

ORIGINAL ARTICLE

PREVALENCE OF SHOULDER PAIN AMONG ADULTS IN NORTHERN INDIA

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ABSTRACT

Background: Shoulder pain is a very prevalent musculoskeletal disorder. The incidence and prevalence of shoulder pain varies widely across literature. Various risk factors of shoulder pain like age, gender, obesity and diabetes have been considered in literature. Shoulder pain is reported to be more prevalent in middle aged females. Smoking has also been considered as an important risk factor. Diabetes has been associated with adhesive capsulitis. The purpose of the present study was to find out the prevalence of shoulder pain among adults in Rohtak District of Northern India.

Methodology: A cross-sectional study design was adopted for the study. A questionnaire in Hindi language was designed to obtain information from subjects between 30-70 years of age. Information regarding current pain, hand dominance, smoking and occupation of subjects was recorded. History of diabetes was also obtained. Hindi version of shoulder pain and disability index was used.

Results: Out of 1069 subjects who participated in the study 245 (22.9%) reported shoulder pain. The prevalence is higher in middle age between 41-50 years. Among the subjects who reported shoulder pain 201 (82.04%) had unilateral pain and 44(17.96%) reported pain in both shoulders. 58.78% patients had chronic pain. The mean score for shoulder pain and disability index for the respondents with shoulder pain is 40.43 ± 21.83 .

Conclusion: The prevalence of shoulder pain among adults of age between 30-70 years is 22.9%. The shoulder pain is significantly associated with obesity, left hand dominance and diabetes. No association of shoulder pain was seen with gender, smoking and rural or urban area.

Keywords: Shoulder pain, Prevalence, SPADI, Diabetes, Smoking, BMI

INTRODUCTION

Shoulder pain is a very prevalent musculoskeletal disorder. After low back pain and neck pain it ranks as third most prevalent musculoskeletal complaint[1]. Shoulder pain may lead to inability in carrying out daily life activities, work and leisure activities. The lifetime prevalence of shoulder pain is as high as 67 percent [2]. In a systematic review on the prevalence and incidence of shoulder pain it was concluded that the prevalence of shoulder pain varies largely across age and population. The incidence of shoulder pain has been reported between 0.9%-2.5% and prevalence reported by various studies vary from 6.9-26% for point prevalence to 6.7-66.7% for lifetime prevalence [2]. The literature is deficient regarding prevalence of shoulder pain in Indian population.

Various risk factors of shoulder pain like age, gender, diabetes and alcoholism have been considered in the literature. Shoulder pain is more common among adults. Various authors concluded that the prevalence of shoulder pain increases with age [3-5]. Few authors have shown that the shoulder pain prevalence is highest in middle aged individuals. [6,7]. Gender has also been considered an important risk factor for shoulder and upper extremity pain.

Shoulder pain has been found to be more prevalent among females [6,7]. However some prevalence studies did not find any difference in prevalence of shoulder pain among men and women [8,9]. Relationship of obesity with various musculoskeletal conditions has been widely studied[10]. Tendon injury in shoulder has also been associated with adiposity [11]. The review of literature on various studies related to shoulder pain showed that there is an association of obesity with shoulder pain [12,13]. However, the population based study of Makela et al., 1999 failed to find such association [8].

Research shows that there is strong association of smoking with musculoskeletal pain[14,15]. A study on working population showed smoking as an important risk factor for shoulder pain [16]. Also recent study have shown smoking as an important risk factor for shoulder pain [13]. Baumgrten et al., 2010 observed a dose dependent and time dependent relationship between smoking and rotator cuff tears [17]. Diabetes has been considered as a risk factor for shoulder pain [8,13]. The effect of diabetes on the musculoskeletal system has been studied by various authors. Adhesive capsulitis or frozen shoulder is the most common musculoskeletal problem due to diabetes [19].

The present study was focused on finding the prevalence of shoulder pain among adults in Rohtak District of Northern India.

METHODOLOGY

A cross-sectional study design was adopted for the present study. For a population of more than 100,000 at a precision level of 5 percent a minimum of 400 subjects are required from the population [19]. For the present study the survey was conducted on 1069 people aged between 30-70 years.

Tools of data collection

Hindi is the most popular language spoken in this part of country. Therefore the questionnaire was designed in Hindi Language. The questionnaire consists of demographic information, questions on presence and duration of shoulder pain. Occupation of people was coded according to National Classification of Occupation. The information was collected on presence of diabetes and smoking habits of people. The questionnaire also included the Hindi version of Shoulder pain and disability index (SPADI) [20].

RESULTS

Out of 1069 subjects who participated in the study 245 (22.9%) reported shoulder pain. Mean age and BMI of the respondents is 47.52 ± 11.36 and 24.45 ± 4.04 respectively. Table 1 shows the distribution of various risk factors categories for the respondents. Chi square test was used to see the association of various risk factors with shoulder pain. Figure 1 shows the percentage distribution of various occupations among the respondents. Among the subjects who reported shoulder pain 201 (82.04%) had unilateral pain and 44(17.96%) reported pain in both shoulders. According to duration of pain 101(41.22%) subjects reported pain for less than 3 months and 144(58.78%) subjects reported pain for more than 3 months. The mean score for shoulder pain and disability index for the respondents with shoulder pain is 40.43 ± 21.83 .

DISCUSSION

The study shows a prevalence of 22.9 % in the population aged between 30 to 70 years. The prevalence of shoulder pain for this age group has been found to be between 7-27% [2]. Chard et al., 1991 reported a prevalence of shoulder pain as 26% in UK population [21].Allander et al., 1974 reported shoulder pain prevalence between 8-27% in population between 31-74 years of age but the study included subjects with clinically confirmed restricted movements along with shoulder pain [22]. Pope et al., 1997 reported the prevalence of shoulder and upper arm pain to be 34% [23]. The prevalence rates vary widely over the literature due to variation in case definition and group of population selected. As shown in table 1 when the sample was divided into various age groups 42.90% of respondents with shoulder pain were in age group between 41-50 years. Van der Windt et al., 1995 in their population based study found the peak prevalence of shoulder pain in middle age group between 45-64 years [7]. Various other authors have reported peak prevalence of shoulder pain in middle age group. The chi square test shows that there is no associa-

tion between shoulder pain and gender.

43.30% of respondents with shoulder pain are overweight as compared to only 32% of those without shoulder pain. Chi square test shows that there is an association of shoulder pain with BMI. The literature on various studies related to shoulder pain showed that there is an association of obesity with shoulder pain [3,5,11]. There are two factors in theory which are mainly responsible for this association. According to vascular impairment theory insufficient blood supply can cause degeneration of tendon which may lead to rupture of tendon. Obesity is a known risk factor for vascular diseases such as atherosclerosis, elevated cholesterol and decreased physical activity thus it may lead to reduced blood supply to shoulder tendons. Also increased adiposity has been associated with adiposopathy or sick fat syndrome. In this condition there is a systemic inflammatory state (metabolic syndrome) associated with elevated BMI [24].

Table 1 shows that shoulder pain is significantly associated with hand dominance. 11.80% of respondents with shoulder pain are left hand dominant in the sample as compared to 7.50% left hand dominant in those without pain. Results also show that there is no association of belonging from rural or urban areas with shoulder pain. The results show no association of shoulder pain with smoking in the sample taken.

Diabetes has been considered one of the most important risk factor for shoulder pain [8,13]. In the present study 20.80% of respondents with shoulder pain were diabetics as compared to only 14.60% among those without shoulder pain.

The subjects were categorized into various occupation categories according to National classification of occupation. Very few subjects were in the categories 1(senior legislators, officials, managers), 3(technicians and associate professionals), and 7(craft and related trade worker). Figure 1 show that shoulder pain was more common in plant and machinery operators, those involved in elementary occupation and the workers not classified by occupation. The prevalence was higher in elementary occupations due to higher physical load of work. The non classified occupation included housewives and those retired from job. 75 percent of respondents from this category were housewives. 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. There is a need to study various factors involved resulting in higher prevalence of shoulder pain among housewives.

Thus, the prevalence of shoulder pain is high and there are various risk factors like obesity, diabetes and occupation related to shoulder pain. There is a need to further study various risk factors of shoulder pain along with objective assessment of the patients to find out predictors of shoulder pain.

CONCLUSION

The prevalence of shoulder pain among adults of age between 30-70 years is 22.9%. The prevalence is higher in middle age between 41-50 years. The shoulder pain is significantly associated with obesity, left hand dominance and diabetes. No association of shoulder pain was seen with gender, smoking and rural or urban area.

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Table 1: Number of respondents [n(%)] in various risk factor categories

		Subjects n (%)	Subjects with Shoulder Pain (%)	Subjects without Shoulder Pain (%)	Chi Square
Total		1069(100)	245(22.9)	824(77.1)	
Age	30-40 years	366(34.20)	40(16.30)	326(39.60)	53.944**
	41-50 years	311(29.10)	105(42.90)	206(25.00)	
	51-60 years	211(19.70)	48(19.60)	163(19.80)	
	61-70 years	181(16.90)	52(21.20)	129(15.70)	
Gender	Males	542(50.70)	119(48.60)	423(51.30)	0.577
	Females	527(49.30)	126(51.40)	401(48.70)	
BMI	<18.5	50(4.68)	15(6.10)	35(4.20)	15.915**
	18.5-24.9	558(52.20)	101(41.20)	457(55.50)	
	25-29.9	370(34.60)	106(43.30)	264(32.00)	
	>30	91(8.50)	23(9.40)	68(8.30)	
Hand Dominance	left	91(8.51)	29(11.80)	62(7.50)	4.51*
	Right	978(91.49)	216(88.20)	762(92.50)	
Area	Rural	428(40.00)	108(44.10)	320(38.80)	2.165
	Urban	641(60.00)	137(55.90)	504(61.20)	
Smoking	Yes	266(24.90)	67(27.30)	199(24.20)	1.032
	No	803(75.10)	178(72.70)	625(75.80)	
Diabetes	Yes	171(16.00)	51(20.80)	120(14.60)	5.495**
	No	898(84.00)	194(79.20)	704(85.40)	

*significant at $p < 0.05$ **significant at $p < 0.01$

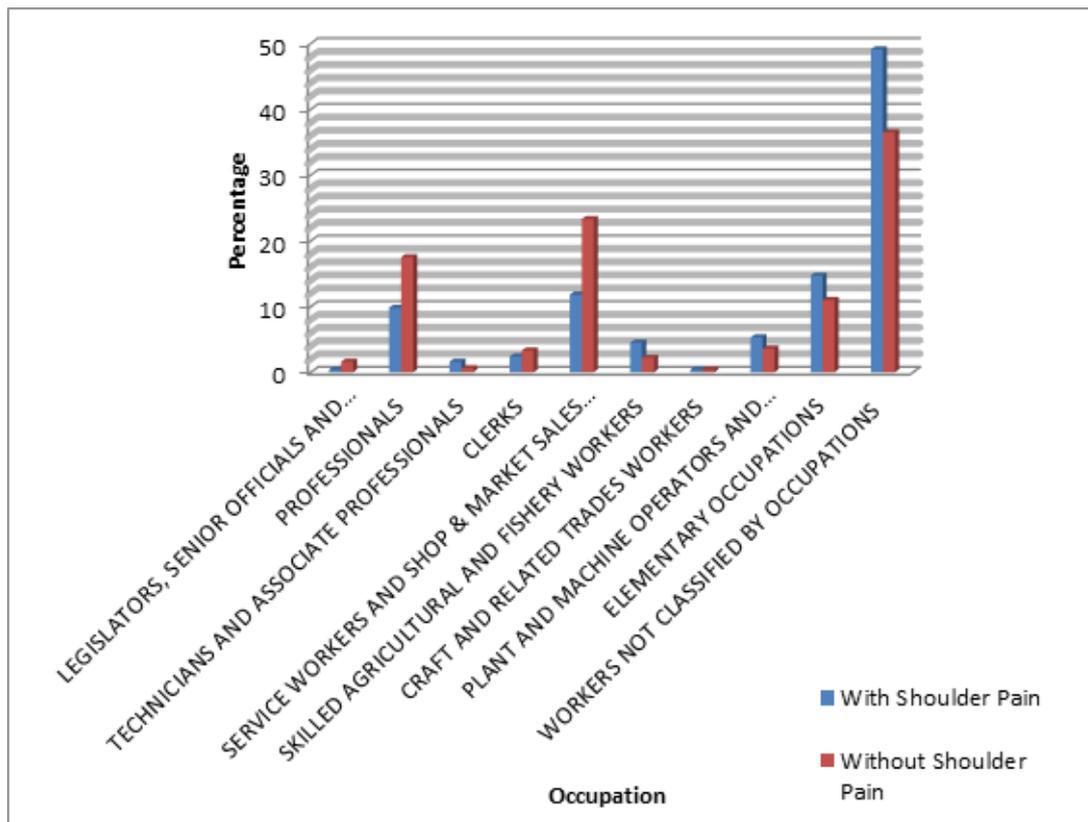


Figure 1: Occupation Distribution of Respondents