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Are Irish therapists at heightened risk for low back pain?

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Are Irish Therapists at heightened risk for low back pain?

Abstract

Background

Within the international literature, no studies have been identified that provide a comparison between prevalence rate of Low Back Pain (LBP) for chartered physiotherapists, physical and athletic therapists and the national working population. This investigation is essential to determine whether therapists are a high-risk occupational group for the development of LBP.

Aims

The objectives of this study were [1] to establish the prevalence of LBP among therapists in Ireland for both the employed and self-employed [2] to compare employment status-, gender- and age-specific LBP prevalence rates among therapists and the national working population and [3] to estimate the adjusted odds of developing LBP among therapists relative to the national working population.

Methods

Data analysis of the Health In Hand Intensive Tasks and Safety (HITS) study and the third national Survey on Lifestyle, Attitudes and Nutrition (SLÁN) were conducted. The HITS study was a cross sectional study investigating work-related musculoskeletal disorders in practicing therapists. The Survey on Lifestyle, Attitudes and Nutrition (SLÁN) 2007 was a face-to-face interview study of adults.

Results

LBP prevalence in therapists was 49 percent with no significant difference by employment status. Therapists had a much higher prevalence compared to the national working population across all demographic strata, with therapists nearly five times more likely to suffer from

LBP than the national working population after careful adjustment for differences in socio-demographics.

Conclusion

Therapists in Ireland are a high risk occupational grouping for the development of LBP warranting further research into the physical and psychosocial work risk factors.

Keywords: work-related musculoskeletal disorder, prevalence, physiotherapist, health care workers

1. Introduction

Musculoskeletal disorders (MSDs) “include a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels” (1) and they affect the upper and lower limbs and the back. ‘Within Europe a number of occupational sectors, including health and social work, have been shown to display higher incident rates of MSDs than the national population (1.2 to 1.6 times higher). Interestingly, female workers in the health and social care sector reported higher than average levels of MSDs, such as backache at 28 percent. This was compared to backache in female workers at 22 percent and both genders at 25 percent across all other work sectors (2). Although not uniquely caused by work, MSDs can be caused or aggravated by many physical and psychosocial work factors. These are termed Work-related Musculoskeletal Disorders (WRMSDs) (1). It is interesting to note that recent literature has indicated that there now appears to be a decline in the incidence of WRMSDs. However, it isn’t clear if this decline is just “an artefact of changes in clinical care-seeking preferences, compensation claim reporting practices and workers’ perceptions of the role of work exposures in the onset of MSDs” (3). The Global Burden of Disease Study 2010 (GBD 2010) indicated that work-related low back pain (LBP) accounted for one-third of all disability arising from the occupational risk factors included in GBD 2010 (4). Previous international research on the prevention and/or reduction of WRMSDs/symptoms, including LBP, in health care workers has focused predominantly on nurses, nursing assistants and nursing students (5, 6).

Therapists in health care, including physiotherapists, physical therapists and athletic therapists, have been proposed to be a high-risk occupational group for the development of LBP “due to the combination of prolonged stooping, repetitive low-risk and infrequent high-risk lifts” as part of their workday tasks (7). No investigation has been conducted to date in

relation to prevalence rates of WRMSDs/symptoms with these occupations in Ireland. Whilst internationally the terms *physiotherapist* and *physical therapists* are used interchangeably, in Ireland there is a distinct difference in the use of these terms and they have been historically organised as two separate professions. Physiotherapists have been described as a broad based health care professionals that not only addresses musculoskeletal care of the physically active but also deals with a number of diverse clinical fields. In contrast, Physical Therapists in Ireland are certified, first contact practitioners and specialise in advanced palpatory and manual techniques to assess and treat pain and discomfort in the soft tissues (8). Finally, Athletic Therapists specialise in musculoskeletal injuries related to physical activity. Chartered Physiotherapists, Physical Therapists and Athletic Therapists will be described as *therapists* in this paper. Whilst these groups are organised into distinct groups in Ireland, the type of work they engage in is very similar including direct patient contact and manual/manipulative therapy, therefore, this allows them to be deemed as comparable occupational groups in relation to WRMSDs. Studies have been completed worldwide to investigate the 12 month prevalence of WRMSDs/symptoms of physiotherapists/physical therapists with rates ranging from 92.4 percent in Korea to 32 percent in America (9, 10). Due to the differences between chartered physiotherapists, physical therapists and athletic therapists, a research study in the Irish context would be an important addition to the current literature.

Previous research has mainly focused on employed therapists and do not provide data on the large group of self-employed therapists (9-22). Within the international literature, no studies have been identified by the authors that provide a comparison between prevalence rate of LBP for therapists and the nationally representative working population. This investigation is essential to determine whether therapists are a high-risk occupational group for the development of LBP.

The objectives of this study were [1] to establish the prevalence of LBP among chartered physiotherapists, physical therapists and athletic therapists for both employed and self-employed therapists in Ireland [2] to compare employment status-, gender- and age-specific LBP prevalence rates with the national working population and [3] to estimate the adjusted odds of developing LBP among therapists in Ireland relative to the national working population.

2. Methods

Two separate datasets were used. The Health In Hand Intensive Tasks and Safety (HITS) study conducted in 2011 (23) and the third national Survey on Lifestyle, Attitudes and Nutrition (SLÁN) conducted in Ireland in 2007 (24).

The HITS study was a cross sectional study design investigating WRMSDs in practicing chartered physiotherapists, physical therapists and athletic therapists. The sampling of Physical Therapists and Athletic Therapists was completed through three databases aiming for a representative Irish sample including the databases of the Institute of Physical Therapy and Applied Science (IPTAS), the Irish Association of Physical Therapists (I.A.P.T.) and the Athletic Rehabilitation Therapy Certified (A.R.T.C) organisation. Chartered Physiotherapists were sampled from two different populations, the population of chartered physiotherapists in private practice and from the population of chartered physiotherapists employed in hospitals. Study participants working in private practice were randomly selected from two databases. To sample chartered physiotherapists in private and public hospitals, one-stage proportionate clustered sampling was used. Hospitals were selected based on bed capacity to ensure representation of physiotherapists working in different size hospitals reflecting approximately the proportionate distribution of different hospitals sizes in Ireland. Each study participant

was sent an invitation letter to participate in the study which included an information sheet and a self-administered questionnaire along with a self-addressed stamped envelope.

The HITS questionnaire was pilot tested for content validity and question clarity by therapists in all work settings. Respondents provided self-reported data relating to gender, age, employment status and the occurrence of LBP in the past 12 months. The question on LBP, which was part of the administered Nordic Questionnaire on MSDs (25), asked the respondent 'have you at any time in the last 12 months had trouble such as ache, pain, discomfort, numbness in any of the low back' with options to answer "No", "Left", "Right" and "Both". For data analysis, an answer of "Left", "Right" and "Both" was recoded into "Yes". Age was recorded as a continuous variable and was later re-coded into a categorical variable for data analysis. Information was obtained from respondents in relation to their primary employment and any secondary employment they may have had. This information was gathered together to produce the employment status variable which was classified into 'employed', 'self-employed' and 'both' for the data analysis. "Both" indicating therapists who were both employed and self-employed based on their primary and secondary employment i.e. individual employed in the public health service and working part-time in their own practice.

The Survey on Lifestyle, Attitudes and Nutrition (SLÁN) 2007 was a face-to-face interview study of adults aged 18 years, performed at the participant's home address. SLÁN 2007 was a nationally representative survey involving 10,364 respondents. The sample was deemed representative of the general population in Ireland when compared with Census 2006 figures. Complete details on the robust sampling for SLÁN 2007 can be found in the original report (24). The overall aim of SLÁN 2007 was to provide nationally representative data on the general health, health behaviours and health service use of adults living in Ireland.

Within SLÁN 2007, participants provided self-reported data relating to their gender, age, usual situation in regard to work and the occurrence of LBP in the past 12 months. The usual situation in regard to work was classified into ‘employed’, ‘self-employed’ and ‘other’. Age was gathered from participants as a continuous variable and was later re-coded into a categorical variable for data analysis. The question on LBP asked respondents ‘have you had lower back pain or other chronic back condition in the last 12 months?’ with options to answer either “Yes” or “No”.

Data were analysed using the Statistical Package for Social Science (SPSS) Version 21. Chi square analysis was used to determine significant differences in the prevalence of self-reported LBP with various demographic characteristics. Yates Continuity Correction was used in two by two tables and Chi square test for linear trend, where appropriate. Logistic regression models were built for both samples with LBP in past 12 months as the outcome simultaneously adjusting for gender, age and employment status. Three binary logistic regression models were run [1] a model for therapists, [2] a model for the SLÁN 2007 national working population and [3] a combined model for therapists and the SLÁN national working population.

Ethical approval for the HITS study was received from The Clinical Research Ethics Committee of the Cork Teaching Hospitals, Cork, Ireland. Informed consent was sought from all participants. Ethical approval for the Survey on Lifestyle, Attitudes and Nutrition (SLÁN) was provided by the Research Ethics Committee of the Royal College of Surgeons in Ireland (RCSI).

3. Results

The final sample size for data analysis in the HITS data was 347 therapists. This included 141 currently practicing physical therapists and athletic therapists (response rate: 76 percent), 135 chartered physiotherapists in private practice (response rate: 54 percent) and 71 hospital-

based chartered physiotherapists (response rate: 31 percent). The overall sample size for SLÁN 2007 was 10,364 respondents, corresponding to a response rate of 62 percent. To ensure the SLÁN dataset was an appropriate comparator, only the working population of SLÁN 2007 was included in this analysis which resulted in a final sample size for SLÁN 2007 of 5,862 respondents.

Table 1 shows the demographic characteristics of therapists and the nationally representative working population sample of SLÁN 2007. A larger percentage of therapists were self-employed (46 percent and 57 percent, respectively), compared to only 20 percent of the SLÁN national working population. The gender distribution within chartered physiotherapists showed greater percentage of females (77 percent) compared to males (23 percent). On the contrary, the gender distribution within the other groupings was practically evenly distributed between males and females. Over one fifth of therapists were between 35 – 39 years of age, however, over a quarter of the national working population within SLÁN 2007 were 50 or more years of age.

Table 2 shows the prevalence of LBP among therapists and the SLÁN 2007 national working population. The overall LBP prevalence over the past 12 months was 49 percent (95% CI 43-54) in therapists with very little difference by employment status. No significant differences for any of the included variables were determined within the sample populations of therapists. The LBP prevalence in the past 12 months within the national working population of SLÁN 2007 was 16 percent (95% CI 15-17). Self-employed individuals had a significantly higher prevalence of LBP (18 percent) compared to their employed counterparts (16 percent) ($P < 0.05$). The prevalence of LBP showed a linear trend with age group by increasing significantly from 11 percent (95% CI 9-13) in individuals less than or equal to 29 years up to 19 percent (95% CI 17-21) in individuals aged 50 years or more ($P < 0.001$).

Table 3 shows the results of the logistic regression models. In the model for the therapists, neither gender, age nor employment status were an independent predictor of LBP prevalence. In the model for the national working population, age group was the only independent predictor of LBP prevalence. In the combined model, the adjusted odds ratio indicates that therapists were nearly five times more likely to suffer from LBP than the national working population (adjusted odds ratio: 4.8, 95% confidence limits 3.8 – 6.1, $P < 0.001$).

4. Discussion

Therapists reported an overall 12 month LBP prevalence of 49 percent (95% CI 44-54). This prevalence compared well to worldwide rates for therapists, specifically European prevalence rates. Within Europe, 12 month prevalence of LBP in physiotherapists ranged from 37 percent in the United Kingdom to 30 percent in Sweden (16, 17). The national working population in Ireland reported an overall LBP prevalence of 16 percent (95% CI 15-17). When comparing the LBP prevalence rates for the different groups, it was clear that therapists suffered from a higher prevalence of LBP compared to the national working population across all demographic strata, with therapists nearly five times more likely to suffer from LBP than the national working population after careful adjustment for differences in socio-demographics.

The key strengths of this study were the careful sampling method, the inclusion of self-employed workers and the comparison with the national working population. Research including self-employed workers is generally very sparse across all occupations and, to the authors' knowledge, no research to date has investigated the LBP prevalence rates of self-employed therapists. Self-employed individuals in the national working population had a significantly higher prevalence of LBP over the past 12 months compared to their employed

counterparts, however, these significant differences in employment status disappeared when adjusting for age and gender. There were no significant differences for employment status within the sample population of therapists. This may have been due to a small sample size (n=347) resulting in a lack of power. A significant difference would have been expected as the literature indicates that self-employed workers seem to be more exposed to musculoskeletal disorders risk factors, such as repetitive movements, carrying/moving heavy loads, prolonged standing or walking, painful and tiring positions, and are more affected by the related health problems than their employed counterparts (26). Therefore as these differences were not found in relation to LBP, this shows the need to investigate the prevalence of upper limb disorders in therapists to determine if the expected significant differences in employment status occur. Within the international research on LBP of therapists, only one paper compared prevalence rates in therapists to a reference group. This comparison group was limited as it included occupational therapists which are a similarly physically demanding group (27). This current paper provides a comparison with nationally representative data on the prevalence of LBP.

This paper also has some key limitations. This study was a cross-sectional study design using self-reported data. Although measured by the widely used Nordic Questionnaire, the reported prevalence estimates of low back pain do not reflect medical diagnosis based on a physical examination and other diagnostic measures. They are indicative self-reported symptoms. Therefore, the prevalence rates reported need to be interpreted with caution due to the possibility of recall and reporting bias. However, the Nordic Questionnaire has been shown to be a useful instrument for the screening of MSDs with acceptable predictive validity along with very good construct, content and face validity when compared to medical diagnosis (28, 29). In addition, therapists are an occupational grouping with excellent

awareness and knowledge on the topic of LBP, therefore, their self-reported data may hold even stronger validity. The response rate for the physical therapists was high making us confident that this sample was fairly representative of the population, however, in chartered physiotherapists working in hospitals it was very low at 31 percent, for further detail see (23). One possible contributing factor to this low response rate from hospital based physiotherapists is the negotiations with the Irish Minister for Health in relation to the title of ‘physiotherapist’ and ‘physical therapist’, which were ongoing at the time of the study. With lower response rates, the possibility of selection bias needs to be taken into account. In our sample this particularly applies to hospital-based chartered physiotherapists. It is unclear if the potential systematic selection bias inflated or deflated the prevalence rates for specific groups. However, potential systematic selection bias, by gender and province of residence/professional practice, was investigated in a non-responder analysis for self-employed therapists. No systematic response bias was detected by gender or province (23). In addition, although assessing the same outcome LBP, there was a slight difference in the wording of the LBP prevalence question between the HITS Study and SLÁN 2007 national working population questionnaire which may have influenced the self-reports. Along with this it is also worth noting that the mode of data collection varied in the HITS Study (self-report questionnaire) and SLÁN 2007 (face to face interview survey). The possible information bias due to the use of two different data collection methods may have been mitigated due to the LBP prevalence questions being an unambiguous question. The interpretation of unambiguous questions has been shown to be “relatively independent of the mode of data collection” (30). Finally, the lag in time periods between the SLÁN study in 2007 and the HITS Study in 2011 needs to be acknowledged. The SLÁN study was completed just prior to the global financial crisis in 2008, however, the HITS Study was completed within the recent worldwide recession. Based on the observed declining trend in

WRMSDs in recent years, it could be argued that potentially even higher estimates for therapists would have been obtained if the HITS study would have been conducted at the same time (2007) as the SLAN study was done”

In conclusion, to the authors’ knowledge, this is the first paper to establish prevalence rates of LBP in health care therapists and compare prevalence rates of therapists to the national working population. **This study demonstrates a higher prevalence of reported LBP in both employed and self-employed therapists than the national working population suggesting that this group may be involved in work practices that place them at increased risk.** Therefore, further research to investigate workplace risk factors affecting this unique occupational grouping is warranted, including targeting this group with prevention measures and providing guidance on appropriate coping strategies to reduce and mitigate against the prevalence of LBP.

Key Points

To the author’s knowledge, this is the first paper to compare prevalence rates of therapists to the national working population.

Therapists are nearly five times more likely to suffer from LBP than the national working population after careful adjustment for differences in age, gender and employment status.

There were no significant differences of LBP prevalence for employment status in the population of therapists, this indicates the need to investigate the prevalence of upper limb disorders in therapists to determine if the expected significant differences in employment status occur.

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Table 1: Characteristics of Chartered physiotherapists (n=206), physical therapists and athletic therapists (n=141) and the SLÁN 2007 nationally representative working population sample (n=5862)

	Chartered physiotherapists	Physical therapists and athletic therapists	SLÁN 2007 nationally representative working population sample
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Employment Status			
Employed	90 (44)	29 (21)	4657 (79)
Self-employed	94 (46)	81 (57)	1205 (21)
Both	22 (11)	31 (22)	..
Gender			
Male	48 (23)	66 (47)	2879 (49)
Female	158 (77)	75 (53)	2983 (51)
Age Group^{a+b}			
<= 29 years	30 (15)	20 (14)	1240 (21)
30 – 34 years	47 (23)	21 (15)	865 (15)
35 – 39 years	45 (22)	32 (23)	824 (14)
40 – 44 years	28 (14)	29 (21)	773 (13)
45 – 49 years	18 (9)	26 (19)	660 (11)
50+ years	37 (18)	12 (9)	1500 (26)

^a 1 missing value for age group in Chartered physiotherapists

^b 1 missing value for age group in Physical and athletic therapists

Table 2: Prevalence of Low Back Pain (LBP) over the past 12 months in Irish chartered physiotherapists, physical therapists and athletic therapists and the SLÁN 2007 nationally representative working population sample

	Chartered physiotherapists		Physical therapists and athletic therapists		All therapists		SLÁN 2007 nationally representative working population sample	
	<i>n</i> (%)	95% CI	<i>n</i> (%)	95% CI	<i>n</i> (%)	95% CI	<i>n</i> (%)	95% CI
Total	206 ^a (51)	44-57	141 ^b (46)	38-55	347 ^c (49)	44-54	5862 ^d (16)	15-17
Employment Status								
Employed	90 (49)	39-59	26 (46)	27-65	116 (48)	39-57	4617 (16)	15-17
Self-employed	94 (49)	39-59	81 (48)	37-59	175 (49)	41-56	1199 (18)	16-20
Both	22 (64)	44-84	31 (42)	25-60	53 (51)	38-64
Gender								
Male	48 (40)	26-53	65 (43)	31-55	113 (42)	33-51	2860 (16)	14-17
Female	158 (54)	43-62	73 (49)	38-61	231 (52)	46-59	2956 (17)	15-18
Age Group								
<= 29 years	30 (53)	35-71	19 (63)	42-85	49 (57)	43-70	1234 (11)	9-13
30 – 34 years	47 (38)	24-52	20 (45)	23-61	67 (40)	29-52	859 (14)	12-17
35 – 39 years	45 (44)	30-59	31 (36)	19-52	76 (41)	30-52	820 (16)	13-18
40 – 44 years	28 (64)	47-82	29 (52)	34-70	57 (58)	45-70	762 (19)	16-21

45 – 49 years	18 (56)	33-79	26 (42)	23-61	44 (48)	34-62	655 (18)	15-21
50+ years	37 (57)	41-73	12 (50)	22-78	49 (55)	41-68	1486 (19)	17-21

^a 1 missing value for age group in Chartered Physiotherapists.

^b 3 missing values for gender and employment status in Physical and Athletic therapists. 4 missing values for age group in Physical and Athletic therapists.

^c 3 missing values for gender and employment status in all therapists. 5 missing values for age group in all therapists.

^d 46 missing values for LBP prevalence over past 12 months in SLÁN 2007 nationally representative working population sample

Table 3: Logistic Regression model to identify the odds ratio of having LBP in the past 12 months for chartered physiotherapists, physical therapists & athletic therapists, the SLÁN 2007 nationally representative working population sample and the therapists and the SLÁN 2007 nationally representative working population sample combined

Variable	Adjusted odds ratio	95% CI	p value
All therapists (n=347)			
Employment status (reference: employed)			
Self-employed	1.0	0.6 – 1.7	NS
Both	1.1	0.6 – 2.1	NS
Gender (reference: male)			
Female	1.5	0.9 – 2.4	NS
Age Group (reference: <= 29 years)			
30-34 years	0.5	0.2 – 1.1	NS
35-39 years	0.6	0.3 – 1.2	NS
40-44 years	1.1	0.5 – 2.4	NS
45-49 years	0.7	0.3 – 1.6	NS
50+ years	0.9	0.4 – 2.1	NS
SLÁN 2007 nationally representative working population sample (n=5,862)			
Employment status (reference: employed)			
Self-employed	1.1	0.9 – 1.3	NS

Gender (reference: male)			
Female	1.1	1.0 – 1.3	NS
Age Group (reference: <= 29 years)			
30-34 years	1.3	1.0 – 1.7	*
35-39 years	1.5	1.1 – 1.9	**
40-44 years	1.8	1.4 – 2.3	***
45-49 years	1.7	1.3 – 2.2	***
50+ years	1.8	1.5 – 2.3	***
All therapists and SLÁN 2007 nationally representative working population sample (n=6,209)			
Therapists (reference: SLÁN population)	4.8	3.8 – 6.1	***

* $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$