PREVALENCE OF KNEE PROBLEMS EXPERIENCED BY NURSES

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ABSTRACT

Background-Work related Musculoskeletal Disorders are common among health care workers. The nursing population constituting about 33% of the hospital workforce is particularly at a high risk, accounting for 60% of the occupational injuries. Knee joint is the most important weight bearing joint of the body which is involved in various daily activities and hence is the commonest to undergo much wear and tear and damage.

Objective-To find prevalence of knee problems in nursing staff.

Method-Validated self administered questionnaire containing three scales- Knee Injury and Osteoarthritis Outcome Score, Knee Outcome Survey Activities of Daily Living Scale and Lysholm, which sought information on demographics, prevalence and pattern of knee problems was employed as the survey instrument. A total of 150 questionnaires were distributed to nurses in the different hospitals, all of which were returned duly filled.

Results –The average prevalence of knee problems in nursing staff was found to be 71.7% ranging from mild to moderate range of severity .Their results are as follows-KOOS 70%, KOS-ADL 65.71 %, Lysholm 77.5% with Standard Deviation of- 13.0, 11.23, 11.36 respectively .Squatting, twisting and pivoting on one knee, jumping, kneeling stair climbing have been identified as the main activities causing knee pains.

Conclusion-The prevalence of knee problems in the nursing staff is in the moderate range of severity.

KEYWORDS: KOOS; KOS-ADL; Lysholm

INTRODUCTION

Nurses routinely perform activities that require lifting heavy loads, lifting patients and transferring them out of bed and from the floor[1]. They also entail exposure to constrained postures, forceful movements, high emotional strain (because of caring for large numbers of patients who may be critically ill), and work deadline pressures[2]. These tasks put them at high risk for acute and cumulative Work related Musculoskeletal Disorders (WMSDs)[1]. In addition to ergonomic factors, psychosocial risk factors such as high demand, low job control, and lack of social support have also been recognized as contributing factors to the development of musculoskeletal disorders among nursing professional[1].

Research performed in several countries show prevalence rates above 80% of the WMSD's disorders in nursing workers[2]. Based on observations of nursing work practices, it was hypothesized that nursing job requirements affect not only the lower back but also other body joints such as the neck and shoulders, knees[3]. The frequent complaints are low back pain, knee pain, neck and shoulder symptoms[4].

Knee joint is the most important weight bearing joint of the body which is involved in various day to day activities and hence is the commonest to undergo much wear and tear and damage too[5]. In previous studies (Alexopoulos EC- 2011; Magnago ST-2010; Freimann T-2013) prevalence of knee pain was reported from 23 to 80 % [2,3,6].

Although injuries to the knee and wrist are known to be associated with handling and moving patients, their incidence and prevalence in nursing is not well researched in the literature[7]. Hence, further study on this topic is essential to find the prevalence of knee problems in nursing staff. Thus the main aim of this study is to find the prevalence of knee pins in the nurses working in hospitals.

MATERIAL AND METHODS

This was an observational, cross sectional study done on the nursing staff working in the hospitals in and around the city. The study was approved by Institutional Review Board. Total of 150 nurses participated in this study out of which 28 had to be excluded as they did not have any knee pains. Male and female nurses between 18-64 years of age were included using the purposive sampling method who have been

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working for at least one year in the hospital setup. The inclusion criterion was to select the major working age group in the hospitals who have minimum one year of experience of working so that they are aware of their job profile and what all problems they are facing due to that. Nurses who have undergone any knee surgery/trauma to knee joint in past 6 months and the female nurses who were pregnant were excluded from the study as they were likely to have pain due to their physiological condition(pregnancy) or due to the surgical intervention that they have had undergone.

Knee Injury and Osteoarthritis Outcome Score (KOOS), Knee Outcome Survey Activities of Daily Living Scale (KOS-ADL), Lysholm scales were given to nursing staff & they were expected to fill them and hand them back. All participants had signed the informed consent form.

KOOS is patient\self-administered Likert scale. KOOS scale has five patient-relevant dimensions that are scored separately: Pain (9 items); Symptoms (7 items); ADL Function (17 items); Sport and Recreation Function (5 items); Quality of Life (4 items)[8,9].

KNEE OUTCOME SURVEY-Activities of Daily Living Scale (KOS-ADL) is a patient self report survey that includes an Activities of Daily Living Scale (ADLS). The ADLS is a 14 item scale that queries patients about how their knee symptoms effect their ability to perform general daily activities (6 items-Pain, Stiffness, swelling, giving way of knee, weakness, limping) as well as how their knee condition affects their ability to perform specific functional tasks (8 items-standing, walking going up and down the stairs etc)[8,10].

Lysholm scale deals with the specific knee problems like meniscal tear, chondral injuries. Lysholm scale is a Likert questionnaire which has the following components- limping, going up and down the stairs, locking sensations, buckling of the knee, squatting, and stiffness etc[11,12].

Data was collected and analyzed using Microsoft excels version-2007.

RESULTS

This study gives the prevalence of knee problems in nursing staff as given in Table-1.

On an average 71.7 % of the nurses are suffering from mild to moderate range of knee pain. Squatting, twisting and pivoting on one knee, jumping, kneeling stair climbing has been identified as the main activities causing knee pains.

TABLE 1: PREVALENCE OF KNEE PAINS IN NURSES

Name of scale	% Value	Mean values	Standard Deviation
KOOS	70	70/100	13.0
KOS-ADL	65.71	46.0/70	11.23
Lysholm	77.5	77.5/100	11.36

Hospitals were found to be the common work setting among the respondents of this study.

Table 2 gives the demographic details of the nursing staff.

TABLE 2: DEMOGRAPHIC DATA

Variable	Minimum	Maximum	Average
Age(years)	18	64	35.2

DISCUSSION

The study was done on 150 nurses to find the prevalence of knee problems in the nursing staff working in the hospitals in and around the city. Three validated scales KOOS, KOS-ADL, Lysholm were used to find out the prevalence of the knee problems[8-12].

The mean scores found in the study indicate that majority of the nursing staff are suffering from knee problems ranging from mild to moderate severity. The authors' also found that terminal ranges, high intensity activities are some of the causative factors for knee pain. According to Alexopoulos EC repetitious movement, awkward postures, and high force levels are the three primary risk factors that have been associated with WMSDs[6]. The prevalence of knee problems can be attributed to the fact that the nurses are routinely exposed to awkward postures, forceful movements, lifting heavy loads, lifting patients which all are activities straining the knee joints[2].

KOOS scale: 70% prevalence rate

The KOOS scale checks multiple components related to the knee pains and functional applicability of the joint in ADLs. KOOS scale is calculated as total score out of 100 where 100= no knee problems & 0= exrteme knee problems. The pain questions check subject's pain while doing activities like twisting/pivoting, straightening & bending knee fully, going up or down stairs etc. Low pain scores can be attributed to the fact that the nursing staff have been provided with more ergonomically oriented gadgets like better structured trolleys for carrying the dressing articles, use of elevators for internal transport in the hospital etc which is supported by the study done by Nelson A[13]. Tinubu BM showed that getting help in handling heavy patients (50.4%), modification of nursing procedures in order to avoid stressing an injury (45.4%), and modifying patient's/nurse position (40.3%) were the top three coping strategies which are

applicable here too1. Alexopoulos EC showed in their study that a high perceived physical exertion and a moderate/bad general perceived health were the strongest factor for knee pain[6].

The nurses are facing very little problems in doing their activities of daily living (ADL) .The reason for this as explained by Nelson A can be that they have gained sufficient amount of experience so as to modify their activities in an ergonomic way so that the existing knee problems don't hinder their activity[13]. Another explanation can be that experience has taught the nursing staff about injury prevention, avoiding harmful physical load, and hence have developed better coping strategies for musculoskeletal problems and knee pains as shown by Tinubu BM[1].

The subjects found that sports activities like squatting, running, jumping, kneeling were difficult to perform. These activities don't form a part of their ADLs, so the subjects were unaccustomed to these activities. Besides this, running, jumping activities are high intensity activities causing extreme amount of compressive forces on the knee joint as proved by Besier TF hence the low scores and higher association with pain and discomfort[14].

KOS –ADL scale: 65.71% prevalence of knee pains

Knee stiffness, swelling, giving way\buckling of the knee, weakness, limping were not the common complaints for majority of the subjects in this study.

The authors have found that standing is difficult and painful. As shown by Mündermann A & Kuo AD in their studies, standing causes more knee pain as compared to any other activity of ADLs as standing demands more static muscle work, hence more pains[3,15,16]. Only 50% of the population is suffering from difficulty in walking while the rest of them have adjusted their walking pattern to their present knee problems. Use of better footwear and correct biomechanical alignment can be some other factors associated with ease of walking, as depicted by Reed LF[17].

According to this study, stair climbing is painful and difficult process. Stair climbing activity demands higher muscle work, increased flexibility and knee range of motion proven by Mündermann A[15]. Hence this activity is more painful.

The present study shows that kneeling and squatting is a big problem for many subjects. Squatting requires terminal knee range and strong quadriceps muscle strength for the eccentric activity getting up back to standing state as proved by Mündermann A & Kuo AD in their studies[15,16,18]. Kneeling also causes extreme loading & compression on knee which can be another reason for more problems[15].

Sitting with your knee bent & rising from chair are not much difficult or causing or aggravating the knee problems.

Lysholm scale: 77.5% prevalence of knee pains.

Limping, knee locking, swelling, knee buckling are not the problem areas for majority of the nurses. None of the nurses needed to use a crutch or cane.

Pain is the complaint of the majority of the subjects. Pain can be multi factorial and multidimensional, associated not only with musculoskeletal causes but also psychological, emotional social- economical causes as proved by different authors like Freimann T-2013; Magnago ST- 2010; Alexopoulos EC- 2011; Briggs KK-2004; Attar SM-2014 in their studies respectively[2,3,6,12,19].

Climbing stairs is a major problem. Mündermann A proved in her study that stair climbing is an activity associated with more muscle strength, range of motion for the knee and also with higher loading forces in the knee joint (compressive and gravitational forces)[15].

Nearly 75% of the nurses are suffering from difficulty to squat. This can be attributed to the extreme terminal range of knee flexion needed for doing the squatting activity and for the strong eccentric contraction of the quadriceps, glutei and other antigravity muscles for getting up[15,20].

Thus it can be concluded the average prevalence of knee problems in the nursing staff is 71.7% which lies in the moderate range of severity.

CONCLUSION

The prevalence of knee problems in the nursing staff is in the moderate range of severity.

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CLINICAL APPLICATION

The results founded in this study will help to create more awareness in the nursing staff about the knee problems and the methods to prevent them from occurring.

SOURCE OF SUPPORT

None

CONFLICT OF INTERESTS

Dr. Joshi has nothing to disclose. The authors declare that they have no conflict of interests.

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