

Research article

A study to analyse the prevalence of periarthritis among shoulder pain subjects – A cross sectional studyG. Yuvarani¹, Jibi Paul², M. Manoj Abraham³, N. Harikrishnan⁴¹Associate Professor, ²Professor, Faculty of Physiotherapy, ⁴Professor and Principal, Faculty of Pharmacy, Dr. MGR Educational and Research Institute, Chennai, Tamil Nadu, India³Professor and Principal, KG College of Physiotherapy, (The Tamil Nadu Dr. MGR Medical University) Coimbatore, Tamil Nadu, India

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Corresponding author: **G. Yuvarani**. Email: yuvarani.physio@drmgrdu.ac.in**ABSTRACT**

Introduction and Aim: Periarthritis shoulder is generally defined as a self - limiting disorder that affects mostly the diabetic persons. Periarthritis shoulder affects the older population with females at its peak. This study was intended to find out whether all the shoulder pain subjects were victims of periarthritis shoulder and to analyse the prevalence of periarthritis among subjects who were suffering from shoulder.

Materials and Methods: This study was a prospective, observational study conducted on the patients who visited the outpatient Physiotherapy Departments. Nearly 300 patients who came with shoulder pain were taken as samples. A detailed explanation about the purpose of the study was given to the subjects. The subjects included were based on the inclusion criteria pain more than 1 month, both male and female, age group of 40-60 years, both dominant and non-dominant hand, history of shoulder pain at night, progressive limitation of shoulder movement, particularly a reduction of at least half the normal range of abduction and external rotation.

Results: Based on the inclusion and exclusion criteria nearly 300 participants were selected and they were asked to fill the SPADI questionnaire. Out of 300 participants nearly 127 subjects were concluded with positive signs of periarthritis shoulder.

Conclusion: The result obtained from our study states that the severity of the disease is more among the female population. The subjects who are suffering from shoulder pain must be taken into anticipation that in future they may develop shoulder periarthritis.

Keywords: Periarthritis shoulder; SPADI; adhesive capsulitis; frozen shoulder.

INTRODUCTION

Shoulder pain ranks the third most prevalent musculoskeletal disorder after low back pain and neck pain. Shoulder pain often leads to interruption in their activities of daily living, absenteeism from work (1). Shoulder pain is more common among adults. Many authors concluded that the prevalence of shoulder pain increases with age (2-4). Some of the authors showed that middle aged people have highest prevalence rate of shoulder pain(5). Periarthritis (PA) shoulder also called as adhesive capsulitis or frozen shoulder is defined as a gradual progress in the restriction of movements, patient usually complaints about severe pain and inability to sleep on the affected side. Periarthritis shoulder affects the older population with female at its peak(6). Frozen shoulder is defined as an idiopathic condition of the shoulder characterized by the spontaneous onset of pain in the shoulder with restriction of movement in every direction (7). Frozen shoulder is at higher risk people who have immobility of shoulder due to minor trauma of upper limb, surgery, overuse injury or any other systemic illness such as DM, disorder of thyroid, CVD, Dupuytren's contracture and stroke (8-10).

Periarthritis shoulder or frozen shoulder is clinically divided into three stages namely stage I painful stage, active shoulder movement is impossible but full passive movement is produced. Stage II: frozen stage both active and passive movements of shoulder were restricted. Stage III: thawing stage – Shoulder pain negligible, and patients could move their shoulder (11). Adhesive capsulitis is a self – limiting inflammatory process that effects shoulder capsule, characterized with the progressive pain and decreased range of motion of the gleno-humeral joint in both active and passive movements (12). Periarthritis shoulder most commonly affects the older population, in particularly the females are the vulnerable group. The exact prevalence of this condition is still a debate, however few authors had quoted it to be between 2-5% among the general population (13). The annual incidence of PA is between 3% - 5% in the general population and as high as 20% among individuals with diabetes (14). The purpose of the study is to identify the prevalence of PA shoulder among large group of patients with PA shoulder.

MATERIALS AND METHODS

This study was a prospective, observational study conducted on the patients who visited the Outpatient Physiotherapy Department, ACS Medical college & Hospital, Vellappanchavadi, Chennai, Giri Balaji Physio (Pain Relief Centre), Trichy, Rajesh Physio care, Arni, Thiruvannamalai. Nearly 300 patients who came with shoulder pain were taken as samples. All the subjects who suffered from shoulder pain were recruited for this study. A detailed explanation about the purpose of the study was given to the subjects. A basic demographic data was collected from the participants that include, name, age, sex, occupation, history of the illness. The subjects included were based on the inclusion criteria pain more than 1 month, both male and female, age group 40-60 years, both dominant and non-dominant hand, history of shoulder pain at night, progressive limitation of shoulder

movement, particularly a reduction of at least half the normal range of abduction and external rotation. The subjects excluded were those with recent surgery around shoulder joint, pace makers, recent steroid injection around shoulder joint, subjects under medications, Intrinsic shoulder diseases as biceps tendinitis, rotator cuff tears, parkinsonism, cervical radiculopathy, rheumatoid arthritis, infection.

Based on the inclusion and exclusion criteria nearly 300 participants were selected and they were asked to fill the SPADI questionnaire. Out of 300 participants nearly 127 subjects were concluded with positive signs of periarthritis shoulder.

Data analysis

All the data obtained were statistically analysed using SPSS software version 23 and the results were derived.

Table 1: Age-wise analysis of shoulder pain among the respondents

Age level in years	Gender		Side (n=127)		SPADI (n=127)	
	Male (n=66)	Female (n=61)	Left side	Right side	Less difficulty	High difficulty
Less than 40	7 (10.60)	11 (18.03)	7 (5.51)	11 (8.67)	11 (8.67)	7 (5.51)
41-50	35 (53.03)	28 (45.90)	22 (17.32)	41 (32.28)	25 (19.68)	36 (28.35)
51-60	21 (31.82)	20 (32.79)	17 (13.38)	24 (18.90)	10 (7.87)	31 (24.41)
Above 60	3 (4.54)	2 (3.28)	5 (3.94)	0 (0.00)	0 (0.00)	5 (3.94)
Chi-Square	1.697		8.211**		11.020**	
p-value	0.638		0.042		0.012	

Source: Field Survey.

Note: ** indicates at 5 percent level of significance.

RESULTS

From Table 1, on comparing the result obtained between age against gender, side affected, SPADI score it is very clearly stated that out of 127 identified subjects, 66 male and 61 female subjects were affected. The data obtained were clearly categorised under four divisions as less than 40 years, 41-50 years, 51-60 years and above 60 years. Under less than 40 years category a total of 18 subjects were identified and nearly 07 (10.60%) male subjects and 11 (18.03%) female subjects were affected. Among these subjects nearly 7(5.51%) were affected on their left hand side whereas 11 (8.67%) were right hand affected. On analysing the SPADI in this category 11 (8.67%) fall under less difficulty and 7 (5.51%) under high difficulty. At the age level of 41-50 years, a total of 63 subjects were identified of which 35 (53.03%) male subjects and 28 (45.90%) female subjects were affected. Among these subjects 22 (17.32%) were affected on left side and 41 (32.28%) were affected on right side. When the SPADI had been reviewed for this age group, 25 (19.68%) subjects fall under less difficulty, while 36 (28.35%) under high difficulty. At the age level of 51-60 years, a total of 41 subjects were identified of which 21 (31.82%) male subjects and female subjects were affected. Among these subjects

17 (13.38%) were affected on left side and 24 (18.90%) were affected on right side. When the SPADI had been reviewed for this age group, 10 (7.87%) subjects fall under less difficulty, while 31 (24.41%) under high difficulty. Above 60 years category, a total of 5 subjects were identified of which 3 (4.54%) male subjects and 2 (3.28%) female subjects were affected. All 5 (3.94%) of these subjects were affected on the left side, whereas no subjects were found who were affected on the right side. When the SPADI had been reviewed for this age group, all the 5 (3.94%) subjects fall under high difficulty.

From the above descriptive statistics, subjects who were affected with periarthritis shoulder above the 40 years 11% were under mild and 7% under severe category. Between the age group of 41-50 years, 38.1% of subjects fall within mild and 61.9% in severe category. Between 51-60 years, 24.4% of the subjects recruited fall under mild and 75.6% under severe category. Above 60 years there is 0% mild and 5% in severe category. The above table explicitly showed that periarthritis shoulder usually impacts people between the ages of 40 and 60, however the exact scenario can be seen between the ages of 51 and 60 years.

Table 2: Gender-wise analysis of shoulder pain among the respondents

Gender	Side (n=127)		SPADI (n=127)	
	Left side	Right side	Less difficulty	High difficulty
Male	22 (17.32)	44 (34.64)	31 (24.40)	35 (27.56)
Female	29 (22.83)	32 (25.20)	17 (13.38)	44 (34.64)
Chi-Square	2.663		4.919**	
p-value	0.103		0.027	

Source: Field Survey.

Note: ** indicates at 5 percent level of significance.

According to Shoulder Pain and Disability Index (SPADI) of 10-point scale, this study takes 0 to 5 less difficulty and 6 to 10 high difficulties.

From the table 2, it can be compared that the male: female ratio is almost equal. Out of 127 subjects identified with periarthritis shoulder, 66 were male and 61 were female subjects. However, the severity of the condition varies as nearly 31 (24.40%) male subjects fall under mild and 35 (27.56%) in severe form of disease. On the other hand, about 17 (13.38%) female subjects fall under mild and 44 (34.64%) in severe form. This descriptive statistic clearly emphasizes that though the overall female ratio is somewhat less than the male but the severity of the disease is more among the female subjects.

On analysing all the data obtained this study concludes that out of 300 subjects who were screened for the periarthritis shoulder, nearly 127 subjects had shown to be victims of this condition. In our study the total number of male population were 66 and female were 61, the severity of the disease was higher in females than male population. On comparing the age group most of the subjects were between the age of 41-60 years.

DISCUSSION

From our study, the age distribution for periarthritis shoulder is found to be 41-50 years. There are many studies that had concluded the age of study we found that the Right side is more affected than the left side. Frozen shoulder affected were between 40-60 years, however, in our study, nearly 49.6% of subjects were between the age group of 41-50 years. On considering the gender affected with periarthritis 66 male and 61 female subjects were affected. In the present study, females had a higher prevalence of frozen shoulder than males. This result is similar to a study in which frozen shoulder was more common in female participants (15). Frozen shoulder also known as Adhesive capsulitis is defined as a condition of uncertain etiology, characterized by significant restriction of both active and passive shoulder motion that occurs in the absence of a known intrusive shoulder disorder. The incidence of shoulder pain has been reported between 0.9%-2.5% and the prevalence reported by various studies varies from 6.9-26% for point prevalence to 6.7-66.7% for lifetime prevalence (16). Diabetes has been considered one of the most

important risk factors for shoulder pain (17). The prevalent cause for shoulder pain was periarthritis in males is about 36.20 % and in females about 48.61%. The results show that there is a higher prevalence of shoulder pain in Indian housewives. This may be due to the work involvement in household and child care activities. Repetitive activities may be responsible for this increased prevalence (18-20).

Van der Windt *et al.*, concluded that prevalence is higher among middle aged group between 45-64 years in his population-based study (21). Allander *et al.*, concluded that prevalence of shoulder pain between 31-74 years of age is about 8-27% of population were clinically confirmed restricted movements along with shoulder pain (22). Bhawan et al concluded that prevalence is higher in middle age between 41 – 50 years. The shoulder pain is significantly associated with left dominant hand (23). Sk. Rai et al concluded that higher prevalence of PA Shoulder is as high as 10% to 22% in diabetes mellitus as compared as normal population (24). Mäkelä *et al.*, concluded that the prevalence of shoulder pain and restricted movement occurred in 5.4% and there was no significant difference in male: female ratio (25). Hani *et al.*, reviewed that the prevalence and relative risk of adhesive capsulitis is higher in diabetic population (26). Robinson *et al.*, reported that the frozen shoulder is unusual in the population under the age of 40, with a maximum prevalence between the ages of 40 and 60, and is rare in patients over the age of 70 (27). This study aimed to evaluate the prevalence of PA shoulder in patient with prior to age, gender and side. Our result showed that 41-50 years of age group (49.6%) was most affected when compared to other age group. Male (52%) was most affected than female. The dominant shoulder (59.8%) is slightly more likely to be affected.

CONCLUSION

The result obtained from our study states that the severity of the disease is more among the female population. The subjects who are suffering from shoulder pain must be taken into anticipation that in future they may develop shoulder periarthritis.

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CONFLICT OF INTEREST

Authors declare that there is no conflict of interest for this study.

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