

# SPINAL MUSCULOSKELETAL DISCOMFORT IN NEW ZEALAND INTERMEDIATE SCHOOLS

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Since the strongest predictor of having adult musculoskeletal discomfort and back pain (MSD/BP) is a previous history of such symptoms (Troup et al, 1987) the present study examined by questionnaire the prevalence of MSD/BP amongst 245 school students aged 11-14 years in seven intermediate schools in New Zealand (NZ). Lifetime prevalence of low back pain (LBP) was 48%. MSD prevalence during the one-month period prior to completing the questionnaire was 36% for the neck, 23% for the upper back and 35% for the low back. Overall, 143 children (58%) reported spinal aches/pain in the last month. 31% of these children reported aches/pain in a single spinal region. 28% reported it in more than one spinal region. Small differences in methodology between previous apparently similar studies of NZ secondary students (aged 13-18 years) and UK intermediate aged students made direct comparisons between studies misleading and invalid. However, lifetime prevalence of LBP was slightly lower than in another UK study of intermediate aged students and MSD prevalence was similar but tended to be slightly lower for the neck and upper back. It is concluded that the prevalence of MSD/BP in New Zealand intermediate school children is high and probably broadly similar to children of the same age in the United Kingdom. MSD appeared equally prevalent in the low back and neck and was slightly lower for the upper back. There was evidence of regional co-occurrence of spinal MSD. The study has highlighted difficulties in making direct prevalence comparisons between different (yet apparently similar) studies and indicates a need to collect data for MSD prevalence in New Zealand secondary school students if a comparison with their intermediate counterparts is desired.

## INTRODUCTION

Musculoskeletal discomfort and back pain (MSD/BP) amongst adults places a high financial burden on industry and a countries economy, and is the cause of widespread suffering and disability to large numbers of individuals. MSD/BP amongst school students is also of great concern because the strongest predictor of having future back pain is a previous history of such symptoms (Troup et al, 1987). In addition, a large proportion of adult sufferers report first onset of back pain in their early teenage years or early adult life (Papageorgiou et al, 1996).

The prevalence of low back pain (LBP) amongst children has been reported to range from 11.5% (Grantham et al 2001) to 64.2% (Negrini, 2000). The various studies in the literature used different methodologies for data collection and definition of LBP. Also LBP prevalence has been reported over different time periods and the children's ages differed between studies. In general therefore it is difficult to compare LBP and MSD prevalence between different studies. However international collaboration in recent years between our research Centre with the Epidemiology Research Unit at Manchester University, UK and the Robens Centre for Health Ergonomics, Surrey University, UK has resulted in three studies of spinal MSD/BP prevalence have used a very similar

questionnaire (Whittfield et al 2001 and 2003, Watson et al 2002 and Murphy 2003). Whittfield et al reported MSD over the last seven days for the neck, upper and lower back amongst 140 secondary school students (aged 13-18 yr) in New Zealand. Watson et al reported low back pain (LBP) prevalence over the last month for 1446 school children and Murphy reported spinal MSD prevalence in the last month for 679 children, aged 11-14 in different regions in the United Kingdom. This age group was the same as that of intermediate school children in New Zealand.

The present study was conducted in an attempt to compare the prevalence of spinal MSD/BP from a survey of intermediate school children in New Zealand with the earlier data for New Zealand secondary students (Whittfield et al 2001) and with the data from the recent studies of UK intermediate level students (Watson et al 2002, Murphy 2003). The present data is taken from a wider study of the risk factors for spinal MSD/BP amongst New Zealand intermediate school students (Trevelyan and Legg 2003a and b).

## METHODS

A cross sectional questionnaire survey was conducted of 245 children (112 male, 133 female) aged 11-14 yr in seven intermediate schools in the Manawatu area (a central district in the North Island) of New Zealand. The schools represented a

mixture of urban and rural dwellers. Each child completed a self-report questionnaire, following confirmation of written parental informed consent for the child to participate in the study which was approved by the Massey University Human Ethics Committee.

The questionnaire used in the present study was based on questionnaires developed and used to examine risk factors for MSD/BP by the Epidemiology Research Unit at the University of Manchester (Watson et al 2002) and the Robens Centre for Health Ergonomics at the University of Surrey, United Kingdom (Murphy 2003). The whole questionnaire took approximately 20 minutes to complete and was administered by two researchers in classrooms over six weeks in May-June 2002.

In the present paper, data is reported only for responses concerning demographic characteristics (age, height, weight), lifetime low back pain (LBP) prevalence and spinal MSD prevalence over the last seven days and over the last month. Lifetime prevalence of LBP was determined as the response to the question "Have you ever had low back pain?" The prevalence of spinal MSD was determined as responses to the question "Please indicate whether you have had aches/pains in the last seven days and in the last month" in the neck, upper back and lower back'.

## RESULTS

Mean, standard deviation (SD), maximum and minimum age, height and weight of the students were: 12.0 (0.6, 11.0-13.7) yr, 1.519 (0.0801, 1.338-1.820) m and 44.6 (11.0, 26.0-93.0) kg. 118 children (48%) responded positively to the question about lifetime prevalence of LBP. The number of positive responses and prevalence of aches/pains (spinal MSD) during the seven days/one month prior to completing the questionnaire were 87/87 (36/36%) for the neck, 57/56 (23/23%) for the upper back and 85/86 (35/35%) for the low back. Overall, 143 children (58%) reported spinal aches/pain in the last month. 31% of these children reported aches/pain in a single spinal region. 28% reported it in more than one spinal region.

## DISCUSSION

The prevalence of low back pain (LBP) amongst children has been reported to range from 11.5% (Grantham et al 2001) to 64.2% (Negrini, 2000). Although our findings are within this range, these various studies in the literature used quite different methodologies for data collection and definitions of LBP. Also, LBP prevalence was reported over different time periods and the children's ages differed between studies. In general therefore it is difficult to compare LBP and MSD prevalence between different studies. However collaboration over the last several years has resulted in three recent studies which were very similar to ours. In particular, all four of the studies have used a common similar (but not quite identical) questionnaire.

In the first similar study, Whittfield et al (2001) did not ask about lifetime prevalence of MSD nor about prevalence in the last month. The actual question used was "Have you, at any time in the last 7 days, had any ache, pain, discomfort or numbness that may be as a result of your schoolbag(s)?" and reported the MSD prevalence in 140 New Zealand secondary school students aged 13-18 years as: 44% (neck), 36% (upper back) and 35% (lower back). An initial impression is that the prevalence of MSD in intermediate and secondary schools is similar. However, Whittfields et al's question about aches/pains was not exactly the same as in the present study ie it included the qualifying clause 'that may be as a result of your schoolbag(s)'. Thus, direct comparison between the studies is invalid. Hence, if a comparison of MSD prevalence between NZ intermediate and secondary schools is to be made, there is still a need to collect data using an identical methodology.

In the second similar study, Watson et al (2002) did not report lifetime prevalence but reported a LBP prevalence of 24% over a one-month period in 1446 English children aged 11-14 years. Watson's classification of LBP required positive responses to two separate questions (a direct question 'In the past month have you had LBP which lasted for one day or longer?' and a pre-shaded manikin question 'In the past month have you experienced pain in the shaded area which lasted for one day or longer?' (the shaded area corresponded to the lower back area)). In our study, children only reported if they experienced any LBP in the month before data collection. This difference probably accounts for an apparently higher prevalence of LBP amongst the NZ students. However due to the methodological differences, direct comparison of the data is misleading and invalid.

In the third similar study, Murphy et al (2003) reported MSD prevalence of 22% (neck), 17% (upper back) and 20% (lower back) over a 7-day period and 49% (neck), 30% (upper back) and 36% (lower back) over a one-month period in 679 English children aged 11-14 years. The one-month prevalence was similar to that of the present study, with a trend towards lower prevalence amongst the NZ students for MSD in the neck and upper back. This pattern was the same for the data for the 7-day period. In the present study, the 7-day and one-month prevalences were the same. In contrast, Murphy reported substantially lower 7-day prevalences. Since Murphy's classification of MSD prevalence was the identical to that used in the present study, the reason for this difference is unclear and exemplifies the difficulties in making comparisons between studies of this type. However the lifetime prevalence in both studies was similar, being slightly higher in the UK (55%) than in NZ (48%).

It is concluded that the prevalence of MSD/BP in New Zealand intermediate school children is high and probably broadly similar to children of the same age in the United Kingdom. MSD appeared equally prevalent in the low back (36%) and neck (35%) and slightly lower for the upper back (23%). There was evidence of regional co-occurrence spinal MSD. The study has highlighted difficulties in making direct

prevalence comparisons between different (yet apparently similar) studies and has shown there is still a need to collect data for MSD prevalence in New Zealand secondary school students if a comparison with their intermediate counterparts is desired.

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