as determine if absences get longer as shown in the original research by

Watson and colleagues over a two year period (Watson et al., 1998). Understanding how these possible changes relate to claimants' ages, gender, salary (socioeconomic status); educational level and working sector or industry, would provide significantly more information for targeted interventions, which may occur both within primary care consultations but also wider public health and secondary care initiatives.

Additionally, the positive economic impact of the BAC and MIS interventions, when robustly calculated, can then be used as rationale for further healthcare provision change particularly in relation to other MSK conditions; but also more broadly other symptom dominated conditions such as CMI. This is despite the fact that the benefit of the investment in healthcare system change may not be felt within the same governmental department. This data would equally be relevant to UK health authorities which seek to justify rehabilitation provision but more specifically to the devolved nations which do not retain control over both health and social security budgets.

Population based interventions

Previous public health campaigns designed to address attitudes and beliefs about LBP have been shown to produce significant positive shifts in beliefs across the general public as well as healthcare providers and these changes were reported to be associated with reductions in compensation costs for LBP (Buchbinder et al., 2001b). Whether or not this campaign shifted those that most needed change or just had an overall systematic shift for all respondents (Bowey-Morris et al., 2010) is not known. The reported improvements in beliefs

for HCPs were sustained when assessed against management of hypothetical patients up to 4.5 years later (Buchbinder and Jolley, 2007); however further disability cost analysis was not reported in this later published work and therefore whether or not the sustained changes in beliefs related to continued change in actual clinical management is again not known. Given the findings of our research (chapters 3 and 9), this potentially suggests that local public health campaigns may do well to highlight guidance advice that encourages assistance for people with back pain to remain in work (Waddell and Burton, 2006), particularly if they have absented in the past. However, effectiveness of such campaigns would have to be measured against a sustained trend of change in actual LBP management by HCPs particularly in relation to the issuing of sickness certificates and trends of compensated work loss for the condition, which with the baseline data now available locally could be achieved.

APPENDICES

Appendix 1

Procedure for data cleaning for Trend Analyses (Chapters 3 & 10)

1.	Certificates were sorted by "Doctor's Name". Overseas and private Doctor Name codes were removed from the database, leaving only public Secondary care certificates and all Primary care certificates.
2.	Totals for number of certificates and days certified for Primary and public Secondary Care were calculated and used within the results. Secondary care certificates were subsequently separated leaving only Primary care certificates
3.	All certificates for excluded condition categories were removed.
4.	Remaining certificates were grouped by condition category. Total certificates and total number of days were subsequently calculated for each year.

Appendix 2

States of Jersey Social Security Department Ailment Descriptions: (titles represent GP workload categories)

Other:
Abdominal pain
Abscess
Accident / injury (unspecified)
Allergic rash
Alzheimer's Disease
Amputation
Appendicitis
Autism
Bells palsy
Bi-polar disorder
Blackouts (F)
Blindness / partial sight
Blood disorders
Brain damage
Bruising
Burns
Cellulitis
Cerebral Atrophy
Cerebral haemorrhage
Cerebral Palsy
Chickenpox / measles / rubella
Cholecystectomy
Chronic fatigue Syndrome
Colic / renal colic
Colitis
Colostomy
Concussion
Conjunctivitis
Convalescence
Crohn's Disease
Cuts
Cystitis (inflammation of the bladder)
Deafness
Dementia
Dental treatment / extraction
Dermatitis
Diarrhoea and Vomiting
Dilation & curettage (D&C)
Diverticulitis
Downs Syndrome
Dyspepsia
Eczema
Encephalitis
Epilepsy / Fits
Facial trauma
Facial trauma – work related

Food poisoning
Foreign body in eye (FB)
Gastritis
Gastro-enteritis
Glandular fever (GF)
Gout
Guillain Barre Syndrome
Gynaecology problems & ops
Haemophilia
Haemorrhage
Haemorrhoids / piles
Hayfever
Head injury
Headache
Hemiplegia
Hepatitis / jaundice
Hernia
Herpes (any form)
Hospital treatment
Hospitalisation
Hyperemesis / vomiting
Hysterectomy
I.B.S
Ileitis
Infection
Infection ear
Infection eye
Injury to chest
Injury to eye
Injury to face or head
Injury to head
Injury to other parts of body
Insect bite
Investigation
Kidney disease/infection
Labyrinthitis
Learning Difficulties
Liver disease / cirrhosis
Lymphodema
Manipulation under anaesthetic
M.E
Medical board
Mentally Handicapped
Migraine
Motor Neuron Disease
Multiple sclerosis
Muscular Atrophy
Muscular dystrophy
Nausea
Oedema / Swelling
Operation
Osteoporosis
Otitis

Pain – chest
Paralysis
Paraplegia
Parkinson's Disease/ Syndrome
Partially sighted
Peptic ulcer
Peritonitis
Phlebitis
Poliomyelitis
Post viral
Post-operation
Pregnancy / miscarriage
Prostate disease
Quadriplegia
Rash
Schizophrenia
Sepsis
Shock
Sickness
Skin disease / disorder
Spastic limb
Spinabifida
Stroke / C.V.A
Sunburn
Swollen glands
Thrombosis
Thyroid disorder
Tinnitus
Toxaemia
Tuberculosis (T.B.)
Ulceration
Urinary Tract infection (UTI)
Varicosities
Vertigo / giddiness
Viraemia
Virus infection
Pain:
Pain (unspecified)
Misc:
Miscellaneous
Diabetes:
Diabetes
Cancer:
Cancer
Carcinoma (CA)
Tumour – benign
Tumour – malignant
Respiratory:

Asthma
Bronchitis
COAD/COPD
Cold/influenza
Congestion
Emphysema
Laryngitis
Pharyngitis
Pleurisy
Pneumonia
Sinusitis
Sore throat
Tonsillitis
Tracheitis
URTI
Cardiovascular:
Angina
Chest pain
Heart disease
Heart failure
High blood pressure/hypertension
Infarct/Myocardial Infarction
MI
Myocarditis
Palpitations
Musculoskeletal:
Arthritis
Arthritis – osteo
Arthritis – rheumatoid
Carpal Tunnel Syndrome
Dislocation
Fractures – ankle
Fractures – arm
Fractures – collar bone
Fractures – elbow
Fractures – finger
Fractures – foot
Fractures – leg
Fractures – multiple / unspec
Fractures – pelvis
Fractures – ribs
Fractures – shoulder
Fractures – skull
Fractures – wrist
Frozen Shoulder
Injury – ankle
Injury – arm
Injury – elbow
Injury – finger
Injury – foot
Injury – leg

Injury – neck
Injury – ribs
Injury – shoulder
Injury – skull
Injury – wrist
Injury neck – work related
Injury to hand
Injury to hand or arm
Injury to head
Injury to hip
Injury to knee
Injury to leg, ankle or foot
Injury to ribs
Injury to shoulder
Injury to thumb or finger
Myalgia
Pain – leg
Pain – neck / torticollis
Pain – shoulder
Rheumatism
RSI
Shoulder pain
Sprain
Strain / sis
Tendonitis
Tennis Elbow
Tenosynovitis
Whiplash
Whiplash – work related
LBP:
Back pain
Disc
Injury back
Injury to back
Injury to spine
Lumbago
Pain – back
Pain – nerve/sciatica
Prolapsed Intervertebral disc
Spondylitis
Spondylosis
Mental Illness
Agoraphobia
Anxiety
Bereavement
Debility
Depression
Exhaustion
Grief
Mental Illness
Nervous Disorder

Nervous Exhaustion
Post natal depression
Stress
Drug:
Alcoholism
Detox
Drug/Substance Dependency

Appendix 3.

JASS Health Questions used in analysis (as they appear in the Survey)

General Health Status

7.1 In general, how would you rate your health? (please tick one box only)
Excellent
Very Good
Good
Fair
Poor

Pain

7.14 Do you currently have any pain? (please tick one box only)
Yes Please go to question 7.15
No Please go to question 7.16

7.15 If Yes, where do you have pain? (please tick all that apply)
Neck
Shoulders
Upper back
Lower back
Legs
Elsewhere (please specify)

7.16 Have you **ever** had lower back pain? (Please tick one box only)
Yes Please go to question 7.17
No Please go to question 7.19

7.17 Have you **ever** had to take time off work due to lower back pain? (please tick one box only)
Yes
No

7.18 Within the last 7 days, how much has lower back pain affected your day-to-day activities? (please tick one box only)
Extremely
Quite a bit
Moderately
A little bit
Not at all

7.19 **BBQ**

7.20 If a person suffers from **lower back pain**, how often do you think it is acceptable for them to take time off work? (please tick on box only)
Always
Often
Sometimes
Rarely
Never

7.21 If a person suffers from **stress**, how often do you think it is acceptable for them to take time off work? (please tick on box only)
Always
Often
Sometimes
Rarely
Never

Appendix 4.

Items deleted from the PABS-PT for use with a GP population

Factor / Item	Reason for deletion
Biomedical Factor	
It is the task of the physiotherapist to remove the cause of back pain	Specific to Physiotherapy. Not included in questionnaire. Not used in previous work with GPs (Jellema et al., 2005a)
If therapy does not result in a reduction of back pain, there is a high risk of severe restrictions in the long term	Did not contribute to total score. Cronbach's α improved from 0.781 to 0.79 when item removed.
Back pain sufferers should refrain from all physical activity in order to avoid injury	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
Good posture prevents back pain	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
Not enough effort is made to find the underlying organic causes of back pain	Not retained in the original work by Houben due to minimal loading criteria and therefore omitted from analysis
Patients that have suffered back pain should avoid activities that stress the back	Not retained in the original work by Houben due to non-heterogeneity and therefore omitted from analysis
Back pain indicates that there is something dangerously wrong with the back	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
Sport should not be recommended for patients with back pain	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
TENS and/or back braces support functional recovery	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
Biopsychosocial Factor	
Even if the pain has worsened, the intensity of the next treatment can be increased	Specific to Physiotherapy. Not included in questionnaire. Not used in previous work with GPs (Jellema et al., 2005a)
In the long run, patients with back pain have a higher risk of developing spinal impairments	Added by Houben et al (2005b) to strengthen Biopsychosocial factor but loaded on the Biomedical factor during factor analysis – as unable to do this with GP sample this item was omitted from questionnaire.
Knowledge of tissue damage is not necessary for effective treatment	Produced an item-total correlation of less than 0.2
A patient suffering from severe back pain will benefit from physical exercise	Produced an item-total correlation of less than 0.2
Therapy may have been successful even if pain remains	Produced an item-total correlation of less than 0.2
Exercises that may be back straining should not be avoided during treatment	Produced an item-total correlation of less than 0.2
Unilateral physical stress is not a cause of back pain	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
The way patients view their pain influences the progress of the symptoms	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
Therapy can completely alleviate the functional symptoms caused by back pain	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
If activities of daily living cause more back pain, this is not dangerous	Not retained in original work by Ostelo or Houben and therefore omitted from analysis.
A rapid resumption of daily activities is an important goal of the treatment	Not on original Ostelo questionnaire and excluded by Houben therefore omitted
In back pain, imaging tests are unnecessary	Not on original Ostelo questionnaire and excluded by Houben therefore omitted

Appendix 5 PowerPoint presentation for the MIS detailing the BAC Remit

The Back Assessment Clinic

Dr Gari Purcell-Jones
Dr Chad Taylor
Kim Richings & Julia Bowey

1

- The Nature of the problem
  - Trends in disability
  - The medical process
- The role of work in maintaining health
- Guidelines on diagnostic triage & treatment
- New System:
  1. GP Triage
  2. The Back Book
  3. Physiotherapy - Back Assessment Clinic
- Questions????

2

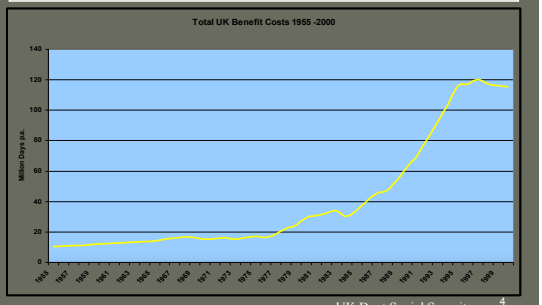
The Back Pain Revolution

- Human beings have had back pain throughout recorded history
- Back pain has not changed: it is no different, no more severe and no more common than it has always been
- What has changed, is how we think about back pain and what we do about it
- We have turned a benign bodily symptom into one of the most common causes of chronic disability in Western society today
- But if we can create an epidemic, we can also reverse it!

(Waddell, 1998)

3

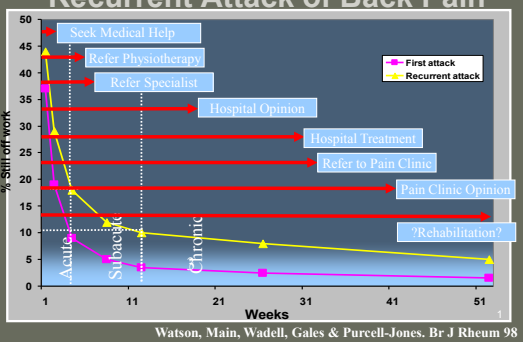
Total UK Benefit Costs 1955 -2000



UK Dept Social Security

4

Return to Work After First or Recurrent Attack of Back Pain



Watson, Main, Wadell, Gales & Purcell-Jones. Br J Rheum 98

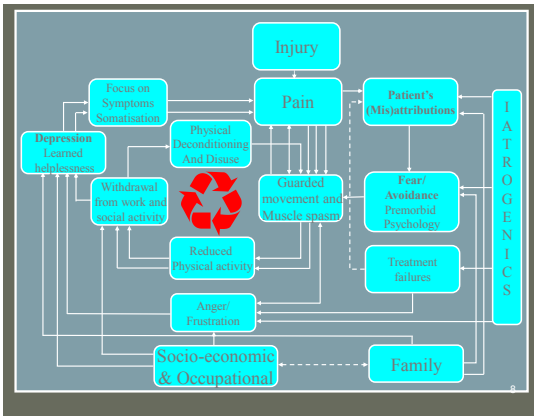
5

- Until recently there has been an exponential rise in disability associated with low back pain in western societies
- The day someone stops work with back pain they have a 1 -10% chance of still being off work a year later
- Once off work for 4 -6 weeks they have a 20% risk of long-term disability (1 in 5 patients off for > a month!)
- Off work for 6 months they have only a 50% chance of ever returning to their previous job
- By 1-2 years they are virtually unemployable,

6

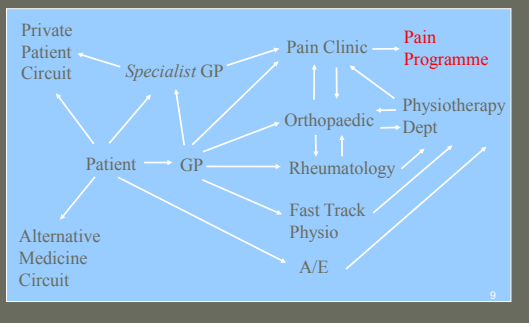
Is the medical process contributing to this disabling trend?

7



8

The Failed Treatment Odyssey



9

Investigations

•False positive rates of radiographic investigations in normal asymptomatic people:

	Degenerative condition	Disk prolapse
•Plain x-ray	0-90%	-
•CT Scan	10-35%	10-20%
•MRI Scan	35-90%	20-35%

(Jarvik & Deyo, 2000)

•A standard set of lumbrosacral views gives 120 times radiation dose of a chest x-ray

10

Dangerous Investigations

"Trials suggest that X-rays do not reassure patients and reduce distress. Rather, the decision to order an X-ray may cause worry that the Dr thinks there may be something serious. Even a normal test result may not outweigh that anxiety" (McDonald et al, 1996)

- Any minor radiological "abnormalities may be disastrous for patient confidence and beliefs in "hurt = harm"
- Principal recommendations – RCGP and RCR: X-rays are not routinely indicated in simple LBP

11

Work Is Good for Your Health

12

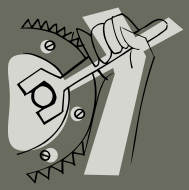
Out of Work versus In Work

- Increased Mental Health Problems
  - Janlert,1997; Weich &Lewis, 1998; Kposowa, 2001
- Lower Life Expectancy
  - Morris et al 1994; Martikainan & Valkonen, 1996; Nylen et al, 2001
- More Back Pain
  - Mason, 1994; Kraut et al, 2000

13

Unified Objectives

- Keeping people in work
- Getting people back to work



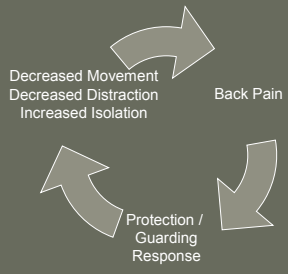
14

Rest is Bad for Your Health

- Bed rest for fractured hips – 90% die
- Better surgical outcomes with early mobilisation
- Muscle breakdown starts within hours
- Joints waste and breakdown when not used, becoming stiff and painful
- Failed return to activities due to deconditioning

15

Vicious cycle of chronic back pain



16

Vicious cycle of chronic back pain

17

Sick leave worsens this cycle

- ' Do the whole job or not at all'
- Stuck at home, resting in bed
- Boredom, with no distraction from pain
- Difficult to go out and be seen doing 'normal' activities
- Disenfranchised from the workplace
- Social isolation

18

Epidemiology of Back Pain

- Health and safety conscious environments have the highest prevalence of back pain disability.
- Spinal pain as common in 3rd World but disability virtually unheard of.
- Cultural protective response is one of the main causes of back pain disability.

19

Acute Low Back Pain Guidelines

- Assessment and Triage
- Is it serious spinal pathology?
  - Is it cauda equina?
  - Is it true nerve root pain?
- Is it simple mechanical back pain?
- Are there psychosocial issues?

20

Triage Process

- The CSAG report on LBP (1994) sets out a diagnostic triage:
- Aim to classify patients as either:

A) **Simple low back pain** ('common "mechanical" back pain which is musculoskeletal in origin and in which symptoms vary with different physical activities') - ≈ 95%

B) **Nerve root pain** -<5%

C) **Possible serious spinal pathology** -1%

21

95% of low back pain patients have simple mechanical low back pain

22

Red Flags ??

- **Possible serious spinal pathology** – accounts for only 1% of all LBP problems
- Red flags (indicators of possible serious spinal pathology) are subdivided into two groups:

a) signs and symptoms requiring emergency referral to a spinal surgeon; and

b) signs and symptoms suggesting possible serious spinal pathology

23

Physical Risk Factors for Serious Pathology (Red Flags)

Cauda Equina Syndrome

Is there any bladder or anal sphincter disturbance?

Widespread (> 1 nerve root) pain or progressive motor weakness in legs

Saddle anaesthesia (anus, perineum or genitals)

Gait disturbance (dyskinesia)

This Requires Very Urgent Orthopaedic Assessment via immediate referral to Orthopaedics or A/E

24

Physical Risk Factors for Serious Pathology (Red Flags)

Other Red Flags

- **Is the patient systemically unwell?**
- **Is the patient < 20 or > 65 years old?**
- **Is there a history of violent trauma?**
- **Is there any obvious structural deformity?**
- **Is there a past history of systemic steroids, drug abuse or immunocompromise?**
- **Is there a past history of weight loss or carcinoma?**
- **Is there a recent history of thoracic pain?**
- **Is there a history of constant progressive non mechanical pain**
- **Is there a past history of drug abuse?**
- **Is there a past history of immunocompromise?**
- **Are inflammatory markers raised?**
- **Is there any evidence of inflammatory arthropathy?**
- **Is there any widespread neurological disturbance?**

25

GP's know their patients best – red flags are indicators to be evaluated in a context of what is normal for that patient

26

Distinguish Nerve root pain from referred leg pain

1. Unilateral leg pain more intense than back pain;
2. Pain generally radiates to foot or toes;
3. Numbness and paraesthesia in the same distribution;
4. Nerve irritation signs (tension signs);Lesague, Slump test and Prone knee bend
5. Motor, sensory or reflex change limited to one nerve root;
6. Reasonable prognosis, **50% recover spontaneously in 6/52**

- 98% of disk prolapses are at L4/L5 or L5/S1

27

Psychosocial Yellow Flags

- **Psychosocial factors have a greater influence on outcome, what ever the outcome is**
- Aim – to identify and quantify psychosocial risk factors
- To provide "hooks" for early behaviour management to improve disability outcomes
- When?:
  - **Initial consultation – address immediately if possible**
  - Pts with non-resolved LBP at **2-4 weeks** who are not at work
  - Pts with non-resolved LBP **struggling at 4 weeks** Physio Triage

28

Psychosocial Yellow Flags

- **Attitudes – catastrophising, passive attitude to rehabilitation**
- **Behaviours – use of extended rest, over reliance on aids/appliances**
- **Compensation issues – barriers to recovery**
- **Diagnosis/treatment – unsure of diagnosis, numerous health professional opinions**
- **Emotions – fear, depression, stress, anxiety**
- **Work – unsupportive boss or colleagues, lack of autonomy/interest in job**
- **Family – over-protective, unsupportive**

29

Assessing Psychosocial Yellow Flags

- **What do you think is the cause of your pain?**
- **Do you think you need further investigation?**
- **What do you think will help and what are you currently doing to manage your pain?**
- **As a result of your pain, what are you not doing? Why?**
- **If you are off work, when do you feel that you will be able to return?**
- **How are your employer and your family responding to your pain problems?**
- **How do you see yourself in the future?**
- **Are you currently involved in any legal action or claim associated with your back pain?**

30

Psychosocial factors are the greatest predictors of outcome – whatever the outcome is!

31

Acute Low Back Pain Guidelines Treatment

1. **Explain and reassure** – often this is the only reason patients come to see us – **hand out The Back Book**
2. **Advise to stay active and working** (promotes faster recovery)
3. **Control symptoms** – appropriate regular analgesia (patients reluctant to take without appropriate messages i.e. hurt ≠ harm)
4. **Agree on a plan** – give positive messages about recovery expectation, x-rays and scans are not routinely necessary and can give mixed messages to patients
5. **Arrange review** – set date for review if symptoms not resolving (consider referral to BAC if signed off >2 weeks or still struggling >4 weeks)

32

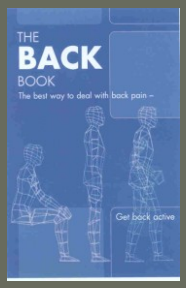
Drug management
PRODIGY Guidance

- Simple analgesia – paracetamol / codeine – regularly not prn
- Standard NSAIDs – ibuprofen, naproxen, diclofenac sodium
- GI protection – use only with a standard NSAID
- Muscle relaxant – 1 week supply – only in presence of significant muscle spasm
- Sub-acute – amitriptyline or gabapentin 1 month trial

33

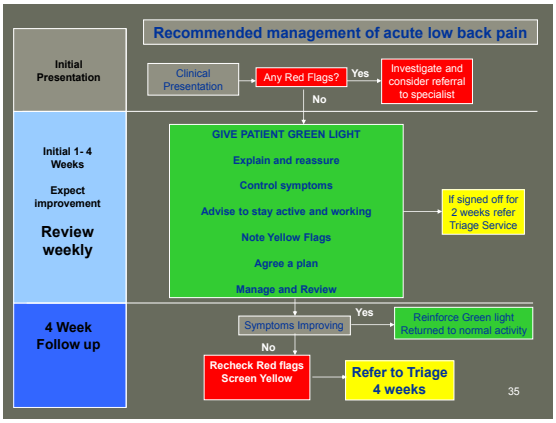
Acute low back pain Management in Jersey - BAC

1. GP Triage
2. Advise & reassure
3. Simple analgesia
4. Provide with Back Book
5. GP Review onward referral if necessary
6. BAC Assessment



34

Recommended management of acute low back pain



35

36

BIBLIOGRAPHY

Acute low back problems in adults: assessment and treatment. Agency for Health Care Policy and Research. *Clinical Practice Guideline - Quick Reference Guide for Clinicians***,** iii-iv.

ABENHAIM, L., ROSSIGNOL, M., VALAT, J. P., NORDIN, M., AVOUAC, B., BLOTMAN, F., CHARLOT, J., DREISER, R. L., LEGRAND, E., ROZENBERG, S. & VAUTRAVERS, P. (2000) The role of activity in the therapeutic management of back pain. Report of the International Paris Task Force on Back Pain. *Spine,* 25**,** 1S-33S.

ACC (1997) New Zealand Acute Low Back Pain Guide. Wellington, Accident Rehabilitation & Compensation Insurance Corporation of New Zealand and the National Health Committee.

AGEBERG, E., FLENHAGEN, J. & LJUNG, J. (2007) Test-retest reliability of knee kinesthesia in healthy adults. *BMC Musculoskeletal Disorders.*

AHCPR (1994) Clinical Practice Guideline Number 14: Acute Low Back Problems in Adults. Rockville, MD, Agency for Health Care Policy and Research.

AL-OBAIDI, S. M., BEATTIE, P., AL-ZOABI, B. & AL-WEKEEL, S. (2005) The relationship of anticipated pain and fear avoidance beliefs to outcome in patients with chronic low back pain who are not receiving workers' compensation. *Spine,* 30**,** 1051-7.

ALAVINIA, S. M. & BURDORF, A. (2008) Unemployment and retirement and ill-health: a cross-sectional analysis across European countries. *International Archives of Occupational & Environmental Health,* 82**,** 39-45.

AYLWARD, M. (2004) Needless unemployment: the public health crisis. IN HOLLAND-ELLIOT, K. (Ed.) *What about the workers?* Royal Society of Medicine, London, Royal Society of Medicine Press.

BECKERMAN, H., ROEBROECK, M. E., LANKHORST, G. J., BECHER, J. G., BEZEMER, P. D. & VERBEEK, A. L. M. (2001) Smallest real difference, a link between reproducibility and responsiveness. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation,* 10**,** 571-578.

BEVAN, S., QUADRELLO, T., MCGEE, R., MAHDON, M., VAVROVSKY, A. & BARHAM, L. (2009) Fit for Work? Musculoskeletal Disorders in the European Workforce. London, The Work Foundation.

BISHOP, A., FOSTER, N., THOMAS, E. & HAY, E. M. (2008) How does the self-reported clinical management of patients with low back pain relate to the attitudes and beliefs of health care practitioners? A survey of UK general practitioners and physiotherapists. *Pain,* 135**,** 187-195.

BISHOP, A., THOMAS, E. & FOSTER, N. (2007) Health care practitioners' attitudes and beliefs about low back pain: A systematic search and critical review of available measurement tools. *Pain,* 132**,** 91 - 101.

BLACK, C. (2008) *Working for a healthier tomorrow: Dame Carol Black's Review of the health of Britain's working age population,* London, TSO.

BLAND, J. & ALTMAN, D. (1986) Statistical methods for assessing agreement between two methods of clinical measurement. *Lancet,* 1**,** 307-310.

BLAND, M. (2000) *An introduction to medical statistics,* Oxford, Oxford University Press.

BLYTH, F. M. (2008) Chronic pain--is it a public health problem?[comment]. *Pain,* 137**,** 465-6.
BLYTH, F. M., MACFARLANE, G. J. & NICHOLAS, M. K. (2007) The contribution of psychosocial factors to the development of chronic pain: the key to better outcomes for patients?[see comment]. *Pain,* 129**,** 8-11.
BOERSMA, K. & LINTON, S. J. (2005a) How does persistent pain develop? An analysis of the relationship between psychological variables, pain and function across stages of chronicity. *Behaviour Research & Therapy,* 43**,** 1495-507.
BOERSMA, K. & LINTON, S. J. (2005b) Screening to identify patients at risk: profiles of psychological risk factors for early intervention. *Clinical Journal of Pain,* 21**,** 38-43; discussion 69-72.
BOERSMA, K. & LINTON, S. J. (2006) Psychological processes underlying the development of a chronic pain problem: a prospective study of the relationship between profiles of psychological variables in the fear-avoidance model and disability. *Clinical Journal of Pain,* 22**,** 160-6.
BOWEY-MORRIS, J., PURCELL-JONES, G. & WATSON, P. J. (2010) Test-Retest Reliability of the Pain Attitudes and Beliefs Scale and Sensitivity to Change in a General Practitioner Population. *Clinical Journal of Pain,* 26**,** 144-52.
BRAGE, S. & REISO, H. (1999) [Work ability and gender--physicians' assessment of sick-listed patients]. *Tidsskrift for Den Norske Laegeforening,* 119**,** 3737-40.
BRESSLER, H. B., KEYES, W. J., ROCHON, P. A. & BADLEY, E. (1999) The prevalence of low back pain in the elderly. A systematic review of the literature. *Spine,* 24**,** 1813-9.
BUCHBINDER, R. (2008) Self-management education en masse: effectiveness of the Back Pain: Don't Take It Lying Down mass media campaign. *Medical Journal of Australia,* 189**,** S29-32.
BUCHBINDER, R. & JOLLEY, D. (2004) Population based intervention to change back pain beliefs: three year follow up population survey. *BMJ,* 328**,** 321.
BUCHBINDER, R. & JOLLEY, D. (2005) Effects of a media campaign on back beliefs is sustained 3 years after its cessation. *Spine,* 30**,** 1323-30.
BUCHBINDER, R. & JOLLEY, D. (2007) Improvements in general practitioner beliefs and stated management of back pain persist 4.5 years after the cessation of a public health media campaign. *Spine,* 32**,** E156-E162.
BUCHBINDER, R., JOLLEY, D. & WYATT, M. (2001a) 2001 Volvo Award winner in clinical studies: Effects of a media campaign on back pain beliefs and its potential influence on management of low back pain in general practice. *Spine,* 26**,** 2535-2542.
BUCHBINDER, R., JOLLEY, D. & WYATT, M. (2001b) Population based intervention to change back pain beliefs and disability: three part evaluation. *BMJ,* 322**,** 1516-20.
BURTON, A. K. & WADDELL, G. (1998) Clinical guidelines in the management of low back pain. *Baillieres Clinical Rheumatology,* 12**,** 17-35.
BURTON, A. K., WADDELL, G., BURTT, R. & BLAIR, S. (1996) Patient educational material in the management of low back pain in primary care. *Bulletin of the Hospital for Joint Diseases,* 55**,** 138-41.
BURTON, A. K., WADDELL, G., TILLOTSON, K. M. & SUMMERTON, N. (1999) Information and advice to patients with back pain can have a positive effect. A randomized controlled trial of a novel educational booklet in primary care. *Spine,* 24**,** 2484-91.

BUSIJA, L., HOLLINGSWORTH, B., BUCHBINDER, R. & OSBORNE, R. H. (2007) Role of age, sex, and obesity in the higher prevalence of arthritis among lower socioeconomic groups: a population-based survey.[see comment]. *Arthritis & Rheumatism,* 57**,** 553-61.

CAMPBELL, A. & OGDEN, J. (2006) Why do doctors issue sick notes? An experimental questionnaire study in primary care. *Family Practice,* 23**,** 125-130.

CASSIDY, J. D., CARROLL, L. J. & COTE, P. (1998) The Saskatchewan health and back pain survey. The prevalence of low back pain and related disability in Saskatchewan adults. *Spine,* 23**,** 1860-6; discussion 1867.

CASSIDY, J. D., COTE, P., CARROLL, L. J. & KRISTMAN, V. (2005) Incidence and course of low back pain episodes in the general population. *Spine,* 30**,** 2817-23.

CHERKIN, D. C., DEYO, R. A., STREET, J. H. & BARLOW, W. (1996) Predicting poor outcomes for back pain seen in primary care using patients' own criteria. *Spine,* 21**,** 2900-7.

CHEW-GRAHAM, C. & MAY, C. (1999) Chronic low back pain in general practice: the challenge of the consultation. *Family Practice,* 16**,** 46-49.

CHOU, R., QASEEM, A., SNOW, V., CASEY, D., CROSS, J. T., JR., SHEKELLE, P., OWENS, D. K., CLINICAL EFFICACY ASSESSMENT SUBCOMMITTEE OF THE AMERICAN COLLEGE OF, P., AMERICAN COLLEGE OF, P. & AMERICAN PAIN SOCIETY LOW BACK PAIN GUIDELINES, P. (2007) Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society.[Erratum appears in Ann Intern Med. 2008 Feb 5;148(3):247-8; PMID: 18257154].[Summary for patients in Ann Intern Med. 2007 Oct 2;147(7):I45; PMID: 17909203]. *Annals of Internal Medicine,* 147**,** 478-91.

CIPD (2009) Annual Survey Report 2009. *Absence Management.* London, CIPD.

CLEELAND, C. S. & RYAN, K. M. (1994) Pain assessment: global use of the Brief Pain Inventory. *Annals of the Academy of Medicine, Singapore,* 23**,** 129-38.

COHEN, J. W. (1988) *Statistical power analysis for the behavior sciences,* Hillsdale, NJ, Lawrence Erlbaum Associates.

CORBETT, M., FOSTER, N. & ONG, B. N. (2009) GP attitudes and self-reported behaviour in primary care consultations for low back pain. *Family Practice,* 26**,** 359-64.

COUDEYRE, E., RANNOU, F., TUBACH, F., BARON, G., CORIAT, F., BRIN, S., REVEL, M. & POIRAUDEAU, S. (2006) General practitioners' fear-avoidance beliefs influence their management of patients with low back pain. *Pain,* 124**,** 330-337.

COUDEYRE, E., TUBACH, F., RANNOU, F., BARON, G., CORIAT, F., BRIN, S., REVEL, M. & POIRAUDEAU, S. (2007) Fear-avoidance beliefs about back pain in patients with acute LBP. *Clinical Journal of Pain,* 23**,** 720-725.

CRAWFORD, C., RYAN, K. & SHIPTON, E. (2007) Exploring general practitioner identification and management of psychosocial Yellow Flags in acute low back pain. *New Zealand Medical Journal,* 120**,** U2536.

CROMBEZ, G., VLAEYEN, J. W., HEUTS, P. H. & LYSENS, R. (1999) Pain-related fear is more disabling than pain itself: evidence on the role of pain-related fear in chronic back pain disability. *Pain,* 80**,** 329-39.

CSAG, C. S. A. G. (1994) Back Pain. IN CSAG, C. S. A. G. (Ed.) London, HMSO.

DAVIES, S. & GIBAUT, D. (2007) Jersey Annual Social Survey 2007. IN UNIT, S. O. J. S. (Ed.), States of Jersey.

DAVIS, S. & GIBAUT, D. (2007) Jersey Annual Social Survey 2007. IN UNIT, S. O. J. S. (Ed.), States of Jersey.
DAVIS, S. & GIBAUT, D. (2009) Jersey Annual Social Survey 2009. *Jersey Annual Social Survey.* St Helier, States of Jersey Statistics Unit.
DE C WILLIAMS, A. C., NICHOLAS, M. K., RICHARDSON, P. H., PITHER, C. E. & FERNANDES, J. (1999) Generalizing from a controlled trial: the effects of patient preference versus randomization on the outcome of inpatient versus outpatient chronic pain management. *Pain,* 83**,** 57-65.
DE VET, H., CB, T. & BOUTER, L. (2003) Current challenges in clinimetrics. *Journal of Clinical Epidemiology,* 56**,** 1137-41.
DEKKERS-SANCHEZ, P. M., HOVING, J. L., SLUITER, J. K. & FRINGS-DRESEN, M. H. W. (2008) Factors associated with long-term sick leave in sick-listed employees: a systematic review. *Occupational & Environmental Medicine,* 65**,** 153-7.
DEY, P., SIMPSON, C. W. R., COLLINS, S. I., HODGSON, G., DOWRICK, C. F., SIMISON, A. J. M. & ROSE, M. J. (2004) Implementation of RCGP guidelines for acute low back pain: a cluster randomised controlled trial. *British Journal of General Practice,* 54**,** 33-7.
DEYO, R. A. (1986) Comparative validity of the sickness impact profile and shorter scales for functional assessment in low-back pain. *Spine,* 11**,** 951-4.
DEYO, R. A., MIRZA, S. K. & MARTIN, B. I. (2006) Back pain prevalence and visit rates: estimates from U.S. national surveys, 2002. *Spine,* 31**,** 2724-7.
DIONNE, C. E., VON KORFF, M., KOEPSELL, T. D., DEYO, R. A., BARLOW, W. E. & CHECKOWAY, H. (2001) Formal education and back pain: a review. *Journal of Epidemiology & Community Health,* 55**,** 455-68.
DOH (1999) The Prevalence of Back Pain in Great Britain in 1998. Based on the Office of National Statistics Omnibus Survey Module. IN HEALTH, D. O. (Ed.) London, Department of Health, Statistics Division 3.
ENGLUND, L. & SVARDSUDD, K. (2000) Sick-listing habits among general practitioners in a Swedish county. *scandinavian Journal of Primary Health Care,* 18**,** 81-86.
FIELD, A. (2000) *Discovering statistics using SPSS for windows,* London, Sage Publications.
FLEISS, J. (1986) Reliability of measurements. *The design and analysis of clinical experiments.* New York, John Wiley & Sons.
FORD, F. M., FORD, J. & DOWRICK, C. (2000) Welfare to work: the role of general practice. *British Journal of General Practice,* 50**,** 497-500.
FRANK, J., SINCLAIR, S., HOGG-JOHNSON, S., SHANNON, H., BOMBARDIER, C., BEATON, D. & COLE, D. (1998) Preventing disability from work-related low-back pain. New evidence gives new hope--if we can just get all the players onside. *CMAJ Canadian Medical Association Journal,* 158**,** 1625-31.
FRITZ, J. M. & GEORGE, S. Z. (2002) Identifying psychosocial variables in patients with acute work-related low back pain: the importance of fear-avoidance beliefs. *Physical Therapy,* 82**,** 973-83.
FULLEN, B. M., MAHER, T., BURY, G., TYNAN, A., DALY, L. E. & HURLEY, D. A. (2007) Adherence of Irish general practitioners to European guidelines for acute low back pain: a prospective pilot study. *European Journal of Pain: Ejp,* 11**,** 614-23.
GHELDOF, E. L. M., VINCK, J., VAN DEN BUSSCHE, E., VLAEYEN, J. W. S., HIDDING, A. & CROMBEZ, G. (2006) Pain and pain-related fear are

associated with functional and social disability in an occupational setting: evidence of mediation by pain-related fear. *European Journal of Pain: Ejp,* 10**,** 513-25.
GIBAUT, D. (2008) Jersey in Figures 2008. *Jersey in Figures.* States of Jersey Statistics Unit.
GIBAUT, D. (2009a) Jersey Economic Trends 2009. *Jersey Economic Trends.* St Helier, States of Jersey Statistics Unit.
GIBAUT, D. (2009b) Jersey Labour Market at June 2009. *Jersey Labour Market.* St Helier, States of Jersey Statistics Unit.
GONZALEZ-URZELAI, V., PALACIO-ELUA, L. & LOPEZ-DE-MUNAIN, J. (2003) Routine primary care management of acute low back pain: adherence to clinical guidelines.[see comment]. *European Spine Journal,* 12**,** 589-94.
GOUBERT, L., CROMBEZ, G. & DE BOURDEAUDHUIJ, I. (2004) Low back pain, disability and back pain myths in a community sample: prevalence and interrelationships. *European Journal of Pain: Ejp,* 8**,** 385-94.
GREENWALD, A. G. & BANAJI, M. R. (1995) Implicit social cognition: attitudes, self-esteem, and stereotypes. *Psychological Review,* 102**,** 4-27.
GROSS, D., FERRARI, R., RUSSELL, A., BATTIE, M., SCHOPFLOCHER, D., HU, R., WADDELL, G. & BUCHBINDER, R. (2006) A population-based survey of back pain beliefs in Canada. *Spine,* 31**,** 2142-5.
GUYATT, G., WALTER, S. & NORMAN, G. (1987) Measuring change over time: Assessing the usefulness of evaluative instruments. *Journal of Chronic Diseases,* 40**,** 171 - 178.
HALDORSEN, E. M., BRAGE, S., JOHANNESEN, T. S., TELLNES, G. & URSIN, H. (1996) Musculoskeletal pain: concepts of disease, illness, and sickness certification in health professionals in Norway. *Scandinavian Journal of Rheumatology,* 25**,** 224-32.
HART, S. & WALKER, R. (2005) Social Protection in Jersey: a Comparative Study. St Helier, States of Jersey Employment and Social Security Department.
HASHEMI, L., WEBSTER, B. S. & CLANCY, E. A. (1998) Trends in disability duration and cost of workers' compensation low back pain claims (1988-1996). *Journal of Occupational & Environmental Medicine,* 40**,** 1110-9.
HEISTARO, S., VARTIAINEN, E., HELIOVAARA, M. & PUSKA, P. (1998) Trends of back pain in eastern Finland, 1972-1992, in relation to socioeconomic status and behavioral risk factors. *American Journal of Epidemiology,* 148**,** 671-82.
HMTREASURY (2008) Pre-Budget Report 2008 Facing Global Challenges: Supporting people through difficult times. The Stationery Office: London.
HOLMBACK, A. M., PORTER, M. M. & DOWNHAM, D. Y. (1999) Reliability of isokinetic ankle dorsiflexor strength measurements in healthy young men and women. *Scandinavian Journal of Rehabilitation Medicine,* 31**,** 229-39.
HOPKINS, W. (2000) Measures of reliability in sports medicine and science. *Sports Medicine,* 30**,** 1-15.
HOUBEN, R. M. A., GIJSEN, A., PETERSON, J., DE JONG, P. J. & VLAEYEN, J. W. S. (2005a) Do health care providers' attitudes towards back pain predict their treatment recommendations? Differential predictive validity of implicit and explicit attitude measures. *Pain,* 114**,** 491-8.
HOUBEN, R. M. A., OSTELO, R. W. J. G., VLAEYEN, J. W. S., WOLTERS, P. M. J. C., PETERS, M. & STOMP-VAN DEN BERG, S. G. M. (2005b) Health care providers' orientations towards common low back pain predict perceived

harmfulness of physical activities and recommendations regarding return to normal activity. *European Journal of Pain: Ejp,* 9**,** 173-83.
HOUBEN, R. M. A., VLAEYEN, J. W. S., PETERS, M., OSTELO, R., WOLTERS, P. & STOMP-VAN DEN BERG, S. G. M. (2004) Health care providers' attitudes and beliefs towards common low back pain: Factor structure and psychometric properties of the HC-PAIRS. *Clinical Journal of Pain,* 20**,** 37-44.
HSE (2010) Self-reported work-related illness and workplace injuries in 2008/09: Resuls from the Labour Force Survey. Caerphilly, HSE.
HUSSEY, S., PAT, H., WILSON, P., DOWELL, J. & BARBOUR, R. (2004) Sickness certification system in the United Kingdom: qualitative study of views of general practitioners in Scotland. *BMJ,* 328**,** 88-92.
INDAHL, A., VELUND, L. & REIKERAAS, O. (1995) Good prognosis for low back pain left untampered: A randomized clinical trial *Spine,* 20**,** 4730-7.
ISSA (1995) 25th General Assembly Report XII. Quality, Effectiveness and Efficiency of Rehabilitation Measures. Geneva, International Social Security Association.
JELLEMA, P., VAN DER WINDT, D., VAN DER HORST, H. E., BLANKENSTEIN, A. H., BOUTER, L. M. & STALMAN, W. A. B. (2005a) Why is a treatment aimed at psychosocial factors not effective in patients with (sub)acute low back pain? *Pain,* 118**,** 350-359.
JELLEMA, P., VAN DER WINDT, D. A. W. M., VAN DER HORST, H. E., TWISK, J. W. R., STALMAN, W. A. B. & BOUTER, L. M. (2005b) Should treatment of (sub)acute low back pain be aimed at psychosocial prognostic factors? Cluster randomised clinical trial in general practice.[see comment]. *BMJ,* 331**,** 84.
JOHNSON, R. E., JONES, G. T., WILES, N. J., CHADDOCK, C., POTTER, R. G., ROBERTS, C., SYMMONS, D. P. M., WATSON, P. J., TORGERSON, D. J. & MACFARLANE, G. J. (2007) Active exercise, education, and cognitive behavioral therapy for persistent disabling low back pain: a randomized controlled trial. *Spine,* 32**,** 1578-85.
JONES, T., GERRITY, M. & EARP, J. (1990) Written case simulations: Do they predict physician's behaviour? *Journal of Clinical Epidemiology,* 43**,** 805 - 815.
KAPOOR, S., SHAW, W. S., PRANSKY, G. & PATTERSON, W. (2006) Initial patient and clinician expectations of return to work after acute onset of work-related low back pain. *Journal of Occupational & Environmental Medicine,* 48**,** 1173-80.
KEELEY, P., CREED, F., TOMENSON, B., TODD, C., BORGLIN, G. & DICKENS, C. (2008) Psychosocial predictors of health-related quality of life and health service utilisation in people with chronic low back pain. *Pain,* 135**,** 142-50.
KELLER, S., BANN, C. M., DODD, S. L., SCHEIN, J., MENDOZA, T. R. & CLEELAND, C. S. (2004) Validity of the brief pain inventory for use in documenting the outcomes of patients with noncancer pain. *Clinical Journal of Pain,* 20**,** 309-18.
KENDALL, N., BURTON, A. K., MAIN, C. J. & WATSON, P. J. (2009) *Tackling Musculoskeletal problems: a guide for clinic and workplace - identifying obstacles using the psychosocial flags framework.,* London, TSO.
KENDALL, N. A. S., LINTON, S. J. & MAIN, C. J. (1997) Guide to Assessing psychosocial yellow flags in acute low back pain. Wellington, NZ, Accident Rehabilitation and Compensation Insurance Corporation and National Advisory Committee on Health and Disability.

KLABER MOFFETT, J. A., CARR, J. & HOWARTH, E. (2004) High fear-avoiders of physical activity benefit from an exercise program for patients with back pain. *Spine,* 29**,** 1167-72; discussion 1173.

KLABER MOFFETT, J. A., NEWBRONNER, E., WADDELL, G., CROUCHER, K. & SPEAR, S. (2000) *Public perceptions about low back pain and its management: A gap between expectations and reality?*, Health Expectations. 3(3)(pp 161-168), 2000. Date of Publication: 2000.

KOES, B. W., VAN TULDER, M. W., OSTELO, R., KIM BURTON, A. & WADDELL, G. (2001) Clinical guidelines for the management of low back pain in primary care: an international comparison.[see comment]. *Spine,* 26**,** 2504-13; discussion 2513-4.

KORI, S. H., MILLER, R. P. & TODD, D. D. (1990) Kinesiophobia: a new view of chronic pain behaviour. *Pain Management,* 3**,** 35-43.

KPOSOWA, A. J. (2003) Research on unemployment and suicide. *Journal of Epidemiology and Community Health,* 57**,** 559-60.

KRAUSE, N., FRANK, J. W., DASINGER, L. K., SULLIVAN, T. J. & SINCLAIR, S. J. (2001) Determinants of duration of disability and return-to-work after work-related injury and illness: challenges for future research. *American Journal of Industrial Medicine,* 40**,** 464-84.

KUGLER, K., WIGN, J., GEILEN, M., DE JONG, J. & VLAEYEN, J. (1999) The photographs series of daily activities (PHODA). Heerleen:, School of physiotherapy, Hogeschool Zuyd.

KUIJER, W., GROOTHOFF, J. W., BROUWER, S., GEERTZEN, J. H. B. & DIJKSTRA, P. U. (2006) Prediction of sickness absence in patients with chronic low back pain: a systematic review. *Journal of Occupational Rehabilitation,* 16**,** 439-67.

LAWRENCE, R. C., FELSON, D. T., HELMICK, C. G., ARNOLD, L. M., CHOI, H., DEYO, R. A., GABRIEL, S., HIRSCH, R., HOCHBERG, M. C., HUNDER, G. G., JORDAN, J. M., KATZ, J. N., KREMERS, H. M., WOLFE, F. & NATIONAL ARTHRITIS DATA, W. (2008) Estimates of the prevalence of arthritis and other rheumatic conditions in the United States. Part II. *Arthritis & Rheumatism,* 58**,** 26-35.

LAWRENCE, R. C., HELMICK, C. G., ARNETT, F. C., DEYO, R. A., FELSON, D. T., GIANNINI, E. H., HEYSE, S. P., HIRSCH, R., HOCHBERG, M. C., HUNDER, G. G., LIANG, M. H., PILLEMER, S. R., STEEN, V. D. & WOLFE, F. (1998) Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States.[see comment]. *Arthritis & Rheumatism,* 41**,** 778-99.

LEBOEUF-YDE, C. & LAURITSEN, J. M. (1995) The prevalence of low back pain in the literature. A structured review of 26 Nordic studies from 1954 to 1993. *Spine,* 20**,** 2112-8.

LEIGH, J. P. & SHEETZ, R. M. (1989) Prevalence of back pain among fulltime United States workers. *British Journal of Industrial Medicine,* 46**,** 651-7.

LEINO, P. I., BERG, M. A. & PUSKA, P. (1994) Is back pain increasing? Results from national surveys in Finland during 1978/9-1992. *Scandinavian Journal of Rheumatology,* 23**,** 269-76.

LEXELL, J. E. & DOWNHAM, D. Y. (2005) How to assess the reliability of measurements in rehabilitation. *American Journal of Physical Medicine & Rehabilitation,* 84**,** 719-23.

LINTON, S. J. (2000) A review of psychological risk factors in back and neck pain. *Spine,* 25**,** 1148-56.
LINTON, S. J. & ANDERSSON, T. (2000) Can chronic disability be prevented? A randomized trial of a cognitive-behavior intervention and two forms of information for patients with spinal pain. *Spine,* 25**,** 2825-2831.
LINTON, S. J., BUER, N., VLAEYEN, J. & HELLSING, A. L. (2000) Are fear-avoidance beliefs related to the inception of an episode of back pain? A prospective study. *Psychological Health,* 14**,** 1051-9.
LINTON, S. J., GROSS, D., SCHULTZ, I. Z., MAIN, C., COTE, P., PRANSKY, G. & JOHNSON, W. (2005) Prognosis and the identification of workers risking disability: research issues and directions for future research. *Journal of Occupational Rehabilitation,* 15**,** 459-74.
LINTON, S. J., HELLSING, A. L. & HALLDEN, K. (1998) A population-based study of spinal pain among 35-45-year-old individuals. Prevalence, sick leave, and health care use. *Spine,* 23**,** 1457-63.
LINTON, S. J. & RYBERG, M. (2000) Do epidemiological results replicate? The prevalence and health-economic consequences of neck and back pain in the general population. *European Journal of Pain: Ejp,* 4**,** 347-54.
LINTON, S. J., VLAEYEN, J. & OSTELO, R. (2002) The back pain beliefs of health care providers: Are we fear-avoidant? *Journal of Occupational Rehabilitation,* 12**,** 223-232.
LOTTERS, F. & BURDORF, A. (2006) Prognostic factors for duration of sickness absence due to musculoskeletal disorders. *Clinical Journal of Pain,* 22**,** 212-21.
MAIN, C., PHILLIPS, C. & WATSON, P. (2005) Secondary prevention in health-care and occupational settings in musculoskeletal conditions. IN G, S. I. A. G. (Ed.) *Handbook of complex occupational disability claims: early risk identification, intervention and prevention.* New York, Kluwer Academic.
MAIN, C. J. & WATSON, P. J. (1999) Psychological aspects of pain.[see comment]. *Manual Therapy,* 4**,** 203-15.
MANIADAKIS, N. & GRAY, A. (2000) The economic burden of back pain in the UK. *Pain,* 84**,** 95-103.
MORRIS, J. (2010) Trends in short term incapacity payments for low back pain: a 10 year review of social security data in Jersey. University of Leicester.
MORRIS, J., DAVIS, S., PURCELL-JONES, G. & WATSON, P. J. (2010) Beliefs about Back Pain: results of a population survey of working age adults. *Clinical Journal of Pain,* in press.
MORRIS, J. & WATSON, P. J. (2010) Investigating decisions to absent from work with Low Back Pain: A study combining Patient and GP factors. *European Journal of Pain: Ejp,* Under review.
NUNNALLY, J. O. (1978) *Psychometric Theory,* New York, McGraw-Hill.
ONS (2010) Statistical Bulletin: Labour Market Statistics February 2010. *Labour Market Statistics.* Newport, Office for National Statistics.
OSTELO, R., STOMP-VAN DEN BERG, S. G. M., VLAEYEN, J. W. S., WOLTERS, P. & DE VET, H. C. W. (2003a) Health care provider's attitudes and beliefs towards chronic low back pain: the development of a questionnaire. *Manual Therapy,* 8**,** 214-222.
OSTELO, R. W. J. G., STOMP-VAN DEN BERG, S. G. M., VLAEYEN, J. W. S., WOLTERS, P. M. J. C. & DE VET, H. C. W. (2003b) Health care provider's attitudes and beliefs towards chronic low back pain: the development of a questionnaire. *Manual Therapy,* 8**,** 214-22.

PALLANT, J. (2005) *SPSS Survival Manual,* New York, Open University Press.
PALMER, K. T., WALSH, K., BENDALL, H., COOPER, C. & COGGON, D. (2000) Back pain in Britain: comparison of two prevalence surveys at an interval of 10 years.[see comment]. *BMJ,* 320**,** 1577-8.
PAPAGEORGIOU, A. C., CROFT, P. R., FERRY, S., JAYSON, M. I. & SILMAN, A. J. (1995) Estimating the prevalence of low back pain in the general population. Evidence from the South Manchester Back Pain Survey. *Spine,* 20**,** 1889-94.
PAPAGEORGIOU, A. C., CROFT, P. R., THOMAS, E., FERRY, S., JAYSON, M. I. & SILMAN, A. J. (1996) Influence of previous pain experience on the episode incidence of low back pain: results from the South Manchester Back Pain Study. *Pain,* 66**,** 181-5.
PEEBLES, J. E. & MOORE, R. J. (2000) Illness schemata in patients with low back pain: Predictions of rehabilitation success. *Pain Clinic,* 12**,** 237-246.
PENGEL, L. H. M., REFSHAUGE, K. M., MAHER, C. G., NICHOLAS, M. K., HERBERT, R. D. & MCNAIR, P. (2007) Physiotherapist-directed exercise, advice, or both for subacute low back pain: a randomized trial.[see comment][summary for patients in Ann Intern Med. 2007 Jun 5;146(11):I56; PMID: 17548406]. *Annals of Internal Medicine,* 146**,** 787-96.
PINCUS, T., VOGEL, S., SANTOS, R., BREEN, A., FOSTER, N. & UNDERWOOD, M. (2006) The attitudes to back pain scale in musculoskeletal practitioners (ABS-mp): the development and testing of a new questionnaire. *Clinical Journal of Pain,* 22**,** 378-86.
POIRAUDEAU, S., RANNOU, F., BARON, G., LE HENANFF, A., COUDEYRE, E., ROZENBERG, S., HUAS, D., MARTINEAU, C., JOLIVET-LANDREAU, I., GARCIA-MACE, J., REVEL, M. & RAVAUD, P. (2006a) Fear-avoidance beliefs about back pain in patients with subacute low back pain.[see comment]. *Pain,* 124**,** 305-11.
POIRAUDEAU, S., RANNOU, F., LE HENANFF, A., COUDEYRE, E., ROZENBERG, S., HUAS, D., MARTINEAU, C., JOLIVET-LANDREAU, I., REVEL, M. & RAVAUD, P. (2006b) Outcome of subacute low back pain: influence of patients' and rheumatologists' characteristics. *Rheumatology,* 45**,** 718-23.
POZZO, D., HAINES, H., LAROCHE, Y., FRATELLO, F. & SCORRETTI, C. (2002) Assessing Disability in Europe. Similarities and Differences. Strasbourg, Council of Europe Publishing.
RAINVILLE, J., AHERN, D. K. & PHALEN, L. (1993) Altering beliefs about pain and impairment in a functionally oriented treatment program for chronic low back pain. *Clinical Journal of Pain,* 9**,** 196-201.
RAINVILLE, J., BAGNALL, D. & PHALEN, L. (1995) Health care providers' attitudes and beliefs about functional impairments and chronic back pain. *Clinical Journal of Pain,* 11**,** 287-95.
RAINVILLE, J., CARLSON, N., POLATIN, P., GATCHEL, R. J. & INDAHL, A. (2000) Exploration of physicians' recommendations for activities in chronic low back pain. *Spine,* 25**,** 2210-20.
RCGP (1996) Clinical guidelines for the Management of Acute Low Back Pain. IN RCGP (Ed.) London, Royal College of General Practitioners.
RILEY, J., AHERN, D. & FOLLICK, M. (1988) Chronic pain and functional impairment: assessing beliefs about their relationship. *Archives of Physical Medicine & Rehabilitation,* 69**,** 579-82.

ROLAND, M. & FAIRBANK, J. (2000) The Roland-Morris Disability Questionnaire and the Oswestry Disability Questionnaire. *Spine,* 25**,** 3115-24.
ROLAND, M. & MORRIS, R. (1983) A study of the natural history of back pain. Part I: development of a reliable and sensitive measure of disability in low-back pain. *Spine,* 8**,** 141-4.
ROUSSON, V., GASSER, T. & SEIFERT, B. (2002) Assessing intrarater, interrater and test-retest reliability of continuous measurements. *Statistics in Medicine,* 21**,** 3431-46.
ROZENBERG, S., ALLAERT, F.-A., SAVARIEAU, B., PERAHIA, M., VALAT, J.-P. & GROUPE RACHIS DE LA SOCIETE FRANCAISE DE, R. (2004) Compliance among general practitioners in France with recommendations not to prescribe bed rest for acute low back pain. *Joint, Bone, Spine: Revue du Rhumatisme,* 71**,** 56-9.
SAVIGNY, P., WATSON, P., UNDERWOOD, M. & GUIDELINE DEVELOPMENT, G. (2009) Early management of persistent non-specific low back pain: summary of NICE guidance. *BMJ,* 338**,** b1805.
SAWNEY, P. (2002) Current issues in fitness for work certification. *British Journal of General Practice,* 52**,** 217-222.
SCHERS, H., WENSING, M., HUIJSMANS, Z., VAN TULDER, M. & GROL, R. (2001) Implementation barriers for general practice guidelines on low back pain a qualitative study. *Spine,* 26**,** E348-53.
SHIELS, C., GABBAY, M. B. & FORD, F. M. (2004) Patient factors associated with duration of certified sickness absence and transition to long-term incapacity. *British Journal of General Practice,* 54**,** 86-91.
SIEBEN, J. M., PORTEGIJS, P. J. M., VLAEYEN, J. W. S. & KNOTTNERUS, J. A. (2005) Pain-related fear at the start of a new low back pain episode. *European Journal of Pain,* 9**,** 635-641.
SIEBEN, J. M., VLAEYEN, J. W. S., PORTEGIJS, P. J. M., WARMENHOVEN, F. C., SINT, A. G., DAUTZENBERG, N., ROMEIJNDERS, A., ARNTZ, A. & KNOTTNERUS, J. A. (2009) General practitioners' treatment orientations towards low back pain: influence on treatment behaviour and patient outcome. *European Journal of Pain: Ejp,* 13**,** 412-8.
SJSSC (1995) Continuity and Change: A Review of the Social Security and Health Insurance Schemes in Jersey. IN COMMITTEE, S. S. (Ed.) St Helier, States of Jersey.
SJSU (2002) Report on the 2001 Census. IN COMMITTEE, E. C. (Ed.), States of Jersey Greffe.
SJSU (2009a) Jersey's Resident Population 2008. IN GIBAUT, D. (Ed.) *Population Update.* St Helier, States of Jersey Statistics Unit.
SJSU (2009b) Jersey Annual Social Survey 2009. IN DAVIS, S. (Ed.) *Jersey Annual Social Survey.* St Helier, States of Jersey Statistics Unit.
SJSU (2009c) Jersey Economic Trends 2009. IN GIBAUT, D. (Ed.) *Jersey Economic Trends.* St Helier, States of Jersey Statistics Unit.
SJSU (2009d) Jersey Labour Market at June 2009. IN GIBAUT, D. (Ed.) *Jersey Labour Market.* St Helier, States of Jersey Statistics Unit.
STAFFORD, B. (2007) Review of Changes to the Incapacity Benefit System. IN DEPARTMENT, S. S. (Ed.) St Helier, States Greffe.
STEENSTRA, I. A., KOOPMAN, F. S., KNOL, D. L., KAT, E., BONGERS, P. M., DE VET, H. C. W. & VAN MECHELEN, W. (2005a) Prognostic factors for

duration of sick leave due to low-back pain in dutch health care professionals. *Journal of Occupational Rehabilitation,* 15**,** 591-605.
STEENSTRA, I. A., VERBEEK, J. H., HEYMANS, M. W. & BONGERS, P. M. (2005b) Prognostic factors for duration of sick leave in patients sick listed with acute low back pain: a systematic review of the literature. *Occupational & Environmental Medicine,* 62**,** 851-60.
STEVENS, J. (1996) *Applied multivariate statistics for the social sciences (3rd edn).* Mahway, NJ, Lawrence Erlbaum.
STREINER, D. & NORMAN, G. (1995) *Health measurement scales: a practical guide to their development and use.,* New York, Oxford University Press.
SWINKELS-MEEWISSE, I. E. J., ROELOFS, J., SCHOUTEN, E. G. W., VERBEEK, A. L. M., OOSTENDORP, R. A. B. & VLAEYEN, J. W. S. (2006) Fear of movement/(re)injury predicting chronic disabling low back pain: a prospective inception cohort study. *Spine,* 31**,** 658-64.
SWINKELS-MEEWISSE, I. E. J., ROELOFS, J., VERBEEK, A. L. M., OOSTENDORP, R. A. B. & VLAEYEN, J. W. S. (2003) Fear of movement/(re)injury, disability and participation in acute low back pain. *Pain,* 105**,** 371-379.
SYMONDS, T. L., BURTON, A. K., TILLOTSON, K. M. & MAIN, C. J. (1995) Absence resulting from low back trouble can be reduced by psychosocial intervention at the work place. *Spine,* 20**,** 2738-45.
SYMONDS, T. L., BURTON, A. K., TILLOTSON, K. M. & MAIN, C. J. (1996) Do attitudes and beliefs influence work loss due to low back trouble? *Occupational Medicine (Oxford),* 46**,** 25-32.
TABACHNICK, B. & FIDELL, L. (2001) *Using multivariate statistics,* New York, HarperCollins.
TAN, G., JENSEN, M. P., THORNBY, J. I. & SHANTI, B. F. (2004) Validation of the Brief Pain Inventory for chronic nonmalignant pain. *Journal of Pain,* 5**,** 133-7.
TELLNES, G. (1989) Sickness certification in general practice: a review. *Family Practice,* 6**,** 58-65.
TELLNES, G., SANDVIK, L. & MOUM, T. (1990) Inter-doctor variation in sickness certification. *Scandinavian Journal of Primary Health Care,* 8**,** 45-52.
VAN TULDER, M., BECKER, A., BEKKERING, T., BREEN, A., DEL REAL, M. T. G., HUTCHINSON, A., KOES, B., LAERUM, E., MALMIVAARA, A. & CARE, C. B. W. G. O. G. F. T. M. O. A. L. B. P. I. P. (2006) Chapter 3. European guidelines for the management of acute nonspecific low back pain in primary care. *European Spine Journal,* 15 Suppl 2**,** S169-91.
VLAEYEN, J. W., KOLE-SNIJDERS, A. M., BOEREN, R. G. & VAN EEK, H. (1995) Fear of movement/(re)injury in chronic low back pain and its relation to behavioral performance. *Pain,* 62**,** 363-72.
VLAEYEN, J. W. & LINTON, S. J. (2000) Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain,* 85**,** 317-32.
VLAEYEN, J. W. & LINTON, S. J. (2006) Are we "fear-avoidant"? *Pain,* 124**,** 240-241.
VON KORFF, M. & MOORE, J. C. (2001) Stepped care for back pain: activating approaches for primary care. *Annals of Internal Medicine,* 134**,** 911-7.
WADDELL, G. (2004) *The Back Pain Revolution,* Edinburgh, Churchill Livingston.
WADDELL, G. & AYLWARD, M. (2005) *The Scientific and Conceptual Basis of Incapacity Benefits,* Norwich, TSO.

WADDELL, G., AYLWARD, M. & SAWNEY, P. (2002) *Back pain, incapacity for work and social security benefits: an international literature review and analysis,* London, The Royal Society of Medicine Press Limited.
WADDELL, G. & BURTON, A. K. (2001) *Occupational health guidelines for the management of low back pain at work: Evidence review*, Occupational Medicine. 51(2)(pp 124-135), 2001. Date of Publication: 2001.
WADDELL, G. & BURTON, A. K. (2005) Concepts of rehabilitation for the management of low back pain. *Best Practice & Research in Clinical Rheumatology,* 19**,** 655-70.
WADDELL, G. & BURTON, A. K. (2006) *Is Work Good for Your Health and Wellbeing?,* London, The Stationary Office.
WADDELL, G., BURTON, K. & AYLWARD, M. (2007a) Work and common health problems.[see comment]. *Journal of Insurance Medicine (Seattle),* 39**,** 109-20.
WADDELL, G., FEDER, G. & LEWIS, M. (1997) Systematic reviews of bed rest and advice to stay active for acute low back pain. *British Journal of General Practice,* 47**,** 647-52.
WADDELL, G., NEWTON, M., HENDERSON, I., SOMERVILLE, D. & MAIN, C. J. (1993) A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear avoidance beliefs in chronic low back pain and disability. *Pain,* 52**,** 157-68.
WADDELL, G., O'CONNOR, M., BOORMAN, S. & TORSNEY, B. (2007b) *Working backs Scotland: A public and professional health education campaign for back pain*, Spine. 32(19)(pp 2139-2143), 2007. Date of Publication: Sep 2007.
WALKER, B. F. (2000) The prevalence of low back pain: a systematic review of the literature from 1966 to 1998. *Journal of Spinal Disorders,* 13**,** 205-17.
WATSON, P. J., BOOKER, C. K., MOORES, L. & MAIN, C. J. (2004) Returning the chronically unemployed with low back pain to employment. *European Journal of Pain: Ejp,* 8**,** 359-69.
WATSON, P. J., BOWEY, J., PURCELL-JONES, G. & GALES, T. (2008) General practitioner sickness absence certification for low back pain is not directly associated with beliefs about back pain. *European Journal of Pain: Ejp,* 12**,** 314-20.
WATSON, P. J., MAIN, C. J., WADDELL, G., GALES, T. F. & PURCELL-JONES, G. (1998) Medically certified work loss, recurrence and costs of wage compensation for back pain: a follow-up study of the working population of Jersey. *British Journal of Rheumatology,* 37**,** 82-6.
WAXMAN, R., TENNANT, A. & HELLIWELL, P. (1998) Community survey of factors associated with consultation for low back pain.[Erratum appears in BMJ 1999 Jan 16;318(7177):170]. *BMJ,* 317**,** 1564-7.
WERNER, E. L., IHLEBAEK, C., SKOUEN, J. S. & LAERUM, E. (2005) Beliefs about low back pain in the Norwegian general population: Are they related to pain experiences and health professionals? *Spine,* 30**,** 1770-1776.
WOBY, S. R., WATSON, P. J., ROACH, N. K. & URMSTON, M. (2004) Adjustment to chronic low back pain--the relative influence of fear-avoidance beliefs, catastrophizing, and appraisals of control. *Behaviour Research & Therapy,* 42**,** 761-74.
WWW.PARLIAMENT.UK (2008) Commons Hansard. London.
WYATT, M., UNDERWOOD, M. R., SCHEEL, I. B., CASSIDY, J. D. & NAGEL, P. (2004) Back pain and health policy research: the what, why, how, who, and when. *Spine,* 29**,** E468-75.

ZIGMOND, A. S. & SNAITH, R. P. (1983) The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica,* 67**,** 361-70.

Appendix 6

Published Papers arising from doctoral thesis work

- **General Practitioner sickness absence certification for low back pain is not directly associated with beliefs about back pain**

- **Test-Retest Reliability of the Pain Attitudes and Beliefs Scale and Sensitivity to change in a General Practitioner Population**

- **Investigating decisions to absent from work with low back pain: A study combining patient and GP factors**

- **Beliefs about back pain: results of a population survey of working age adults**