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ACKNOWLEDGEMENT

Provide the list of individuals who contributed in the work and grant details where applicable

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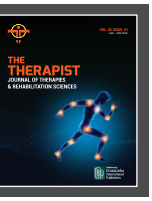

Editorial

Impact of Exercises on Bone Health of Pre-Menopausal Female

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The process of bone resorption and creation, in which osteoclasts destroy old bone and osteoblasts produce new bone, causes the living tissue of bone to continually degrade. Bone is a dynamic tissue that adjusts to the accompanying mechanical forces that are put on it, such as exercise. In order to lower the risk of osteoporosis and resultant fractures during the postmenopausal years, with relative-risk rises, it is crucial to maintain appropriate bone mineral density (BMD) levels throughout the premenopausal years. Pre-menopausal women have been found to have osteopenia and osteoporosis at prevalence rates of 15% and 0.6%, respectively [1]. In addition, it has been found that premenopausal women lose between 0.25 and 1% of their bone mineral density per year [2]. In Pakistan, the long-life expectancy after menopause, multiparity, lack of a calcium-rich diet, vitamin D deficiency, physical inactivity, as well as socio-demographic factors, all contribute to an increase in the prevalence of primary, type II osteoporosis and its associated complications. According to a local survey, it affects postmenopausal women 20-49.3% of the time [3]. Although pre-menopausal women are often unsuitable for pharmaceutical treatment, relying on lifestyle factors is virtually always advised.

Exercise, a low-cost, non-pharmacologic intervention that is accessible to the great majority of the population, is one potentially successful lifestyle strategy for accomplishing this aim. During youth, exercise improves bone growth and increases BMD, and it may help older people avoid osteoporosis and fractures. Regular exercise, particularly weight-bearing and high-impact exercises, helps the body build high peak bone mass and may lower the risk of falls and osteoporotic fractures in later life. Regarding femoral neck BMD, high-impact exercise was shown to be most beneficial, and it has also been hypothesized that gains brought on by high-impact exercise are retained after intervention. In healthy pre-menopausal women, high-impact exercise increases the bone mineral density in the upper femur and the lumbar spine. This kind of exercise could be an effective, secure, and affordable strategy to prevent osteoporosis later in life if done regularly. Progressive resistance strength training for the lower limbs is the kind of exercise that have the greatest impact on BMD for the neck of the femur and should be taken into consideration in clinical practice. The multicomponent training exercise programme has been recommended as the most effective intervention for BMD at the spine. Aerobic exercises involving weight bearing and training on vibrating platforms may also improve BMD.

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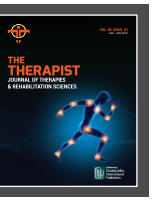

Original Article

Frequency of Back Pain in Knee Osteoarthritis Patients; A Cross Sectional Study

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ABSTRACT

Osteoarthritis is one of the major prevalent types of arthritis and knee joint is mostly involved site in geriatric patients in which half of the old patients with ages more than 50 years. It was found that these management strategies were effective in the reduction of pain and disturbance of the function induced by chronic low back pain and osteoarthritis. Therefore, the current study seeks to analyze the frequency of backache mainly in the region of low back is associated with the patients having knee osteoarthritis. **Objective**: To analyze and investigate the relationship amid back pain and knee osteoarthritis (OA) in order to check frequency of backache in knee osteoarthritis patients. **Methods:** A self-made questionnaires were distributed among the random population of 500 individuals and categorized them according to age, gender, occupation, body mass index, residence, back pain history, severity of pain and pain persistence. SPSS was used to analyze the results. **Results**: In this cross-sectional study, Back pain was associated significantly with knee osteoarthritis patients such as 310 (62%) individuals claimed to have backache with knee osteoarthritis (OA) as well. Obesity was also related with backache with 219 individuals suffer from backpain from 281 members. 67 patients had severe pain, 77 patients had mild pain and 150 patients experienced moderate pain. **Conclusion**: Back pain was found more prevalent (62%) from total collected individuals suffering from knee osteoarthritis.

INTRODUCTION

The most prevalent type of arthritis is osteoarthritis that develops from cartilage deterioration, disability in movement, long standing pain in muscles with marginal bony growth [1]. It distresses varying joints such as hip, hands and knee. Knee osteoarthritis frequently affecting men and women in their older age phases [2]. The Knee is mostly involved in geriatric patients involving half of patients more than 60 years. It is described by medical descriptions such as decreased joint space and osteophytosis [3]. The symptoms of knee OA are pain and functional disability. Functional disability is caused by pain and it also lessen quality of life and increase the probabilities of mortality and morbidity [4]. Risk factors of knee osteoarthritis includes generalized as well as mechanical risk factors. Generalized risks factors include sex, hereditary, genetic susceptibility, age, reproductive cycle factors which trigger the damage of cartilage functions. Whereas, mechanical risk factors include trauma and injury [5]. Obesity, occupation, dietary changes and bodily activity are adaptable factors for Osteoarthritis. Women who are overweight and obese are at high risk to knee OA than men. Females who are in ages of 55 years have exaggerated pain in their knees. Women of middle age have moderate-to-severe knee OA [6]. Radiological examination shows that knee Osteoarthritis have frequency of almost 19% percent in Framingham research study with almost 27 percent in Johnston project of osteoarthritis for the adults aged 45 years. The

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osteoarthritis that can easily be seen on radiographs is higher in adults having ages more than 60 years [7]. Patients having knee osteoarthritis suffer with pain in their affected joint that are knee, hip etc. On the other hand, knee OA also cause the onset of backache in the patients. Backache is predominant in the patients of knee osteoarthritis (OA) than those having rheumatoid arthritis (RA). Obese women are more prone for this disease. It is impartial of knee radiological findings, age, marital status and smoking but disability, night pain anxiety and global severity are those factors that contribute in the initiation of pain. furthermore, lower back pain is evidenced as universal source of functional incapacity that require further study to do due to rapidly growing ageing population worldwide [8]. Convincingly, back pain is related to body mass index and surges by the pain scale in the diseased people. Also, people with knee osteoarthritis also encounter pain in elbow, foot and their low back region [9]. Chronic low back pain and osteoarthritis are two principle musculoskeletal problems which are more prevalent in the population and poses high direct as well as indirect costs. This was suggested in the study conducted in 2010 by May *et al.*, in which the main aim was to manage these two problems with self-management systems such as exercise and self-medication followed by education and advise. It was found that these management strategies were effective in the reduction of pain and disturbance of the function induced by chronic low back pain and osteoarthritis [10]. Therefore, the current research seeks to analyze the occurrence of backache mostly lower backache in patients of knee OA in local inhabitants. Additionally, this research is also meant to aware the people regarding knee (OA), association of back pain and knee OA and take preventing measures for the prevention of back pain. A hypothesis has been designed in this perspective to check the correlation of low backache in patients with knee OA

METHODS

A self-made questionnaire was created to complete a cross sectional research by evaluating the frequency in osteoarthritis patients with backache. This self-made survey was distributed randomly in 4 hospitals including Allied Hospital, Jinnah Hospital Lahore, Social Security Hospital and also Mayo Hospital. Sample size was computed by means of following formulation for random sampling [11]:

$$n=\frac{z^2p(1-p)}{d^2}$$

Where n=number of samples, p= expected prevalence, z= level of confidence and d= absolute precision. Total five hundred members were answered in submitting the questionnaires. The contributors distributed and examined on the base in gender, age, residence, occupation, body mass index (BMI), pain severity and previous pain history. The gathered data were examined and decoded by means SPSS version 21.0. The results were exhibited in the form of tables, graphs and figures. Chi square method was consumed in deducing the statistical methodology to equivalence the results with each other.

RESULTS

Current research was executed in 4 hospitals i.e., the Allied Hospital, Jinnah Hospital Lahore, Social Security Hospital and Mayo Hospital. The respondents who were included in this research gave their pain history by filling the distributed survey form that showed that total 62 percent subjects had backache while 38 percent declined to have backache. The hospitals visited to gather responses from the patients for six months. From 310 positively responded participants, 94 percent subjects were appealed that they suffer from backache after knee arthritis and 6 percent participants practiced back pain before knee OA. Total 28% subjects were male and total 72% subjects are suffering from back pain. overweightness was also related with this disease as 219 subjects suffer with backpain from 281 total participants. Housewives were more affected by backpain followed by doctors, teachers and factory workers. 150 subjects were facing moderate back pain after 77 with mild pain in back and 67 participants with severe backache. Furthermore, most of the patients accepted physical therapy to suppress the pain while other adopted rest and analgesics to relieve their pain symptoms. Maximum data were collected from Allied hospital in Faisalabad and minimum as collected from Mayo Hospital in Lahore. There were 230 people who had visited Allied Hospital, 110 visited Jinnah Hospital, 90 came to Social Security Hospital and 70 had visited Mayo Hospital. The ratio of male suffering from pain in Allied Hospital is 145, in Jinnah Hospital is 73, in Social Security is 65 and in Mayo Hospital is 27(Table 1).

Patients		Allied Hospital	Jinnah Hospital	Social Security hospital	Mayo Hospital	Sum
Number of subjects/ individuals		230	110	90	70	500
Gender	Male	40	50	18	20	128
	Female	190	60	72	50	372
Back pain	Yes	145	73	65	27	310
	No	85	37	25	43	190

Table 1: Distribution of participants visited the hospitals.

Total 17 men had healthy BMI, 49 overweight and 62 were obese whereas 29 females were in healthy BMI range, with 124 were overweight and 219 were in obese range (Table 2).

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Gender	BMI			Total
	18.5-24.9 (Healthy)	25-29.9 (Overweight)	>30 (Obese)	
Male	17	49	62	128
Female	29	124	219	372
Sum	46	173	281	500

Table 2: Frequency of the BMI according to gender

In knee OA patients, 1.2% upper back and neck is involved with 4% midback, 31% low back, 1.2% buttocks and legs, 20.8% lower back radiating to other extremities and 0.6% are having non specified pain(Table 3).

Site of pain	Frequency (%)
Upper back and neck	6 (1.2%)
Mid back	20 (4.0%)
Low back	155 (31.0%)
Buttocks and legs	6 (1.3%)
Lower back pain radiating to other extremities	104 (20.8%)
Non specified	3 (0.6%)
Sum	294 (58.8%)

Table 3: Comparison of the back pain with other sites of pain in knee OA patients

Total 51% participants who are suffering from backpain are in age 50-59 with 34% in age 60-69, 13% in age range of 70-79 and 1.6% in 80-89 age ranges(Table 4).

Age (years)	Frequency (%)
50-59	255 (51.0%)
60-69	172 (34.4%)
70-79	65 (13.0%)
80-89	8 (1.6%)
Total	500 (100%)

Table 4: Frequency of age having back pain

DISCUSSION

The rationale of the current research was to explore the association between backpain and knee osteoarthritis by evaluating its frequency in the affected participants. The objective of the research was to examine the subjects of knee OA on the basis of their backpain. Five hundred individuals have been comprised that have knee OA. It is seen that 62 % have backache before the whole examination initiate. Moreover, 38 percent individuals have no backache. This research shows that backache becomes more predominant in patients with knee OA. Patients with knee OA mostly feel backache particularly in low lumbar region. earlier researched proved that 5 percent of the individuals with knee osteoarthritis suffer with back pain due to varying other factors including obesity, age and gender [9, 12, 13]. In a previous study performed by Zhang *et al.*, in which the relationship between low backache and age in knee osteoarthritis was labelled. The information extracted from these calculations suggested that the frequency of knee OA enhance with the aging especially after sixty-five years. This issue is related due to low muscular strength, cartilage thinning and oxidative damage [7]. Furthermore, this pathology is most widespread in women especially those who are symptomatic with knee OA [2, 14]. The current research showed that age is a major factor that increases the probability of backpain in the patients with knee osteoarthritis. Typically age 50 to 59 is mostly affected with this disease as compared to other individuals. This is due to calcium deficiency, low diet quality, excess physical work, heavy lifting, post-menopausal conditions and lack of awareness [15]. Additionally, most important aspect is obesity that counts for 56 percent in affected individuals with knee OA followed by 34 percent individuals who are overweight & 9 percent in subjects who are healthy. The data were arranged on the basis of their body mass index (BMI). However, BMI is considered as one of most important onset factors for knee OA as suggested by previous study performed by Heidari *et al.*, [6]. However, BMI is considered as one of most important onset factors for knee OA as suggested by previous study that the low backache, fatty body, diabetes, stroke and cancer are the adverse results of obesity. Metabolic disease, enhanced mechanical working and wear & tear are other features that results in obesity in patients with low back pain. Therefore, our calculations are found in agreement with previous researches performed on patients with low back ache in which it is related with obesity [7, 16-19]. Many patients suffer with pain during early morning. Many individuals reported that they feel pain mostly in evening, at night or in whole day time as well. Majorly 30 percent have early morning pain, with 13 percent at night and more than 7 percent in evening with 7 percent in whole day. Previous study done by Wolfe *et al.*, in Germany observed that the morning stiffness was found over 35 % for 60 minutes intervals [12, 20]. The presence of pain in varying times could be due to cartilage destruction, space narrowing, metabolic diseases, body structural changes and excess working with no healthy exercises as calculated by May *et al.*, [10]. Based on present study, it might be determined there is a major relation between back pain and knee osteoarthritis. To evaluate the patients with back pain, low back pain is most obvious in such patients while most importantly 20 percent individuals have backache that goes in other extremities. Besides, it is also discovered that low back pain is highly related with other factors such as gender, occupation and age etc. which enlightened the agreement of our results with previous researches [16].

CONCLUSIONS

Low backache was found more predominant (62%) from total collected individuals suffering from knee osteoarthritis. It was also significantly associated with other risks including women, elder ages, obesity, working professions. Furthermore, more work is required to

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understand the frequency of back pain in the patients with knee osteoarthritis.

Conflicts of Interest

The authors declare no conflict of interest.

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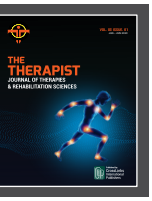

Original Article

Prevalence of Musculoskeletal Sports Injuries of Head, Neck and Upper Limb Among Cricket Players

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ABSTRACT

Sports injuries have been reported with growing rate in a quest to identify patterns by which they can be predicted and prevented. Injury investigation in cricket has been started for almost twenty years. **Objective:** To determine the prevalence of musculoskeletal sports injuries of head, neck and upper limb among cricket players. **Methods:** It was a Cross-sectional study. Data were taken from 180 selected cricket players from different cricket academies, clubs of Lahore Pakistan. The data were analyzed by SPSS version 21 and with a self-generated questionnaire. **Results:** This study showed very low prevalence of head and neck injuries which is 5.6 % and very high prevalence of shoulder injuries are seen in this study which is 77.78 %. Elbow injuries are seen 19.4 % while there is a significant association between type of cricketers and shoulder pain. **Conclusions:** The prevalence of musculoskeletal sports injuries found very high in shoulder joint, then in elbow joint and then in head and neck which has affected their performance. Study also showed a significant correlation between the type of players and shoulder pain.

INTRODUCTION

Cricket was founded by English men at the beginning of 16th century. British rule over subcontinent for almost 100 years and they introduced cricket to them. About 30% population of world are very fond of this sport. Public of common wealth countries also love this game. In South Asian countries cricket is one of the favorite sports [1-3]. Cricket is a game in which a hard ball is thrown by a baller towards batsman [4]. A ball weight 156 grams is thrown from a distance of 22 yards towards a batsman [5]. This needs good eye to hand co-ordination, upper limb power, hand grip strength and the coordinated movements of shoulder, arms and wrists [6]. Now a days cricketers playing at all levels are exposed to long and demanding seasons, practicing and playing cricket than previously, this has led to an increase in the number of injuries [7]. These injuries have very common incidence, sports physiotherapy is improving very rapidly, physiotherapist help cricketers to prevent, minimize risk and fast recovery from injuries. Although it is contact less sport but can injure a player with different ways. A direct body contact with ball when bowler throws towards batsman can become a reason of fracture or other musculoskeletal injuries while fielder slips on grass or two fielders strike each other while taking a catch. But now players use kits and helmet to protect their bodies.

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The most common injuries, are overuse injuries associated with fast bowler [8]. The combine effect of different factors such as poor warm up, bad technique, no rest and overuse injuries, fast bowlers have more risk of injuries [9]. Injuries with overuse are due to constant micro trauma where the acting number of forces, each is lower than the end limit of the special tissue, added to generate a fatigue effect with time [10]. According to McGrath *et al.*, some countries have studied about cricket injuries, but in Pakistan very less research conducted so far, that is why our players shows poor performance and get more injuries. As commonwealth have limited countries so little international data were found on epidemiology of injuries [11]. With increased number of sports injuries, it is important to conduct more researches to avoid these injuries from happening. Investigations of injuries in this sport has been started almost 10 to 15 years ago. Limited researches have been done on cricket injuries in Australia and south Africa, although other countries have started to setup injury databases and some countries like England have produced many reports [12]. In Australia it was described that in adults (>15) cricket injuries are accounted for 7.3% of all sporting injury cases reported in emergency department. In sports-related emergency cricket injuries are counted as fifth greatest source. Injured cases which were involved at the time of injury, formal sporting activity involved 94.6% of injured cases where as organized competition was 82.8% in informal cricket it was accounted for 7.1% and 4.1% were remain unspecified. Others 5.4% cricket injuries which are presented in emergency department happened during leisure cricket activities [13]. In the current study the aim was to find out one year prevalence rate of musculoskeletal injuries, also frequency of head, neck and upper limb specific injuries in cricket players. In this study cricketers and sports injuries were also found associated.

METHODS

A cross-sectional study was conducted in which convenient sampling were used and collect data from Professional players of Lahore, with help of Self-administered questionnaire. Online software Epi Tools were used to calculate sample size which was total of 180 (epitool.ausvet.com) [14]. Study includes players range from under 14 to national level. They participated voluntarily after taking permission from their coaches. Players who were on illegal drugs excluded from this study. Also, who were not playing with hard ball were not included. Data analysis was done using SPSS 21.0 version. For qualitative data results were presented in the form of mean ± standard deviation and frequencies and proportions were used to present the qualitative data. p-value was considered significant at P<0.05.to check the association between type of cricketer and shoulder injuries Pearson chi square-test was applied.

RESULTS

To determine the prevalence of musculoskeletal sports injuries of head, neck and upper limb among cricket players total 180 players were selected in which 60 cricketers were batsman, 60 were bowlers whereas total count of all-rounders was 50, while wicket keepers were 10 with the mean age of 21.56 years. Among 180 individuals only 5(2.8%) showed Head injury while the same number shows neck pain (Table 1).

Variables	Frequency (%)
head injury	5 (2.8%)
Neck pain	5 (2.8%)
No injury	170 (94.4%)
Total	180 (100%)

Table 1: Frequency distribution of head and neck injuries

Out of 180 (13.9%) 25 complain elbow pain, while (5.6%) 10 suffer from tennis elbow. 145 (80.6%) had no injury (Table 2).

Elbow Injuries	Frequency (%)
Elbow pain	25 (13.9%)
Tennis elbow	10 (5.6%)
No injury	145 (80.6%)
Total	180 (100%)

Table 2: Frequency distribution of elbow injuries

120 (66.67%) players developed shoulder pain, 10 (5.58%) players showed rotator cuff injury, 5 (2.78%) players shoulder were dislocated, and 5 (2.78%) players had tendinitis (Figure 1).

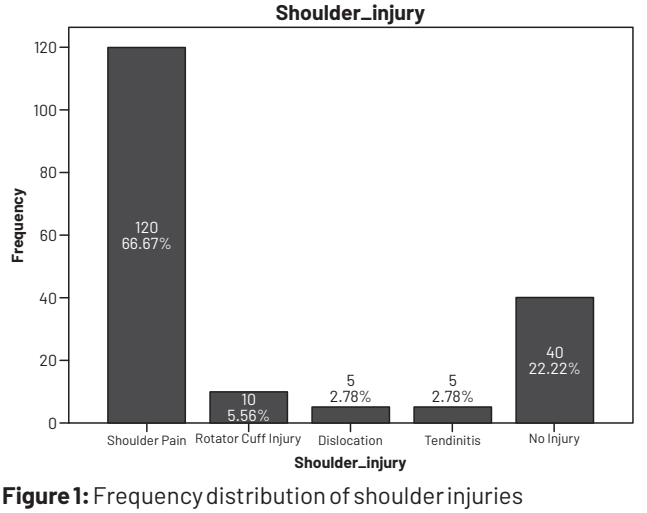

Figure 1: Frequency distribution of shoulder injuries

35 out of 60 batsmen complained shoulder pain, 5 were diagnosed with rotator cuff injury, 5 had tendinitis and 5 had shoulder dislocations.60 out of 60 bowlers had shoulder pain. 10 wicket keepers, 5 were diagnosed with rotator cuff injury. Out of 50 all-rounders 25 had reported

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shoulder pain, out of 10 wicket keepers 5 had rotator cuff injury. There was a major association (p=0.00) found among type of cricketers and shoulder injuries (Figure 2).

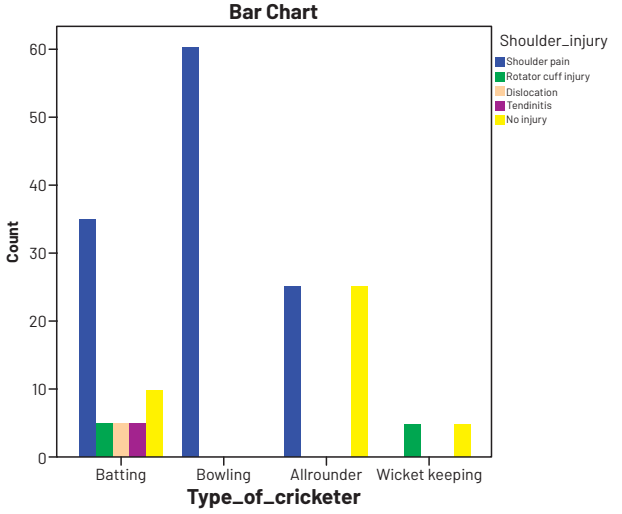

Figure 2: Association between type of cricketer and shoulder injuries

DISCUSSION

To find the prevalence of musculoskeletal sports injuries of head, neck (5.6%) and upper limb including shoulder injuries (77.78%), elbow injuries between cricket players self-administrated questionnaire were used. This study concludes very less frequency of head and neck injuries. Shoulder injuries (77.78%) were high in number while elbow injuries were less. Substantial association was also seen between the shoulder injuries and type of cricketer. In difference to this study of Stretch *et al.*, found that 20% prevalence of injuries related to head and neck whereas 5.6% were found in this study. In their study they found very low prevalence of upper limb injuries but if we consider this study, it was found that upper limb injuries are relatively had high prevalence [15]. In another study done by Zaman, shoulder injuries were found 22.58%, while head and neck injuries were 3.22%. Similarly, in the present study shoulder injuries had high frequency which is (77.78%) and in head and neck injuries the prevalence is 5.6% almost equal to above study. Similarly, the mean of age were 19 years where as in this study the sample age is 21 [16]. Dube *et al.*, conducted a study with 240 high school cricketers, among which 81.25% had pain and cricket related injuries in last season. Shoulder, lower back and knee were the most common sites of injuries. Bowler and batsman had high injury rate which is (36%) and (32%) respectively. Same as this study found shoulder pain are common in cricketers which is (66.7%). Similarly, wicket keepers are less suffered than bowlers in this study [17]. Stretch *et al.*, conducted another study on elite cricket players over two seasons, in which the collective percentage of Head and Neck injury is 5.0%, while upper limb injuries are 20.4% while this study shows head and neck injuries (5.6%) which is quite closer to these results [7]. Another study was conducted by Arshad *et al.*, there were 56.9% batsmen, 26.7% bowlers, 12.1% all-rounder and 4.3% wicketkeepers. The mean age of respondents was 23.11. Most common region involve was lower back followed by shoulder region [18]. In contrast to this, in study done by Houque *et al.*, bats man (38.9%) and all-rounder (57.1%) suffered the most sustained upper limb injury. Where as in this study bowler complained more for the upper limb injury [19]. A study conducted by Noorbhai *et al.*, (17%) players suffered from shoulder injuries while in this study very high prevalence of shoulder injuries is seen which is 77.78% [20]. In another study of Stretch, 92 players participated who played 1st class cricket during the season of 1987/88. Nineteen of these players had played cricket at international level while 73 played at provincial level. They had mean age of 27 years. 20% injuries were related to head and neck while current study shows very low prevalence of head and neck injuries which is 5.6% [21]. Physiotherapists and early rehabilitation can always minimize the risk of injuries as cricket players shows high number of injuries.

CONCLUSIONS

To talk about results this study show low prevalence of head and neck which is (5.6%), a little bit higher of elbow injuries (19.5%) and very high shoulder injuries which is (77.78%). Different kind of cricketers and shoulder injuries also had association among them.

Conflicts of Interest

The authors declare no conflict of interest.

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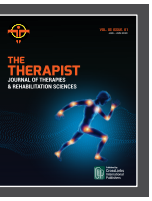

Original Article

Comparative effects of Scapular Mobilization Combined with Glenohumeral Mobilization Versus Glenohumeral Mobilization Alone on Pain, Disability and Quality of Life in Frozen Shoulder

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ABSTRACT

Frozen shoulder is an idiopathic ailment of a shoulder characterized by the onset of pain in the shoulders with no apparent cause. It is a condition which is associated with pain, weakness of muscles and restricted range of motion for months and years. **Objectives:** To compare the effects of Glenohumeral mobilization alone and Scapular mobilization combined with Glenohumeral mobilization on pain, disability, and quality of life in frozen shoulder subjects. **Methods:** Purposive sampling of frozen shoulder patients from OPDs of the Physiotherapy Department of Government hospitals in Faisalabad was used in this quasi-experimental study. Two groups of thirty people with frozen shoulders were established: First and second groups Group 1 received Glenohumeral mobilization alone for four weeks, while group 2 received Scapular mobilization with Glenohumeral mobilization. The Numeric Pain Rating Scale, Shoulder Pain, Disability Scale, and Health Questionnaire were used to assess pain, disability, and quality of life, respectively. SPSS version 23 was used to analyze the data**. Results:** The data analysis showed that significance value i.e., P-value is 0.05 indicating that there was greater effect of scapular mobilization combined with glenohumeral mobilization as compared to glenohumeral mobilization alone on pain, disability and quality of life in frozen shoulder patients. **Conclusions:** Scapular mobilization in conjunction with glenohumeral mobilization was more effective at reducing pain, disability, and quality of life in frozen shoulder patients than either technique alone.

INTRODUCTION

The onset of pain in the shoulders without any apparent cause is characteristic of the idiopathic condition known as frozen shoulder [1, 2]. Codman was the first to coin the term "frozen shoulder" in 1934. Codman noticed a significant decrease in forwarding. The two most important factors are elevation and outward rotation [1]. The natural history of adhesive capsulitis is divided into three stages, each of which lasts for a different amount of time. The first stage usually lasts three to six months, the second stage three to eighteen months, and the final stage three to six months. Clinically, a painful loss of active and passive shoulder mobility over time is what defines adhesive capsulitis. The prevalence of adhesive capsulitis ranges from 3 to 5 percent in the general population, but it can reach 20 percent in diabetic individuals [3]. The majority of adhesive capsulitis patients are middle-aged women, and the non-dominant arm is thought to have a prevalence of between 2% and 5%. Diabetes, thyroid

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illness, and a hereditary propensity, such as Dupuytren-like disease, are other risk factors for adhesive capsulitis [4]. Diabetes, thyroid dysfunctions, and hypoadrenalism are examples of systemic factors; Examples of intrinsic factors include rotator cuff pathologies, biceps tendinitis, calcific tendinitis, and acromioclavicular arthritis; Extrinsic factors include humeral fractures, cervical disc disease, stroke, Parkinson's disease, and cardiopulmonary dysfunction [5]. The majority of frozen shoulder instances may be treated through basic care. Nonsteroidal anti-inflammatory medications (NSAIDs), glucocorticoids administered orally or as intra-articular injections, and/or physical therapy are common conservative therapies for frozen shoulder [6]. Recent controlled clinical trials have failed to provide positive effects with steroid injections into the shoulder joint [7]. A local anesthetic can be used on patients who are in a lot of pain [8]. The MUA technique can be used and is made up of three main parts: manipulation, anesthesia, as well as arthroscopic release [9]. Apprehension and a sense of urgency for functional restoration may be reduced if they are aware and understand that it may take many years before symptoms are totally cured [10]. Physical examination plays a significant role in diagnosis, which can be challenging depending on the stage of the disease and the presence of concurrent shoulder pathology [11]. It is still unclear how frozen shoulder affects those who are affected [12]. Stretching, strengthening exercises, proprioceptive neuromuscular facilitation (PNF), and mobilization therapies are all available to reduce discomfort and increase glenohumeral ROM while treating frozen shoulder. Electrotherapy methods such as ultrasound (US), interferential therapy, transcutaneous electrical nerve stimulation, short wave diathermy, and LASER are also utilized [13]. The role of scapular motion adaptation in FS rehabilitation may be important [14]. Prior to being sent to a surgeon, the majority of patients are recommended a course of physiotherapy [15]. Other treatments for adhesive capsulitis, such as ultrasound, massage, iontophoresis, and phonophoresis, have not been demonstrated to be beneficial [16]. The purpose of this study was to determine if scapular mobilization combined with glenohumeral mobilization is more effective than glenohumeral mobilization alone for improving patient recovery and rehabilitation and to provide clinicians with more information and literature regarding these combined therapies because there is a lack of it.

METHODS

It is a single blinded, Quasi-Experimental study. The methods of non-probability-purposive sampling were used. A sample size of 30 patients were calculated through the formula: $n=2\sigma^2 (Z1-\alpha+Z1-\beta)^2/(\mu o-\mu\alpha)^2$. The patients were screened and evaluated for frozen shoulder in OPDs of Physiotherapy Department of Govt. Hospitals of Faisalabad. The duration of the study was 9 months after the approval from research and ethical committee. The criteria used to select participants were; patient, both sexes, 40-60 years old, with shoulder pain and limited range of motion during flexion, abduction, and external rotation movements, as well as difficulties with ADLs. Participants were excluded on the basis of: Surgical stabilization of shoulder, Other pathological conditions including rotator cuff tear, tendonitis, Shoulder and neck region malignancies, History of trauma or accidental injuries of upper limb, History of stroke, History of mastectomy and coronary artery bypass grafting (CABG), Those with Rheumatoid arthritis, osteoporosis, or disorders of the cervical spine, elbow, wrist, or hand. Data collection tools used in this study were: Numeric pain rating scale (NPRS), Shoulder Pain and Disability index, EuroQol-5 Dimension (EQ-5D). Thirty participants were recruited according to the inclusion and exclusion criteria from different OPDs of Physiotherapy Department of Government hospitals of Faisalabad and divided into Group 1 and Group 2, containing 15 individuals each. Purpose of the study was explained to all the subjects and the written consent and demographics was obtained from them before participating in the study. Group 1 (n=15) received scapular mobilization combined with glenohumeral mobilization which includes upward rotation, downward rotation, protraction, retraction and glenohumeral mobilization which includes anterior glide, posterior glide and lateral glide holding for 5-10 seconds of 10 repetitions for four weeks. Group 2 (n=15) received glenohumeral mobilization alone which includes anterior glide, posterior glide and lateral glide holding for 5-10 seconds of 10 repetitions for four weeks. Duration of session for each group was about 30 minutes. Exercise Protocols for Scapular Mobilization and glenohumeral mobilization is given in Table 1. These interventions were given to each group thrice a week. Pain, disability and quality of life were measured at 0 week and at the end of 4 weeks of intervention. The scores of patients from these scales were analyzed to find out the effectiveness of given interventions. the variables were analyzed and their frequencies and percentages were evaluated. For within group analysis the Wilcoxon test was used and the analysis of between the two groups, the Mann-Whitney test was conducted in order to see which group shows the better results. Data were entered and analyzed by SPSS 25.0. P-value <0.05 was considered significant.

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FITT	Scapular Mobilization	Glenohumeral Mobilization
Frequency	3 times/ week	3 times/ week
Intensity	Hold 5-10 seconds 5-10 Reps	Hold 5-10 seconds 5-10 Reps
Time	30 minutes/ session	30 minutes/ session Anterior
Type	Upward rotation Downward rotation Protraction Retraction	glide Posterior glide Lateral glide

Table 1: Exercise Protocols for Scapular and Glenohumeral Mobilization

RESULTS

The frequency of all the age groups were evaluated and it showed that the most frequent age group was between 40-50 year which means the older population is more at risk of developing frozen shoulder. 53.3% females were found to have frozen shoulder which is more than males i.e., 46.7%. out of 30 participants, 12 participants didn't have any past medical history, 5 participants had Diabetes, 9 participants had Hypertension, 3 participants had both Diabetes & Hypertension and only 1 participant had past medical history of both Diabetes & Surgery. The percentages of participants with nil, Diabetes, Hypertension, Diabetes & Hypertension and Diabetes & Surgery were 40.7, 16.7, 30, 10, and 3.3 respectively. 60 % of the patients were having left side more affected than right limb (Table 2).

Variables		Frequency (Percentage)
Age	40-50	16 (53.3%)
	51-60	14 (46.7%)
Gender	Male	14(46.7%)
	Female	16 (53.3%)
Past Medical History	Nil	12 (40.0%)
	Diabetes	5 (16.7%)
	Hypertension	9 (30.0%)
	Diabetes & HTN	3 (10.0%)
	Diabetes & surgery	1 (3.3%)
Affected side	Left shoulder	18 (60.0%)
	Right shoulder	12 (40.0%)
Duration of pain	4-6 months	13 (43.3%)
	7-9 months	13 (43.3%)
	10-12 months	4 (13.3%)

Table 2: Frequencies and Percentages of variables

A Wilcoxon Signed Rank Test for group 1 indicated that NPRS score after the treatment was statistically significantly greater than the NPRS score before the treatment, Z= -3.508, p=<0.01. Total SPADI score revealed that Total SPADI score after the treatment was statistically significantly greater than the Total SPADI score before the treatment with Z-value of -3.690 and p<0.01. And Total Health score after the treatment was statistically significantly greater than Total Health Score before the treatment Z=-3.690, p<0.01. A Wilcoxon Signed Rank Test for group 2 indicated that NPRS score after the treatment was statistically significantly greater than the NPRS score before the treatment, Z= -3.448, p= <0.01. SPADI score after the treatment was statistically significantly greater than the Total SPADI score before the treatment Z= -3.520, p<0.01. and A Total Health score after the treatment was statistically significantly greater than Total Health Score before the treatment Z=-3.358, p=<0.01(Table 3).

	Variables		N	Mean Rank.	Sum of Ranks	P value
Group 1	NPRS score after intervention	Negative Ranks	15	8.00	120.00	<0.01
	NPRS score before intervention	Positive Ranks	0	.00	.00	
	Total SPADI score after intervention	Negative Ranks	15	8.00	120.00	<0.01
	Total SPADI score before intervention	Positive Ranks	0	.00	.00	
	Total Health score after intervention	Negative Ranks	15	8.00	120.00	<0.01
	Total Health score before intervention?	Positive Ranks	0	.00	.00	
Group 2	NPRS score after intervention?	Negative Ranks	14	7.50	105.00	<0.01
	NPRS score before intervention	Positive Ranks	0	.00	.00	
	Total SPADI score after intervention	Negative Ranks	15	8.00	120.00	<0.01
	Total SPADI score before intervention	Positive Ranks	0	.00	.00	
	Total Health score after intervention	Negative Ranks	13	7.00	91.00	<0.01
	Total Health score before intervention	Positive Ranks	0	.00	.00	

Table 3: Data Analysis of NPRS, SPADI And Total Health Score: (Wilcoxon Test for Within Group Analysis)

A Mann-Whitney Test indicated that NPRS score for Group 1 after the treatment was statistically significantly greater than Group 2, p=0.05. Total SPADI score after the treatment in Group 1 was statistically significantly greater than Group 2, p=0.05. And Total Health score of Group 1 after the treatment was statistically significantly greater than Group 2, p=0.05(Table 4).

Treatment Group		N	Mean Rank.	Sum of Ranks	P value
NPRS score after intervention	Scapular + Glenohumeral mobilization (Group 1)	15	18.00	270.00	0.05
	Glenohumeral mobilization alone (Group 2)	15	13.00	195.00	0.05
SPADI score after intervention	Scapular + Glenohumeral mobilization (Group 1)	15	19.00	285.00	0.05
	Glenohumeral mobilization alone (Group 2)	15	12.00	180.00	
Health score after intervention	Scapular + Glenohumeral mobilization (Group 1)	15	18.00	270.00	
	Glenohumeral mobilization alone (Group 2)	15	13.00	195.00	

Table 4: Data Analysis of NPRS, SPADI and Total Health Score: (Mann-Whitney Test for Among Group Analysis)

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The outcomes showed that there was a more tremendous impact of scapular preparation joined with glenohumeral activation when contrasted with glenohumeral activation alone on torment, handicap, and personal satisfaction in frozen shoulder patients, as the importance esteem was viewed as 0.05 for each of the three factors which demonstrated that the examination speculation was acknowledged which was expressed as the scapular assembly joined with glenohumeral assembly is more compelling for treating patients with frozen shoulder. The current study's two groups, scapular mobilization combined with glenohumeral mobilization and glenohumeral mobilization alone, both showed significant improvement in between-group analysis. However, compared to the glenohumeral mobilization group, the mean value of scapular mobilization combined with the glenohumeral mobilization group showed greater improvements in pain, disability, and quality of life.

DISCUSSION

This study's findings were in line with those of a previous one, which was conducted in 2021. That study sought to contrast passive stretching exercises with end-range mobilization and scapular mobilization in terms of pain, disability, and range of motion in a frozen shoulder. End-range mobilization and scapular mobilization were found to be significantly more effective than passive stretching exercises in reducing shoulder pain severity, functional disability, and range of motion, despite the fact that both groups showed significant improvement [17]. An experimental study was conducted in 2019 to know the effectiveness of adding scapulothoracic joint mobilization to glenohumeral joint mobilization in increasing range of motion and functional mobility in frozen shoulder. The result of this study showed that both interventions significantly increase the range of motion and functional ability in frozen shoulder. However, when compared to each other, the addition of scapulothoracic joint mobilization increases the range of motion and functional ability more than glenohumeral joint mobilization alone [18]. In the treatment of adhesive capsulitis, a 2017 study compared the outcomes of glenohumeral mobilization alone and scapular mobilization in combination. Aftereffects of this study demonstrated that glenohumeral activation when joined with scapular preparation is more viable in diminishing agony and further developing the scope of movement in patients with cement capsulitis when contrasted with the glenohumeral assembly alone [2]. In 2016, a second study was conducted to determine whether end-range mobilization combined with scapular mobilization is effective for frozen shoulders. The purpose of this study was to compare end-range mobilization with scapular mobilization to end-range mobilization alone in terms of improving shoulder function and range of motion. Additionally, the effectiveness of end-range mobilization with scapular mobilization was evaluated. The study found that end-range mobilization combined with scapular mobilization was more effective than end-range mobilization on its own [1]. However, glenohumeral mobilization has also been shown to be effective in reducing pain, disability, and range of motion in frozen shoulders in previous research. In 2021, 40 patients with frozen shoulders participated in a quasi-experimental study. The purpose of this study was to determine how end-range glenohumeral mobilization affected frozen shoulder patients. End-range glenohumeral mobilization was found to be effective in reducing pain and disability in frozen shoulder patients, according to the findings of this study [19]. In order to compare the short-term effects of glenohumeral posterior mobilization versus conventional physiotherapy on improving the range of external rotation in subjects with frozen shoulders, a randomized clinical trial was conducted in 2015. The range of motion in external rotation, pain, and functional improvement were the goals of this study. When compared to conventional physiotherapy, the findings of this study suggested that glenohumeral posterior mobilization is an effective short-term treatment for adhesive capsulitis, reducing pain and improving joint function [20].

CONCLUSIONS

In order to compare the short-term effects of glenohumeral posterior mobilization versus conventional physiotherapy on improving the range of external rotation in subjects with frozen shoulders, a randomized clinical trial was conducted in 2015. The range of motion in external rotation, pain, and functional improvement were the goals of this study. When compared to conventional physiotherapy, the findings of this study suggested that glenohumeral posterior mobilization is an effective short-term treatment for adhesive capsulitis, reducing pain and improving joint function.

Conflicts of Interest

The authors declare no conflict of interest.

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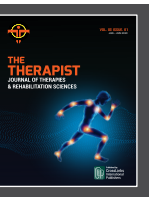

Original Article

Knowledge and Compliance Regarding Central Line Associated Blood Stream Infections (CLABSIs) Prevention among Public and Private Hospital Intensive Care Unit Nurses.

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ABSTRACT

CLABSIs are some of the utmost fatal hospital-acquired infections. CLABSIs cost up to $45,000 per infection around the world. CDC reported that in U.S. hospitals around 41,000 preventable CLABSIs occur every year, so the magnitude of the problem could be worse in Pakistan where there are still gaps in documenting the hospital data. **Objective:** To identify the nurses' knowledge and compliance and their association regarding prevention of CLABSI in public and private sector hospitals of Peshawar. **Methods:** An analytical cross-sectional study was carried out among 140 Nurses working in Intensive Care Units of (LRH & RMI) who had at least one year of experience. Enumerative or census sampling method was used to take the entire eligible ICU nurses as a sample. Data was collected through a validated and pre pilot tested questionnaire and checklist. **Results:** Around 30% of the nurses had poor knowledge, 43.6% had an average knowledge, 22.1% good knowledge and only 3.6% had an excellent knowledge regarding CLABSIs. The compliance level was found as 83.6%. Very weak positive association was found between knowledge and compliance level of nurses regarding CLABSIs on Pearson Correlation test (r). **Conclusions:** The results of this study concluded that nurses were not well equipped with the knowledge regarding CLABSIs, while there was a weak positive relationship between knowledge and compliance level among nurses. Therefore, the findings suggest that nurses need to be updated with standard guidelines and training to prevent CLABSIs.

INTRODUCTION

Central line blood stream infections (CLABSIs) are one of the major concerns among the hospitals. According to the reports of Centre for Disease Control and Prevention (CDC), CLABSI is the main contributor to the burden of Hospital Acquired Infections (HAIs) [1]. Criteria are used to verify the specific source of the infection which may or may not be attained to the central venous catheter. Among all the hospital acquired infections, CLABSIs are the most cost consuming infections, costing for around 46,000 dollars per case [2]. CLABSIs are a very prevalent issue in critical care settings and accounts for 28,000 thousand deaths annually [3]. Each year around 80 thousands cases are reported with CLABSIs in patients admitted in the intensive care unit, the actual rate would be tripled for CLABSI if include the non-ICU setting and is associated with high mortality up to 25% [4]. CDC reported that each year about 41,000 preventable CLABSIs occur in U.S, if CLABSI preventive measures taken timely so can prevent CLABSIs cases and will decrease mortality, morbidity and decrease length of hospital stay and cost [5]. Another study reported

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an estimate of approximately 250,000 CLABSIs occur each year in patients having central lines in-place and the CLASBI rate is reported higher in children as compare to adult, such as 7.4/1,000 catheter days [6]. Central Venous Catheters (CVC) is a major initiative to treat patients with acute illness, it has pros and cons. It provides one of the most effective methods for blood sampling than painful venepuncture. CLABSI can be defined as a blood stream infection confirmed by a laboratory at CVC site within initial 48 hours' placement of CVC. Majority of CLABSIs occur due to practice of central venous catheter (CVC) [7, 8]. Study showed decline in CLABSI rate while implementing CLABSI "bundles" [9]. A number of reported complications caused by CLABSIs in the literature included World Health Organization (WHO) report that CLABSI was the most common cause of HCAIs [10]. Mortality due to CLABSI specifically in ICUs patients, ranges from 14% to 45.7% [11]. Length of hospital stay due to CLABSIs has been reported to be increased by an average of 7.5 to 25 days [12]. In Pakistan, a study conducted regarding CLABSI at NICU by developing a protocol in the forms of bundles that proven to decrease CLABSI rates. NICU was a high CLABSI rate (9/1000 central line days) before the study. Thus, through study by introducing evidence-based CLABSI prevention package (CPP) in the practice to decrease CLABSI rates in the NICU within limited resources [13]. A recent systemic review and meta-analysis reported reduction in CLABSI incidence from 6.4 per 1000 catheter days to 2.5 per 1000 catheter days after implementation of insertion and maintenance bundles [14]. A study was direly needed in Pakistan to identify the adherence and knowledge of nurses regarding CLABSI guidelines.

METHODS

A cross-sectional study design was utilized for the study. Intensive/Critical care nursing is the specialized field of nursing with a focus on the utmost care of the critically ill or in very serious conditions. The study focused on the intensive care unit's nurses both working in the public and private hospitals and recorded their responses of knowledge and compliance related CLABSI. The study was conducted in the Intensive Care Units of Lady Reading Hospital Peshawar and Rehman Medical Institute Peshawar during May 2019 to July, 2019. All the Nurses were sampled who worked in Intensive care units of both hospitals LRH/MTI and RMI Hospital were included, having had one year of experience in intensive care unit. The total number of nurses who worked in the intensive care units was 140. Out of these 140, 90 nurses worked in the various critical units of LRH, while the remaining 50 worked in the RMI intensive care units by total population sampling/ total enumeration sampling/ universal sampling or census method of sampling technique. Nurses unwilling to participate, intern, head nurses/managers, and reliever were excluded. Demographic data section and research instruments of knowledge and compliance regarding CLABSIs were formed by the researcher from the CDC guidelines and validity and reliability were measured by piloting on 10 % of the sample which were not included in the data collection. After the face validity from the field experts, the derived content validity was 0.87, and the calculated Cronbach's Alpha was 0.70. Knowledge was operationalized on obtaining mean score on a standardized, pilot tested and validated questionnaire with the following parameters:

- Excellent Knowledge: More than 80% (≥20 Correct Answers on 25 Items Scale)
- Good Knowledge: 65-80% (≥16-20 Correct Answers on 25 Items Scale)
- Average Knowledge: 50 to 64% (13-16 Correct Answers on 25 Items Scale)
- Poor Knowledge: Less than 50% (≤13 Correct Answers on 25 Items Scale)

Compliance was operationalized with a questionnaire with 3 choices per item: "done completely and accurately" was given 2 marks, "done but not completely or accurately" was given one mark, and "not done" was given no marks. Nurses' compliance scores < 10 was considered as "Insufficient Compliance"; while scores equal to or higher than ≥10 was classified as "Sufficient Compliance." Data was analysed by SPSS Version 22.0 and descriptive statistics were derived for variables. Comparative analyses between the two hospitals nurses were made with the utilization of Chi-square test for association and independent t test for comparison. Pearson correlation test was used to determine association between means score of knowledge and compliance. Approval was taken from ASRB, ERB, Hospital's Departments, and Participants. Participants' rights of refusal/withdrawal, anonymity and confidentiality were also ensured.

RESULTS

In current study female gender (53.6%), diploma nursing qualification (52.9%), single in marital status (60%), LRH staff (64%), age group 26-30 years (49.3%) were in majority comparing to their other categories (table 1).

Variable		n (%)
Gender	Male	65 (46.4%)
	Female	75 (53.6%)
Qualification	Diploma in Nursing	74 (52.9%)
	Post RN BSN/BSN	66 (47.1%)
Marital status	Single	84 (60%)
	Married	56 (40%)
Data Collection Centre	LRH Peshawar	90 (28.6%)

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	RMI Peshawar	50 (21.9%)
Participants' Age (Years)	16 to 20	01 (0.7%)
	21 to 25	52 (37.1%)
	26 to 30	69 (49.3%)
	31 to 35	16 (11.4%)
	36 to 40	2 (1.4%)
	Total	140 (100.0%)
Experience in Years	0 to 3 years	75 (53.6%)
	4 to 6 years	38 (27.1%)
	7 and above years	27 (19.3%)
	Total	140 (100.0%)
ICU Experience in Years	0 to 3 years	97 (69.3%)
	4 to 6 years	29 (20.7%)
	7 years and above	14 (10.0%)
	Total	140 (100.0%)
Training regarding CLABSI	Yes	14 (10.0%)
	No	126 (90.0%)

Table 1: Demographic characteristic of the participants

The comparative analysis of the one public sector hospital (LRH) intensive care unit nurses' knowledge level regarding CLABSI with the private sector (RMI) intensive care unit nurses showed significant differences in the four categories of knowledge related to CLABSI. The RMI intensive care nurses scored significantly better in the CLABSI knowledge related categories like "good knowledge" as compared to the LRH intensive care nurses illustrated in the Figure 1 below. This difference also depicts statistically significant on Chi-square test as (Confidence level 95%, $p < 0.008$).

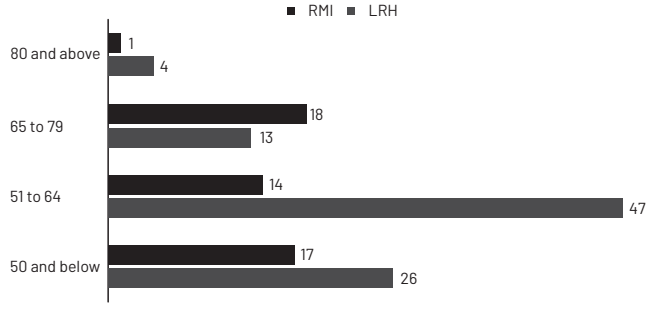

Figure 1: Comparison of LRH & RMI Nurses regarding CLABSI Knowledge

The comparative analysis of the both hospitals ICU nurses' compliance level regarding CLABSI also significantly differs. Likewise, the knowledge regarding CLABSI, the compliance level of the RMI intensive care unit nurses showed 90% compliance as compare to LRH nurses who accounted for almost 80% compliance as shown in Figure 2. This difference is although not very much but appear statistically significant (Confidence Interval (LL -1.92137 & UL -.11863), $p < 0.027$) on independent t test for both institutions equal variances assumed.

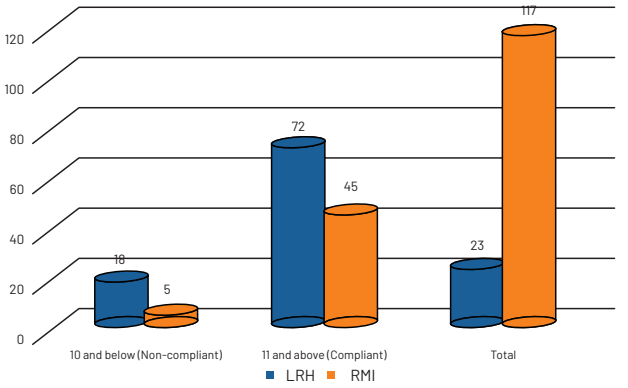

Figure 2: Comparison of LRH & RMI Nurses regarding CLABSI Compliance

Finally, the association among the ICU nurses' knowledge level and their compliance level regarding CLABSI appeared statistically significant through Pearson correlation $r = 0.211$ ($p < 0.012$). It means that ICU nurses knowledge level mean score is positively associated with their compliance level mean score in a linear fashion but very weak in strength.

DISCUSSION

While assessing the knowledge level of participants in the current study showed that majority of the nurses (43.6%) had an average level of knowledge regarding the prevention of CLABSI and only 5 (3.6%) of the participants represented excellent knowledge regarding CLABSI prevention. Similarly, another study conducted with small sample size (50 nurses) to assess the knowledge and practice of nurses regarding the prevention of central line infection reported that nurses possess very low level of knowledge regarding the prevention guidelines of central line associated infections [15]. In the current study, when the compliance categories were compared against the training received regarding CLABSI among nurses, the results showed that among those participants who had received training regarding CLABSI have (92.8%) compliance. The study findings that those nurses who have received training regarding CLABSI represents more compliance than those who have not received any training have been supported by a study in Italy, which showed compliance level of (83.6%) because of training [16]. A longitudinal cohort design conducted in Saudi Arabia has also supported this concept of our study by concluding that in their study 81.1% of nurses were compliant with the guidelines of central line infections control because of the training [17]. A weak association between the knowledge and compliance level regarding prevention of CLABSI among ICU nurses has been found in the current study results. In contrast, a study conducted by Aloush & Alsaraireh (2018) in Jordan has shown positive and strong association of knowledge and compliance regarding the prevention of CLABSI. this

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difference could be explained by the variation in the education level, trends, practices and training of nurses in the hospitals of Jordan [18]. Another study conducted on the knowledge and practices regarding the prevention of central venous catheter-related infections among health care workers has reported that low level of knowledge regarding the prevention of catheter related infections is consistent with low compliance of infection control guidelines and bundles among overall health care professionals [19]. Similarly, a study of observational cohort in nature conducted in a single private sector hospital in Turkey has notified that adherence to all bundles related to the prevention of CLABSI is consistent with maintaining zero rate of CLABSI in intensive care units, which highlights the positive correlation between compliance with the CLABSI bundles and CLABSI preventions [20]. Furthermore, a study conducted in Lahore Pakistan has also supported this fact that those nurses who have less knowledge regarding the prevention of central line associated infections have less compliance and practice of guidelines regarding central line associated infections [21]. Discrepancy with the similar and contrast findings are due to multiple factors like limited number of studies on both the variables knowledge and compliance in studies, lack of standardized valid and reliable tools, and scarce RCTs or systematic review studies.

CONCLUSIONS

Intensive care nurses deal with the critical care patients which along with other obligatory tasks cope frequently with central line catheters. Infection control measures are cardinal and core practices of intensive care units; thus, this study made an attempt to measure the knowledge and compliance level of critical care nurses regarding CLABSIs. Like other studies, this study also establishes a positive association between nurses' knowledge and compliance, although this association is very weak, but it provides a base for other studies to find out such association. A comparison was made between the private and public hospitals nurses in which, significant differences were found which shows that a number of factors influence nurses' knowledge and compliance level regarding CLABSI. Continuous professional development is the focus and play key role for the desirable behaviour and source of modification in cognitive and psychomotor domains. In that instance, this study identified that most of these nurses remain deprived of the formal continuous and up to-date training and highlighted this problem for the policy makers to act accordingly.

Conflicts of Interest

The authors declare no conflict of interest

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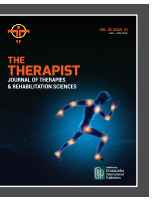

Original Article

Gender Comparison of Severity of Pain, Stiffness, and Functional Limitation Among Second Stage Knee Osteoarthritis Patients with Diabetes

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ABSTRACT

Osteoarthritis (OA) and diabetes mellitus (DM) are two medical conditions that frequently exist together and cause poor consequences. OA is described as joint pain and is one of the main reasons for impairment. Diabetes is high levels of glucose in blood because of disruption in insulin metabolism. **Objective:** To compare gender variations of severity of pain, stiffness and difficulty in functional performance among patients of second stage knee OA with diabetes. **Methods**: Data were collected from 360 individuals with mean age 52.32 ± 4.989 years for males and 50.73 ± 4.763 years for females. Individuals with definite osteophytes in knee joint and clinically diagnosed DM were included in the study. The severity of stiffness and functional limitation was calculated using WOMAC questionnaire. **Results:** The mean of pain score was 9.0833 ± 3.04322, stiffness score was 4.3389 ± 1.12446 and the mean of physical function score was 34.0944 ± 8.65135. Overall, 109 patients had less severe symptoms while 71 had more severe symptoms. Among 180 female participants, n=15 had mild, n=139 had moderate and n=26 had severe pain on NPRS. The mean of the pain score was 9.8778 ± 2.90762. The mean of stiffness score was 4.5167 ± 1.28365 and the mean of physical function score was 37.1611 ± 7.98963. **Conclusion:** Our findings concluded that the gender difference of severity of pain and physical function limitation was statistically significant, but no significant difference was found in severity of stiffness. Also, females with diabetes had more severe symptoms than males with diabetes.

INTRODUCTION

Osteoarthritis (OA) is a long-standing disorder of the joints, in which there is wear down of the bone and joint cartilage. In the aged population worldwide, it is the most frequent type of joint disease with huge problems for fitness and day-to-day activities. Pain, stiffness, weakness, and considerable impairment are symptoms of OA. It affects an individual's overall health and causes problems for people with carrying out daily activities like walking, scrooching, and climbing stairs. According to literature, 10–20% of the older population is affected by osteoarthritis with the incidence increasing continuously. Females and older humans are affected more frequently than men with the

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age of 45–65. According to a study, osteoarthritis of the knee is more frequent than hip OA. Generally, 14.7% of female and 10.5% of male population are affected by knee OA. It is hastily becoming a substantial medical and economic burden to the world [1]. The actual reason of OA is not known but the disease is considered to have several imbricating conditions which may be the result of different factors like family history, age, metabolic elements, physical elements, and environmental elements [2]. According to American College of Rheumatology, knee osteoarthritis is a group of disorders that causes joint inflammation due to changes in articular cartilage and bone [3]. 7% of males and 11% of females are affected by KOA. Trauma, malnutrition, knee bending for long periods of time, and ligamentous damage are the most important causes of knee OA among young adults of age 25–35 while bilateral knee OA is mainly caused by obesity [4]. Advancing age, increased weight, increased blood pressure, high blood glucose, female sex, history of knee injury, compromised strength of quadriceps muscle, and increased physical burden are the risk factors of knee OA [5]. Knee osteoarthritis (KOA) is a chronic, devolutionating disorder that advances with age. It is a progressive disorder that causes pain and limits functional activities. Persistent systemic inflammation occurs due to increased blood glucose levels that results in changes of body organs along with joints. Another outcome of high blood glucose is the formation of advanced glycation end products (AGE) that causes amplification of cartilage stiffness and bone delicacy by accumulating anywhere in the body [6]. Systemic inflammation can cause persistent conditions like diabetes that is linked up with outcomes which promote inflammation and degradation [7]. Diabetes is an independent risk factor for OA prevalence and progression. Proof is increasing on the affiliation of type II diabetes mellitus with osteoarthritis [8]. The purpose of the current study was to compare the gender differences in severity of pain, stiffness and functional limitation among second stage knee osteoarthritic patients with diabetes. We hypothesized that significant difference of severity of pain, stiffness and functional limitation would be found between both genders in second stage of KOA with diabetes.

METHODS

The data were collected from 360 patients, 180 males and 180 females of second stage knee osteoarthritis and clinically diagnosed diabetes from Sadiq Physiotherapy Clinic, Minhaj Physiotherapy Clinic, Services Hospital, Ganga Ram Hospital, Ghurki Trust Teaching Hospital and Sheikh Zayed Hospital. The sample size was calculated using online software named RaoSoft with 95% CI and 5% margin of error. Approval from the ethical committee of the hospital and to conduct this study was obtained. Before taking the data, written consent was taken from the patients. The whole procedure was explained to the participants. Inclusion criteria were patients aged from 45-62 years, Diabetic patients who were clinically diagnosed and KOA. Patients were excluded if they had Knee injections or Lower limb surgery in the past 6 months. The western ontario and mcmaster universities arthritis index (WOMAC) was used to measure the severity of pain, stiffness, and functional limitation in second stage KOA patients with diabetes. WOMAC has a total score range of 0 to 96 where 0 is the best health status while 96 is the worst health status. For the better understanding of the scoring and for better division of results, we took the mean of WOMAC total scoring which was 48. So, the scores ranging from 0-48 were considered good health status and scores ranging from 49- 96 were considered poor health status which meant the patients scoring more than 48 were considered to have increased pain, stiffness and functional limitation [9]. Data were entered and analyzed by SPSS 25.0. All the quantitative variables were presented by mean ± SD and qualitative with frequency and percentages, Independent sample t-test was applied to see the gender-based difference among study variables. p-value<0.05 was considered as significant.

RESULTS

Among 360 total participants, the mean age of male participants (n=180) was 52.32 ± 4.989 years. The mean age of female participants (n=180) was 50.73 ± 4.763 years. The minimum age was 45 years while maximum age was 62 years for both genders. n=180 (50%) were males and n=180 (50%) were females. Mean duration of diabetes was 9.99 ± 7.299 years for male participants and 7.22 ± 5.109 years for female participants. Minimum duration was 1 year for both genders while maximum duration was 32 years for male participants and 29 years for female participants as shown in the table 1.

Variables	Male	Female
Age (Mean ± SD/Range)	52.32 ± 4.98 (45-62)	50.73 ± 4.763 (45-62)
Diabetes Mellitus	9.99 ± 7.299	7.22 ± 5.109

Table 1: Descriptive Statistics for Age and diabetes mellitus (Years)

Among 180 male participants, n=13 (7.2%) had mild, n=152 (84.4%) had moderate and n=15 (8.3%) had severe pain. The mean of pain score was 9.0833 ± 3.04322. The minimum pain score was 3 while maximum score was 16 out of 20. The mean stiffness score was 4.3389±1.12446. The minimum stiffness score was 2 while maximum score was 7 out of 8. The mean of physical function score was 34.0944 ± 8.65135. The minimum physical function score was 17 while maximum score was 58 out of 68. Among 180 female

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participants, n=15 (8.3%) had mild, n=139 (77.2%) had moderate and n=26 (14.4%) had severe pain. The mean of the pain score was 9.8778 ± 2.90762. The minimum pain score was 3 while maximum score was 17 out of 20. The mean of stiffness score was 4.5167 ± 1.28365. The minimum stiffness score was 0 while maximum score was 8 out of 8. The mean of physical function score was 37.1611 ± 7.98963. The minimum physical function score was 21 while maximum score was 58 out of 68. There was significant difference among pain and functional outcome among gender (p-value < 0.05) as shown in table 2.

Variables	Male	Female	p-value
Pain (Mean ± SD /Range)	9.08 ± 3.04 (3-16)	9.877 ± 2.90 (3-17)	0.003
Total stiffness	4.33 ± 1.12 (2-7)	4.51 ± 1.2 (0-8)	0.14
Severity of Functional limitation	34.09 ± 8.65 (17-58)	37.16 ± 7.98 (21-58)	0.000

Table 2: Gender-based difference in Pain Stiffness and Severity of functional Limitations

Among 180 male participants, n=13 (7.2%) had mild, n=152 (84.4%) had moderate and n=15 (8.3%) had severe pain. Among 180 female participants, n=15 (8.3%) had mild, n=139 (77.2%) had moderate and n=26 (14.4%) had severe pain (Figure 1).

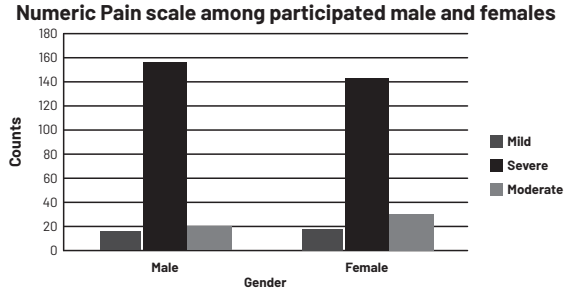

Figure 1: Numeric pain rating scale (NPRS) among both genders

DISCUSSION

The incidence of co-morbidities in patients was investigated with end-stage KOA and their effects on pain and physical function. Stair-climbing test (SCT), 6-minute walk test (6MWT), timed Up and Go (TUG) test, gait analysis and WOMAC was used for physical function examination. Pain was measured using VAS. Their results confirmed associations of comorbidities with higher WOMAC pain scores, physical functions, and QOL in patients with end-stage knee OA. Patients with degenerative bone disease had significantly higher WOMAC pain score (p=.017) and lower gait speed (p=.031) than those without. Patients with diabetes had significantly higher scores for SCT ascent (p=.033) than those without, and patients with hypertension had significantly lower scores for the 6MWT (p=.037) than those without [9]. Likewise, our study investigated the effects of diabetes on pain, stiffness and physical function in patients with second stage knee osteoarthritis. WOMAC index and NPRS was used for measuring pain, stiffness and physical function score. One-way Annova was applied to find the differences between both genders. The difference of total pain score was statistically significant with (p=.012). The difference of total stiffness score was statistically non-significant with (p=.163) and the difference of total physical function score was statistically significant with (p=.001) between both genders. A previous study by Wen *et al.*, investigated the gender variations of knee pain severity and its distribution in diabetic vs non-diabetic patients with advanced stage osteoarthritis. They also investigated the effects of diabetes medicine on these factors. They had total 489 subjects with 30% males and 28% females (p=0.03). Among 188 male participants and 301 female participants, mean of NPRS score was 7.5 ± 0.17 and 7.9 ± 0.13 with p=0.04. Conclusion of the study was that males with diabetes had more severe joint pain and took more medication for pain than males without diabetes [10]. The current study aimed at comparing the gender differences of severity of pain, stiffness, and functional limitation between second stage knee osteoarthritic patients with diabetes which was not previously researched. Our total participants were 360 out of which 50% were males and 50% were females. Among 180 male participants, 7.2% had mild, 84.4% had moderate and 8.3% had severe pain. Among 180 female participants, 8.3% had mild, 77.2% had moderate and 14.4% had severe pain. Our study concluded that diabetic females had more severe knee osteoarthritis symptoms as compared to diabetic males [11]. Comorbidities including diabetes mellitus (DM) must be investigated in patients with OA to determine who is at higher risk for experiencing pain and numerous joint distributions and who would benefit most from preventative measures. Increasing data suggests that those with OA and DM have more severe pain [12-14]. Higher pain severity in those with knee OA who also have DM may be explained by the fact that people with DM tend to have more systemic inflammation than those without DM [15]. Those with diabetes and advanced knee OA have been shown to have a greater concentration of inflammatory markers including interleukin-6 (IL-6) in their synovial fluid, as well as higher synovitis scores [16]. Previous research by Schett *et al.*, however, focused on patients with advanced, severe OA who were slated to have arthroplasty [12]. Recent research by Alenazi *et al.*, has shown that elevated levels of the blood sugar marker hemoglobin A1c are associated with higher pain severity in patients with localized OA, even when medicines are taken into account [17]. Previous studies by Frilander *et al.*, tended to ignore the effects of other metabolic illnesses, such as DM, and instead concentrated on one aspect of metabolic

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syndrome, such as obesity and its association with unilateral or bilateral knee pain [18]. A previous cross-sectional study by Majjad *et al.*, investigated the association between diabetes and msk disorders. A total of 376 subjects with type I and type II diabetes mellitus were included. The mean age of participants was 54 years, ranging from 45–62 years. The mean duration of diabetes was 8 years with minimum 4 years and maximum 13 years duration [19]. Similarly, the current study compared the effects of diabetes on knee osteoarthritis symptoms between both genders. 360 diabetic participants were included with mean age 52.32 ± 4.989 and 50.73 ± 4.763 years for male and female patients, respectively. The mean of diabetes duration for males was 9.99 (7.299) years and it was 7.22 (5.109) years for females [20].

CONCLUSIONS

There was statistically significant gender difference of severity of pain and physical function limitation, but no significant difference was found in severity of stiffness between both genders. The study also concluded that females with diabetes had more severe symptoms of knee osteoarthritis as compared to males with diabetes.

Conflicts of Interest

The authors declare no conflict of interest

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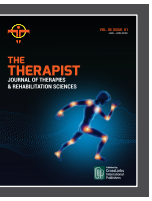

Original Article

Impact of Stuttering on Identity Construction in Women: Speech Language Pathologists (SLP) Perspective

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ABSTRACT

Stuttering is a complex communication disorder characterized by involuntary audible or inaudible stops, repetition, prolongations, blocks, and other symptoms. **Objective:** To find out the impact of stuttering on identity construction in women through perspective of SLP. **Methods:** It was a cross-sectional study. Convenient sampling technique was used. It was conducted through social media platforms or online survey by using a self-designed questionnaire. Duration of the study was four months from March 2022 to June 2022, after the approval of DRC. Sample size was 179 that were taken based on random sampling. Experienced SLPs were included in this study. Data analysis was done using IBM SPSS 23 version. Method of statistical were employed which include the descriptive analysis like mean, range, standard deviation, and chi square test. **Results:** According to the study's findings, stuttering has an impact on every aspect of a woman's life. Results indicated that 90(50.3%)stutters were anxious in speaking in social situations, 66(36.9%) stutters feel difficulty in interpersonal and social interactions, 57(31.8%) stutters had extra, and unnecessary facial movements and 68(38.0%) stutters feel that stuttering is affecting their academics performance. All of these factors suggest that stuttering has a significant impact on a woman's identity. **Conclusion:** It is concluded from present study that stuttering had negative impact in developing identity in women.

INTRODUCTION

Stuttering has become more internationally accepted as a complex communication problem represents a complex interaction of environmental, genetic, and constitutional factors [1]. As speaking is humans' major means of communication, it's not unexpected that stuttering is a disease of speech production, has been linked to a number of issues in their lives. SLPs who's specialized in stuttering treatment must not only handle the symptoms of impaired speech but also understand the multidimensional impact of a person's psychological, emotional, and cultural factors on stuttering [2]. Stuttering is a verbal communication disorder characterized by involuntary sound or word repetitions or prolongations which can be heard or silent. These are hard to control and can be accompanied by other behaviours as well as emotional issues such as anxiety, guilt or frustration [3]. Although stuttering is a symptom instead of a condition, the word is used to describe both the disorder and the symptom [4]. Stuttering also known as developmental stuttering is a common fluency issue that begins in childhood. It typically begins before puberty, between the ages of two and five, with no apparent signs of a brain damage or other unexplained cause [5]. After a defined brain damage, such as a stroke, intra-cerebral bleeding or head trauma, neurogenic or acquired stuttering develops. It's an uncommon occurrence that's been seen after brain injuries in a variety of area [6]. This

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kind has not associated with stuttering in the past. Psychogenic stuttering is uncommon and is thought to be caused by a painful emotional or psychological event. Despite the fact that this sort of fluency disorder has been documented in the literature, the authors have seen a few of the thousands of clients diagnosed of stuttering as a result of emotional or psychological stress [7]. Covert stuttering is defined as the excessive use of secondary behaviours to cover a stutter. *Behavioural symptoms* of stuttering, Syllables are repeated unconsciously, particularly at the start of words [8]. Stuttering had reported to be more common in men than in women with a 2.4:1 ratio [9]. We may define the many hypotheses of stuttering as being based on genetics, child development, neurosis, and learning and conditioning just as we do with other speech disorders[10]. The representation of oneself that develops from interaction in/with multiple groups of others in a number of social circumstances is referred to as identity. The World Health Organization's International Classification of Functioning, Disability, and Health refer to the quality of life of PWS by identifying not only the symptoms of stuttering but also the impact of those symptoms on their ability to engage in daily tasks. Most stutterers are employed at a lower level than their intellectual and educational potential due to their stuttering issue and lack of self-confidence. In Pakistan, the prevalence of stuttering is increasing. The five components of stuttering are emotional, behavioral, cognitive responses, environmental and overall influence. All of these components influence the stutterer's quality of life. The framework demonstrates the strong link between the environment and a stuttering person's ability to perform effectively [11]. The rationale of the study was to find out the impact of stuttering in women as there were many studies conducted internationally and nationally on impact of stuttering but limited study on impact of stuttering on identity construction in women. So, this study is conducted to find out the impact of stuttering in women at Pakistan.

METHODS

A total of 179 speech therapists were included in this study based on random sampling. Data was collected from the SLPs by using a self-designed questionnaire. The questionnaire constituted the questions regarding impact of stuttering. This is cross-sectional study was conducted between March 2021 to Jun 2021 at University of Lahore, Lahore using Convenient sampling technique. Verbal consent from the SLPs was taken. Doctors, physiotherapist, occupational therapist, psychologist and other professionals were excluded from the study. In this study there were no ethical issues because this is not experimental study. Data analysis was done using IBM SPSS version 23.0 version. Method of statistical were employed which include the descriptive analysis like mean, range, standard deviation, and chi square test.

RESULTS

In Table 1 out of 179 SLPs, 158(88.3%) were female and 21(11.7%) were male in the study. On asking the speech therapists about their qualification out of 179(100.0%) almost 98(54.7 %) responded with BSSLP, 70(39.1%) responded with MSSLP and 11(6.1%) responded that they have done PGD in speech therapy. On asking the speech therapists about their work setting out of 179(100.0%) almost setting 93(52%) responded that they are working in Hospital and 86(43%) responded that they are working in Rehabilitation centres. On asking the speech therapist about their work experience 161(89%) were responded with 1 to 5years, 13(7%) were responded with 6 to 10 years, 3(1.7%) were responded with 11 to 15 years and 2(1.1%) were responded with more than 15 years, as shown in Table 1.

Demographics		Frequency (%)
Gender	Male	21 (11.7%)
	Female	158 (88.3%)
Degree of Speech Therapists	BSSLP	98 (54.7%)
	MSSLP	70 (39.1%)
	PGD	11 (6.1%)
Work Setting	Hospital	93 (52.0%)
	Rehabilitation centre	86 (43%)
Work Experience	1 to 5	161 (89.9%)
	6 to 10	13 (7.3%)
	11 to 15	3 (1.7%)
	More than 15	2 (1.1%)

Table 1: Participants Characteristics

In Table 2 results indicated that on asking the question (Do you think that stutter have fear that she may stutter or fear that how would she speak further if she stutter?) from the speech therapist, 31(17%) were responded with "Not at All', 94(52.5%) were responded with "Sometimes" and 54(30.2%) were responded with "Almost Always". On asking the question (Do you think that stutter avoid talking in telephone?) from the speech therapist, 25(14%) were responded with "Not at All', 112(62.6%) were responded with "Sometimes" and 42(23.5%) were responded with "Almost Always". On asking the question (Do you think that stutter avoid talking with her lecturer/boss?) from the speech therapist, 11(6.1%) were responded with "Not at All', 106(59.2%) were responded with "Sometimes" and 62(34.6%) were responded with "Almost Always". On asking the question (Do you think that stutter avoid social and public speaking situations?) from the speech therapists, 6(3.4%) were responded with "Not at All', 83(46.4%) were responded with "Sometimes" and 90(50.3%) were

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responded with "Almost Always". On asking the question (Do you think that stutter feel fearful and anxious in new speaking situations?) from the speech therapists, 6(3.4%) were responded with "Not at All', 65(36.3%) were responded with "Sometimes" 108(60.3%) were responded with "Almost Always". On asking the question (Do you think that stutter change words that she wants to say?) from the speech therapists, 19(10.6%) were responded with "Not at All', 104(58.1%) were responded with "Sometimes" and 56(31.3%) were responded with "Almost Always". On asking the question (Do you think that stutter feel that her speech is worse under stressful situation?) from the speech therapists, 14(7.8%) were responded with "Not at All', 77(43.0%) were responded with "Sometimes" and 88(49.2%) were responded with "Almost Always".

Questions	Response		
Speech related fear, avoidance and anxiety	**Not at all**	**Sometime**	**Almost always**
Do you think that stutter have fear that she may stutter or fear that how would she speak further if she stutter?	31 (17.3%)	94 (52.5%)	54 (30.2%)
Do you think that stutter avoid talking in telephone?	25 (14.0%)	112 (62.6%)	42 (23.5%)
Do you think that stutter avoid talking with her lecturer/boss?	11 (6.1%)	106 (59.2%)	62 (34.6%)
Do you think that stutter avoid social and public speaking situations?	6 (3.4%)	83 (46.4%)	90 (50.3%)
Do you think that stutter feel fearful and anxious in new speaking situations?	6 (3.4%)	65 (36.3%)	108 (60.3%)
Do you think that stutter change words that she wants to say?	19 (10.6%)	104 (58.1%)	56 (31.3%)
Do you think that stutter feel that her speech is worse under stressful situation?	14 (7.8%)	77 (43.0%)	88 (49.2%)
Do you think that stutter feel any variation in her speech in different speaking situations?	8 (4.5%)	105 (58.7%)	66 (36.9%)
Do you think that stutter feel she is helpless, depressed, frustrated?	9 (5%)	112 (62.6%)	58 (32.4%)

Table 2: Questions related to Speech related fear, avoidance and anxiety

In Table 3 on asking the question (Do you think that stutter avoid talking to opposite sex?) was asked from the speech therapist, 9(5%) were responded with "Not at All', 121(67.6%) were responded with "Sometimes" and 49(27.4%) were responded with "Almost Always". On asking the question (Do you think that stuttering of women prevents her from enjoying life?) was asked from the speech therapist, 22(12.3%) were responded with "Not at All', 112(62.6%) were responded with "Sometimes" and 45(25.1%) were responded with "Almost Always". On asking the question (Do you think stuttering makes it harder for you to make friends?) from the speech therapist, 16(8.9%) were responded with "Not at All', 96(53.6%) were responded with "Sometimes" and 67(37.4%) were responded with "Almost Always". On asking the question (Do think that stuttering have any influence on her social life in establishing friendships with family and peers?) from the speech therapist, 15(8.4%) were responded with "Not at All', 94(52.5%) were responded with "Sometimes" and 70(39.1%) were responded with "Almost Always".

Questions	Response		
Interpersonal and social relationship	**Not at all**	**Sometime**	**Almost always**
Do you think that stutter avoid talking to opposite sex?	13 (7.3%)	109 (60.9%)	57 (31.8%)
Do you think that stuttering of women prevents her from enjoying life?	22 (12.3%)	112 (62.6%)	45 (25.1%)
Do you think stuttering makes it harder for you to make friends?	16 (8.9%)	96 (53.6%)	67 (37.4%)
Do think that stuttering have any influence on her social life in establishing friendships with family and peers?	15 (8.4%)	94 (52.5%)	70 (39.1%)

Table 3: Questions related to Interpersonal and social relationship

In Table 4 on asking the question (Do you think that stutter have any extra and unnecessary facial movements?) from the speech therapist, 13(7.3%) were responded with "Not at All', 109(60.9%) were responded with "Sometimes" and 57(31.8%) were

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responded with "Almost Always". On asking the question (Do you think that stutter make sudden forceful or irregular movements with her head, arms, or body during speech attempts?) from the speech therapist, 4(2.2%) were responded with "Not at All', (65.9%) were responded with "Sometimes" and 57(31.8%.) were responded with "Almost Always". On asking the question (Do you think that stutter breathe with excessive effort while trying to speak?) from speech therapist, 4(2.2%) were responded with "Not at All', 99(55.3%) were responded with "Sometimes" and 76(42.5%) were responded with "Almost Always".

Questions	Response		
Behavioural reaction to stuttering	**Not at all**	**Sometime**	**Almost always**
Do you think that stutter have any extra and unnecessary facial movements?	13 (7.3%)	109 (60.9%)	57 (31.8%)
Do you think that stutter make sudden forceful or irregular movements with her head, arms, or body during speech attempts?	4 (2.2%)	115 (65.9%)	57 (31.8 %.)
Do you think that stutter breathe with excessive effort while trying to speak?	4 (2.2%)	99 (55.3%)	76 (42.5%)
Do you think that stutter use gestures to substitute your speaking?	6 (3.4%)	109 (60.9%)	64 (35.8%)
Do you think that stutter add an additional or unnecessary sound, word, or phrase to your speech?	13 (7.3%)	110 (61.5%)	56 (31.3%)
Do you think that stutter repeat a syllables, sound, word or phrases with effort?	17 (9.5%)	104 (58.1%)	58 (32.4%)
Do you think that stutter avoid speaking in certain situations?	9 (5.0%)	101 (56.4%)	69 (38.5%)

Table 4: Question related behavioural reaction to stuttering

DISCUSSION

Stuttering is a communication disorder characterized by involuntary sound or word repetitions or prolongations, which can be heard or silent [12]. The purpose of the study was to see the perception of speech therapists about impact of stuttering on women life. The study had a total of 179 SLPs, 158 of whom were female and 21 of whom were male. Women who stutter have greater problems in life than those who do not stutter, according to the results of this study. Fear, anxiety, and avoidance behaviour in different speaking contexts are also examined in the study. The findings of this study shows that stuttering disorder is associated with a higher level of general anxiety, which brings traumatic experience and makes daily tasks difficult. On reviewing the literature findings were supportive to Susan Miller and Ben C. Watson on evaluating self-perceptions of depression, state of anxiety, and communication attitude was conducted on 52 persons who stuttered and 52 people who speak fluently [13]. The results shows that adults who stutter's anxiety is restricted to their attitude toward communication circumstances as well as their response to bad communication experiences they face in their everyday lives [14]. On asking the respondent about effect of stuttering on Interpersonal and social relationships from speech therapist, almost 7% responded with "Not at all", 60% responded with "Sometimes" and 33%responded with "Almost always. Current study shows that the quality of one's social life was regarded a factor. On reviewing the literature findings were supportive to Jan McAllister, Jacqueline Collier and Lee Shepstone [15]. The study involved 16 participants, with 9 reporting that stuttering had little influence on their social well-being in terms of building friendships, and 7 reporting that stuttering had a good or negative impact on their social life. On asking the respondent about behavioural reaction to stuttering from speech therapist, almost 7% responded with "Not at all", 62% responded with "Sometimes" and 29% responded with "Almost always". The result of this study shows that 60% of the participants said that they had to struggle difficult to know syllables, sounds, words, or sentences. According to the 332 completed questionnaires, stuttering has the biggest negative impact on education and work. Many people have found speech and language therapy to be beneficial, but the nature of the advantages and the precise therapies employed were rarely mentioned [16]. On asking the respondent about effect of stuttering on educational status from speech therapist, 6% responded with "Not at all", 41% responded with "Sometimes" and 24% responded with "Almost always". Many scholars have already written about the impact of stuttering on educational status. On reviewing the literature findings were supportive to Daniels and James in 2019. Results of study showed that students who stutter were more hated and excluded from group activities than their non-stuttering peers, as well as being ignored in social activities and not permitted to participate with their peers. Students who stuttered had problems with academic performance such as oral presentations,

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reading aloud, and sustaining friendships with classmates, according to research; the primary cause was teasing, which had a detrimental influence on students who stutter. But in previous studies explain that for each of the eight scenarios, there was a significant inverse association between maximum educational accomplishment and mean self-reported stuttering severity [17]. Listeners were more inclined to choose presenters who self-disclosed their stuttering as friendlier, outgoing, and confident than speakers who did not, even after controlling for observer and speaker gender. Compared to speakers who employed a self-disclosure statement, observers were more likely to perceive presenters who did not self-disclose as aloof and bashful. When self-disclosure and observer gender were taken into account, observers were less likely to select the female speaker as being friendlier, outgoing, and confident than the male speaker. In comparison to the male speaker, observers were more likely to describe the female speaker as hostile, shy, stupid, and insecure. They were also more likely to say that they were distracted while watching the films [18]. The findings showed that the participants' perceptions of themselves, their stuttering, and their life decisions were influenced by the combination of communication, ethnicity, and culture [19]. The stigma-identity dimensions significantly contributed to the variation in AWS's distress (25%) and the negative effects of stuttering on quality of life (30%). After adjusting for demographics and neuroticism, the categories of salience, centrality, and concealment were also found to be positively predictive of distress and the negative effects of stuttering. The largest predictor of the negative effects of stuttering on quality of life was concealment, which stood out among the other predictor factors (self-rated stuttering severity, demographic characteristics, neuroticism, and the three other stigma-identity constructs). Self-rated stuttering severity was the final moderating factor [20].

CONCLUSIONS

On the basis of obtained findings it was concluded that stuttering had negative impact on women life.

Conflicts of Interest

The authors declare no conflict of interest.

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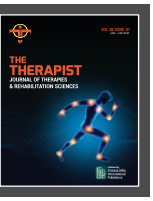

Original Article

Spiritual Perspectives and Well-Being among Stroke Patients in Rehabilitation Centres of Four Tertiary Care Hospitals of Pakistan

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ABSTRACT

Spiritual wellness acknowledges our search for deeper meaning in life. Spirituality can make it easier to cope with the physical and cognitive consequences of a stroke, as well as with any other illness. **Objective:** To identify spiritual well-being and perspective of stroke patients and its association. **Methods:** A total of 420 stroke patients with Epi info sample size calculator were selected from the rehabilitation centres of the tertiary care hospitals of Peshawar, Abbottabad and Swat. Responses recorded through demographic section as well as reliable and validated Likert type quantitative tools in an analytical cross-sectional study. **Results:** Of the 420 participants, 164 (39%) were female. The Spiritual Index of Well-being Scale (SIWB) had a mean score of 40.83 out of a possible 60 and the Spiritual Perspective Scale (SPS) had a mean score of 49.06 out of a possible 60. Spiritual perspectives and well-being were reported to be statistically significant ($p < 0.05$) with each other and with several of the demographic indices on ANOVA and post hoc tests (Games-Howell). The Pearson association between spiritual perspectives and wellbeing (r) was likewise shown to be positively highly statistically significant ($r = 0.530$, $p < 0.000$). **Conclusions:** The findings of the research complement and justify Reed's theory's theoretical assertions. Spiritual Perspectives and practises serve as a buffer and contribute to the growth of Spiritual Well-being. The inclusion of spiritual health as a component of holistic health during medical interventions has implications.

INTRODUCTION

Stroke is an umbrella term or spectrum of disorders mainly sudden loss of brain function or focal neurological deficit because of lack of blood supply to neurological tissues [1]. WHO reported that stroke is the second leading cause of disease in the world just after the ischemic heart disease, with first time worldwide stroke occurs after every two seconds [2]. In UK, stroke is said to strike every 5 minutes, with 100,000 cases each year, and 1.3 million stroke survivors over there [3]. In Pakistan, some earlier studies reported a very high prevalence rate like 4.8% in a community-based population studies [4], and 19% (the highest reported in the region almost implausible) in a study conducted in small urban slum with low socio-economic status [5]. However, the results of these studies were far much higher because of the limitation in small sample sizes, weak study designs and targeted limited single communities etc from the prevalence of other South Asian countries like India, Bangladesh and Sri Lanka which reported round about 1% prevalence [6-8]. A more accurate prevalence of stroke reported 1.2% by integrated population health survey in the 24 districts of Khyber Pakhtunkhwa province [9]. Stroke is the most crippling and

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lethal disease as reported is the largest cause of disability and dependency [10]. After stroke manifestations, a number of symptoms have been reported in research studies including physical, psychosocial and spiritual infirmities, confusion states, pain, altered speech, muscle power, memory, mood, attention, anxiety, depressive disorders, suicidal thoughts, and disrupted quality of life [11-13]. In a discipline, theory guides the research and practice and all these three constructs have a spiral connection. In nursing, Spiritual health being an integral component and in the realm of holistic care completion, Pamela G. Reed stipulated her mid-range nursing theory of Spiritual health, which not only covers the different stages of lifespan, the end-of-life care and geriatrics but also sociocultural and spiritual context application and gained well-refute from the Americas to Asia [14]. Spiritual well-being is a sense of meaning, purpose, or power within or from a transcendental source, on subjective well-being [15]. The subjective assessment of one's own sense of purpose in life, resilience in the face of adversity, and capacity to design one's own trajectory in life are all indicators of one's spiritual well-being [16]. According to a systematic review of CVA (Cerebrovascular accident) survivors, spiritual well-being necessitates changes to one's sense of self, sense of connectedness to others, and spiritual connections in addition to psychosocial and physical reconstruction [17]. Spirituality is transcendental in nature and affects an individual's traits and way of life in response to susceptibility and the onset of disease or illness. There is very little information available regarding the specific spiritual needs of particular patient subgroups due to the multifaceted nature of healthcare needs and myriad management in Stroke rehabilitation [18]. Pakistan, the second-most populous Muslim nation in the world, about the lack of research on the impact of spirituality on health and illness [19]. The significance of the current study was well supported by an extensive review of the literature on spiritual well-being in the context of health, which demonstrates how it is crucial to comprehend patients' spiritual needs in order to develop patient-centred, evidence-based holistic care that supports multidimensional well-being.

METHODS

In this study cross-sectional analytical design was used in the study. As a sample size, 420 Stroke patients were obtained through OpenEpi sample size calculator by putting the parameters of prevalence 50%, 0.05 significance level, 95% confidence level, and bound of error 05% with design effect of 1.1 from the physiotherapy and rehabilitation centres of four tertiary care teaching hospitals during April, 2019 to August, 2019. Consecutive sampling strategy was utilized as stroke patients used to visit health facilities of physiotherapy and rehabilitation centres. Those stroke patients were included who had at least three months of stroke symptoms and were diagnosed on CT scan. TIAs, not willing to informed consent and participation and those seriously ill like unconscious, comatose, memory and psychiatry problems were excluded. The data from the patients were collected through two valid and reliable questionnaires. The spiritual perspective scale (SPS) evaluates a person's adherence to particular spiritual beliefs and participation in particular spiritual practises. Ten items make up the SPS, and responses are chosen from a 6-point Likert scale. The SPS questionnaire contains ten items through 6-point Likert scale range from 1-Strongly Disagree to 6-Strongly Agree. The current study's mean spiritual perspective score was 49.06 out of 60, which exhibited high participation in spiritual activities and initiatives. The validity of SPS varies from 0.89 to 0.95 [20]. The second instrument of the study was spirituality index well-being (SIWB). This scale was created in 2004 by Daaleman and Frey and has 12 items: 6 from the domain of self-efficacy and 6 from the domain of life schemes. Each question has a 5-point scale with 1 (Strongly Agree) being the highest response and 5 being the lowest (Strongly Disagree). The average Spiritual Well-being Score among the stroke patients in the current study was 40.83 out of 60, indicating a moderate level of Spiritual Well-being. The Cronbach's alpha of SIWB is 0.91 [21]. Data collected after approval from the Advance Studies Review Board and Ethical Board of Khyber medical university. Frequency and percentages were calculated for the categorical variables while mean and standard deviation score for continuous variables. Analysis of variance (ANOVA), post hoc (Games-Howell), and Pearson correlation tests for the relationships between variables were calculated through Statistical Package for Social Sciences (SPSS) version 25.0 used for data analysis.

RESULTS

Table 1 shows Demographic characteristics of participants including gender, age, educational status, employment status, religion, length of a stroke's occurrence, hospital and co-morbid. Total number of participants were 420.

Characteristics	Dimensions	Frequency (%) (n=420)
Gender	Male	256 (61.0%)
	Female	164 (39.0%)
Age	26 through 35	12 (2.9%)
	36 through 45	60 (14.3%)
	46 through 55	66 (15.7%)
	56 through 65	124 (29.5%)
	66 and above	158 (37.6%)
	No education	230 (54.8%)

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Educational status	Matric and below	128 (30.5%)
	Intermediate	22 (5.2%)
	Degree	40 (9.5%)
Employment status	Nil	246 (58.6%)
	Public Employee	48 (11.4%)
	Private Employee	16 (3.8%)
	Self-employment	110 (26.2%)
Religion	Muslim	416 (99.0%)
	Others (Ismaili)	4 (1%)
Length of a stroke' soccurrence (Months)	3 to 12	232 (55.2%)
	13 to 24	94 (22.4%)
	25 to 36	64 (15.2%)
	37 to 48	20 (4.8%)
	49 and above	10 (2.4%)
Hospital	SGTH Swat	120 (28.6%)
	ATH Abbottabad	104 (24.8%)
	HMC Peshawar	104 (24.8%)
	LRH Peshawar	92 (21.9%)
CO-morbid	None	26 (6.2%)
	Hypertension	166 (39.5%)
	Diabetes Mellitus	60 (14.3%)
	Cardiovascular problem	6 (1.4%)
	Respiratory disease	4 (1.0%)
	Renal disease	2 (0.5%)
	More than one disease	156 (37.1%)

Table 1: Demographic Characteristics of the Study Participants (N=420)

For the purpose of determining the precise difference of the true difference or which category precisely differs, a post hoc test is advised to be applied. ANOVA produced statistically significant results when the spiritual index of well-being was used as a dependent variable and compared to the categories of spiritual perspectives. In addition, significant pairwise differences between the three categories of the spiritual perspective scale and the spiritual well-being index, as measured. Only the category of scores 31 to 45 with the category 46 and above showed a significant statistical difference ($p < 0.000$), implying that those categories of stroke patients on spiritual views score significantly better for spiritual well-being. The Pearson correlation test revealed a positive relationship between the mean score of spiritual perspective and the average score of spiritual well-being ($r = 0.530$, $p < 0.000$). Additionally, the SPS mean score was shown to be strongly correlated with both age in years ($r = 0.290$, $p < 0.000$) and the number of months since the stroke ($r = 0.136$, $p < 0.049$) (Table 2).

Parameter		Total SPS Score	Total SIWB Score
Total SPS Score	Pearson Correlation	1	.530**
	Sig. (2-tailed)		.000
	N=420	210	210
Total SIWB Score	Pearson Correlation	.530**	1
	Sig. (2-tailed)	.000	
	N=420	210	210

** Correlation is significant at the 0.05 level (2-tailed)

Table 2: Correlation of SPS with SIWB score

DISCUSSION

Most of the studies in the literature explored the spiritual paradigm in stroke population in qualitative studies or those quantitative studies in which different tools from other disciplines used rather than nursing. The average score for the Spiritual Perspective across all ethnic groups was 50.46 for Pashtuns, 49.50 for Punjabis, 45.04 for Hazaras, and 39.50 for others. When compared with the cultural groups of Appalachians, this result practically equals their average score of 48 on the spiritual perspective scale [22]. One study indicated that the homeless population's average score for Spiritual Perspectives was 47.80, mostly in shelters with Christian backgrounds [23]. Another study on the Spiritual Perspectives and practises of hospice and palliative care nurses found that they had a mean score of 49.3 on the Spiritual Perspective Scale [24]. Through the Pearson correlation test, there are statistically significant and positive relationships between spiritual perspectives and age and length of stroke. The findings are similar with a study that conducted for the spiritual perspective and health, that shows significant correlation with race and education, while the age of participants, race and gender are statistically significant reveals through MANOVA [25]. In the current study result, there is a statistically significant association between Spiritual Perspectives score on a continuous variable scale and age ($r = .29$, $p < 0.000$). Coward also found moderate correlation of self-transcendence being a construct of spirituality with older age and female gender in healthy population [26]. Other studies contrarily show lack of such statistical significance in the interventional arm in old age or late life participants' studies [27]. Spiritual Perspectives comprised matters such as participation in spiritual practises and beliefs, opinions, and interactions with others. The findings are also consistent with a study of Filipino women with breast cancer in which significant association found among Spiritual Practices, Self-transcendence and Spiritual Well-being [28]. A study of patients with haemodialysis, the involvement of significant others and a growing awareness of Spirituality as a beneficial tool for improving well-being [29]. Similarly, another study of the caregiver's burden

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related to the haemodialysis patients correlated with spiritual well-being found to be inversely related ($p < 0.001$, $r = -0.41$) positively associated on Spearman correlation test in Kerman, Iran [30]. In cross-sectional research of women with gynaecological cancer, higher levels of Spiritual practise were found to be precursors to Self-transcendence and to be associated with higher levels of Spiritual well-being [31]. Likewise, a longitudinal cohort study on volunteers in the sanatorium for training spiritual practises enhancement has shown that they tend to exhibit good psycho-spiritual well-being as well as spiritual growth and a decreased fear of death [32].

CONCLUSIONS

People develop spirituality as a cultural and religious concept and as a significant source of coping mechanisms in their state of vulnerability in order to find consolation and salvation. Spiritual needs and sustenance are just as vital to survival as are physiological demands because the human spirit is the inner core and the source of all life. Spiritual views have the potential to be strengthened for the effective acquisition of spiritual well-being, happiness, and quality of life due to the statistical significance of the findings and their status as protective variables.

Conflicts of Interest

The authors declare no conflict of interest.

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