



The Relationship Between Low Back Pain and Physical Activity Among Nurses in Kanombe Military Hospital

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SUMMARY

Low back pain is said to be a major health threat which leads to disability in high and low-income countries. Nurses have been singled out amongst professional workers as one of those that are most prone to suffer from occupation-related low back pain. Physical activity has been recommended for the health and well-being of individuals, as well as in the management of low back pain.

The aim of this study was to determine the relationship between low back pain and physical activity levels among nurses in Kanombe Hospital, Kigali, as well as other confounding factors that lead to low back pain. This study adopted a cross-sectional and descriptive design. A total of 133 nurses participated in this study. Three self-administered questionnaires were used: socio-demographic data questionnaire, international physical activity questionnaire (IPAQ) and the Nordic musculoskeletal questionnaire (NMQ).

More than three-quarters of the participants had low back pain (78%) and female nurses were more affected than their male counterparts (84%). Low back pain was significantly associated with gender ($P=0.001$) and marital status ($P=0.020$). Higher job-related physical activity (84%) and lower leisure-time physical activity (5%) were reported among nurses. Age ($P=0.033$), marital status ($P=0.001$) and working experience ($P=0.026$) of nurses were significantly associated with physical activity, but not with low back pain.

There is a need for leisure-time physical activity to be promoted among nurses at Kanombe Hospital, as this would reduce the risk of back injury due to the high level of job-related physical activity.

KEY WORDS: Low back pain, physical activity, nurses

INTRODUCTION

Low back pain has been declared to be an escalating health issue among individuals worldwide, with a lifetime prevalence ranging between 60% and 90% (Freburger et al, 2009; Brennan et al, 2007; Burdorf and Jansen, 2006). Low back pain predominantly affects the working population in both developed and developing nations, leaving a number of individuals disabled (Johanning, 2000; Burdorf and Jansen, 2006; Roffey et al., 2010; Sanya and Ogwumike, 2005; Gardner, 2002; Waddel and Burton, 2001; Naude et al, 2009; Osborn and Smith, 2006). Furthermore, of the working population, nurses were found to be among those

who reported the highest level of work-related back injuries. This is due to the great amount of physical work involved in their profession, such as manual handling and transferring of patients, as well as occupation-related psychological stress (Vieira et al, 2006; Yip, 2004; Smedley et al, 2003; Johanning, 2000).

The impact of low back pain does not only affect individuals but nations also, through medical expenditures incurred as well as the reduced productivity of workers (Crow and Willis, 2009; Freburger et al, 2009). To counteract the negative impact of low back pain, several studies have suggested that regular physical activity is a

potential measure for preventing and managing low back pain, as well as improving the functional ability of adults with chronic low back pain (Heneweer et al, 2009; Skoffler and Foldspang, 2008; Silveri and Spinasant 2009; Hayden et al, 2005; Hicks et al, 2005; Yip, 2004; Woolf and Pfleger, 2003; Deyo and Weinstein, 2001). The World Health Organization also recommends regular participation in physical activity for the prevention of various diseases, as well as to enhance muscle strength and bone density (World Health Organization, 2003).

According to the literature, engaging in regular exercises such as aerobics and strengthening exercises for the back and leg muscles can prevent low back pain (Hayden et al, 2005; Rainvaill et al, 2004; Bejia et al, 2005; Yip, 2001; Roupa et al. 2008). Hicks et al (2005) in their study concluded that poor muscle strength and flexibility can lead to poor posture as a result of dysfunction of the respective muscles and joints, thus leading to back pain. Likewise, Yip (2001) suggested that participation in regular physical activity enhances the psychological well-being of individuals, improves job-related fatigue and muscle pains by increasing and maintaining the musculoskeletal system in shape.

In a survey carried out in South Africa, there is positive evidence that low back pain among nurses may be due to reduced or no participation in physical activities (Naude, 2009). Moreover, studies have shown that physically-active nurses present with less symptoms of low back pain as well as improved psychosocial behaviour (Roupa et al, 2008; Vieira 2006; Karahan and Bayraktar 2004). The aim of this study therefore was to determine if a relationship exists between physical activity participation and low back pain among nurses in Kanombe military hospital.

METHODOLOGY

A quantitative, cross-sectional, descriptive design was used for the current study. One hundred and thirty-three clinical nurses participated in the study and data was collected using three self-administered questionnaires. The first questionnaire requested for socio-demographic information, followed by the long version of the international physical activity questionnaire (IPAQ), which assessed the physical activity levels of the nurses and, lastly, the Nordic musculoskeletal questionnaire, which examined the prevalence of low back pain. The questionnaires were translated from English to Kinyarwanda and translated back to English by two independent professional translators. To further ensure the validity, clarity and reliability of IPAQ

and NMQ, they were used in a pilot study on four nurses, who were not part of the study and were found to be clear and understandable. The IPAQ demonstrated criterion validity correlation with values ranging from 0.14 - 0.53 and reliability correlations ranging from 0.96-0.46 (Craig, 2003). The NMQ demonstrated reliability with Kappa values ranging from 0.88 to 1, and it is said to be internationally validated and respected, having been used in the assessment of musculoskeletal symptoms worldwide (Barros and Alexandre, 2003).

Ethical clearance to conduct the study was sought and granted by the Senate Research Grant and Study Leave Committee of the University of the Western Cape (UWC). Permission to conduct the study was also obtained from the director of medical services in the Ministry of Defence as well as from the director of the hospital. Participants were requested to voluntarily sign the consent form and were told that they were free to withdraw from the study at any time, without incurring any penalty. The Statistical Package for the Social Sciences (SPSS, version 18.0) was used for data analysis. Descriptive statistics were employed to summarize the demographic data, which was presented using frequency tables and expressed as percentages, mean and standard deviation. The chi-square test was used to determine if any associations existed between low back pain, physical activity and socio-demographic variables. All tests were done at 0.05 level of significance.

RESULTS

One hundred and thirty-three questionnaires were distributed to the nurses at Kanombe Hospital, and of these, 122 were returned, giving a response rate of 92%. The females nurses (n = 100, 82%) outnumbered the male nurses (n = 22, 18%). The participants' ages ranged from 24 to 54 years, with a mean age of 34.5 years (SD = 6.8). Most of the nurses (82.2%) had working experience that ranged between 6 and 23 years. A year's prevalence of low back pain among nurses was found to be 78%, while a week's prevalence was found to be 53%. The female nurses (84%) reported a higher prevalence of low back pain than their male counterparts (50%). The chi-square test also revealed a significant relationship between low back pain and gender (P = 0.001). The majority of the nurses were married (74.6%) and reported a high prevalence of low back pain (84%). Statistical test revealed a significant relationship between low back pain and marital status (P = 0.020).

Physical Activity and Low Back Pain

In the job-related physical activity domain, nurses demonstrated a high level of physical activity (83.6%) as well as a high prevalence of low back pain (80%), compared to the other physical activity domains (table 1). However, there was no significant association between low back pain and the different physical activity domains. Nonetheless, physical activity was found to be significantly related to some of the demographic variables such as; age ($p = 0.033$), marital status ($p = 0.001$) and working experience ($p = 0.026$). Low back pain was found to be significantly related to gender ($p = 0.001$) and marital status ($p = 0.020$).

Table 1. Frequency of active and inactive nurses and prevalence of LBP according to physical activity domain

Physical activity domain	Frequency (%)	Had LBP (%)	No LBP (%)	Pearson	Chi-square
Job related					
Active	102 (83.6)	80	20	2.299	0.129
Inactive	20 (16.4)	65	35		
Domestic-related					
Active	35 (28.7)	74	26	0.366	0.545
Inactive	87 (71.3)	79	21		
Transport-related					
Active	18 (14.8)	72	28	0.391	0.532
Inactive	104 (85.2)	21	79		
Leisure-time related					
Active	6 (4.9)	50	50	2.844	0.092
Inactive	116 (95.1)	79	21		

DISCUSSION

Low back pain has been identified as the most prevalent occupation-related problem in both high and low income countries (MacDonald et al, 2008; Burdorf and Jansen, 2006). In America, low back pain was found to be the second most common cause of disability (Freburger, 2009). In Switzerland, a 60 - 80% prevalence was reported among the general population (Roupa et al, 2008). In Africa, results of a systematic review reported that the one-year prevalence of low back pain lies between 14% and 72% and a point prevalence between 16% and 59% (Louw et al, 2007).

Nurses in Africa, like their counterparts in developed countries, equally suffer from low back pain. A study conducted among nurses from two selected hospitals in Nigeria and Ethiopia revealed a high one-year prevalence of 71% (Sikiru and Hanifa, 2009). Similarly, other studies,

one in Greece (Roupa et al, 2008) and another in Turkey (Karahan et al, 2009) also indicated that nurses have the highest risk of low back pain among all hospital staff. What is more, most of the nurses were also found to be less active as far as transport and domestic-related physical activity domains are concerned. It was suggested that this could be attributed to the fact that most of them hire maids to help with their domestic work, and use public means of transport to and from work as well as other places. Additionally, the majority of the nurses in this study did not engage in leisure time physical activities (95.1%), presenting with a high level of job-related physical activity (83.6%), which might be more harmful to them, as they are among the predisposing factors of low back pain (Mitchell et al, 2009; Smedley et al, 2003). Nevertheless, Burton (2005) suggests that low back pain is a multifactorial disorder which also requires a holistic approach to determine the actual cause.

CONCLUSION

The results of this study revealed a high prevalence of low back pain among nurses at Kanombe Hospital. Although the prevalence of low back pain among nurses may be comparable in both high and low-income countries, the working and living conditions in both settings might not be comparable. With that in mind, therefore, nurses in Africa, particularly in Rwanda, where the study was conducted, might be more predisposed to low back pain than those in high-income countries. The results of this study will hopefully contribute to the scanty information available on the prevalence of low back pain among nurses in Africa.

ACKNOWLEDGMENT

Special thanks go to all the nurses who willingly participated in this study.

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