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Demographic & Incidental Background of Recurrent Anterior Shoulder Dislocation: A Study In BSMMU, Dhaka, Bangladesh

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Abstract:

Introduction: *The prevalence rate of subjects with a history of shoulder dislocations in the male population between the ages of 22 and 33 years was 42.4 of 10,000. As a result of its wide range of movements the glenohumeral joint is highly susceptible to dislocation, accounting for 50% of all dislocations & young men who sustain high-energy injuries to the shoulder are most affected. Almost 98% are anterior subtypes, the remaining 2% are posterior subtypes and another subtype is inferior dislocation of negligible percentage. This study aimed to analyze the demographic and incidental background anterior shoulder dislocation.*

Methodology*: This was a prospective cross-sectional study conducted at the Department of Orthopaedic Surgery at BSMMU, Dhaka. Bangladesh, from October 2017 to September 2019. A total of 40 patients who attended the Department of Orthopaedic Surgery at BSMMU with recurrent shoulder dislocation within the defined period were included as study subjects. A purposive non-randomized sampling technique was used in this study. The patients were diagnosed clinically and radiologically. All the collected data were compiled and sorted properly and the quantitative data were analysed statistically by using Statistical Package for Social Science (SPSS-25). The results were expressed as frequency, percentage and mean ± SD. The ethical clearance of this study was obtained from the Institutional Review Board (IRB) of BSMMU, Dhaka, Bangladesh.*

Results: *In this study, out of 40 patients 17 (42.5%) were 18-25 years of age, 10 (25%) were 26-30years, 7 (17.5%) were 31-35 years and 6 (15%) were 36-40years old. The mean age of the patients was 28.2±6.3years and the youngest and the oldest patients were 18 and 40 years respectively. The majority 29(72.5%) of the study subjects were male and only 11(27.5%) were female. Regarding occupation, students were 9 (22.5%), business 8 (20%), farmers 5(12.5%), housewives 6(15%), day labour 4(10%) and service holders 8(20%). Concerning the mechanism of injury, 18 patients (45%) had a history of sports injury, 9 patients (22.5%) had a history of road traffic accidents, 8 patients (20%) had a history of falls and 5 patients (12.5%) had a domestic injury. Among 40 subjects, 27(67.50%) subjects had right-sided shoulder dislocation and 13(32.50%) subjects had left-sided dislocation.*

Conclusion: *This study concluded that the 18-25 years age group was the most affected group and the majority of the subjects were male. Among all patients, students experienced recurrent anterior shoulder dislocation the most. Regarding the mechanism of injury, this study showed that sports were the commonest type. The dominant shoulder was affected the most.*

Keywords: *Shoulder, Dislocation, Instability, Recurrent*

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I. Introduction

The prevalence rate of subjects with a history of shoulder dislocations in the male population between the ages of 22 and 33 years was 42.4 of 10,000. [1] As a result of its wide range of movements the glenohumeral joint is highly susceptible to dislocation, accounting for 50% of all dislocations & young men who sustain high-energy injuries to the shoulder are most affected. The main cause of shoulder instability is trauma, which accounts for 95% of all shoulder dislocations. Almost 98% are anterior subtypes, the remaining 2% are posterior subtypes and another subtype is inferior dislocation of negligible percentage. [2] In athletic patients under the age of 20 years, the recurrence rates are greater than 90%. Among patients aged 20 to 25 years, the rates are between 50 and 75%. It may be due to ligamentous and bony defects of the glenoid rim and the humeral head. [3] Recurrent glenohumeral instability often causes traumatic bone defects of the glenoid and humeral head and is responsible for increasing the risk of further dislocation. [4] The humeral head defect is a compression fracture of the superior aspect of the posterolateral humeral head known as a Hill-Sachs lesion. Typically, Hill-Sachs defects are associated with Bankart lesions which involve avulsion of the anteroinferior glenoid labrum at its attachment to the inferior glenohumeral ligament complex and potential injury to the bony glenoid itself. [5] Operative treatment varies but all have the purpose of reinforcing the anterior and inferior aspects of the glenohumeral joint. [6] Various techniques have been described to address recurrent shoulder dislocations and subluxations. Anatomic repairs such as capsulo-labral repair described by Bankart and modified by Rowe are one of the main techniques used to treat this condition. [7] This procedure is done arthroscopically or in open methods. If a dislocation occurs in more than one direction and/or there is an increase in capsule volume, capsulotomy can be chosen. This technique was described by Neer and Foster and was subsequently revised by Bigliani. However, soft tissue repair alone does not seem to be an effective procedure in all cases. [8] Isolated soft tissue repairs have exhibited failure rates as high as 56% to 67%. [9] Regarding gender, authors from a study concluded that shoulder dislocation occurs most frequently in younger male patients and occurs with similar frequency in urban and rural settings. [10] Recurrent instability and deficits of shoulder function are common after primary nonoperative treatment of an anterior shoulder dislocation. There is substantial variation in the risk of instability, with younger males having the highest risk and females having a much lower risk. [11]

II. Objective

General Objective

- To analyze the demographic and incidental background anterior shoulder dislocation.

Specific Objectives

- To know the age and sex distribution of the respondents.
- To know the occupation of the patients.
- To see the affected predominant side.
- To see the number of episodes of anterior shoulder dislocation.

III. Methodology

This prospective interventional study was conducted at the Department of Orthopaedic Surgery at BSMMU, Dhaka. Bangladesh, from October 2017 to September 2019. A total of 40 patients who attended the Department of Orthopaedic Surgery at BSMMU with recurrent shoulder dislocation within the defined period were included as the study subject. A purposive non-randomized sampling technique was used in this study. The patients were diagnosed clinically and radiologically. After taking informed consent, a detailed history and physical examination of each patient were performed. A structured case record form was used to interview and collect data. Patients were interviewed and the case record form was filled up. All the data were compiled and sorted properly and the quantitative data were analysed statistically by using Statistical Package for Social Science (SPSS-25). The results were expressed as frequency, percentage and mean ± SD. The ethical clearance of this study was obtained from the Institutional Review Board (IRB) of BSMMU, Dhaka, Bangladesh. The inclusion and exclusion criteria of this study were as follows:

Inclusion Criteria

- Patients aged between 18 and 40 of both sexes.
- Patients having more than three episodes of shoulder dislocation.
- Patients having at least one episode of dislocation in the last six months.
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Patients who had previously undergone shoulder surgery and those who had diagnoses of collagen disease
- Presence of degenerative changes
- Patients whose coracoid process is not visible in preoperative radiology.
- Fracture dislocation.
- Patients who did not give consent to participate in the study.
- Patients with medical diseases like epilepsy, convulsion etc.

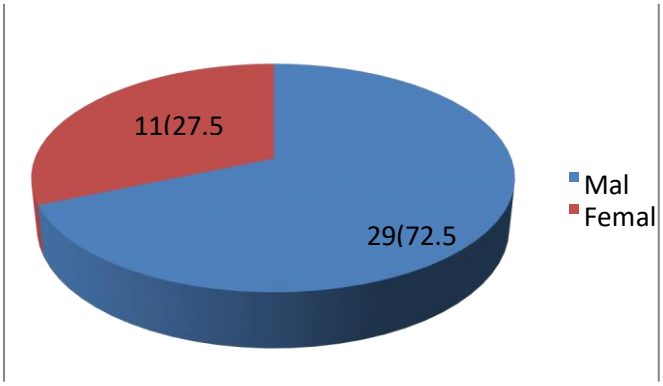
IV. Results

Table 1: Distribution of study population according to age (N=40).

Age (years)	N	%
18-25	17	42.5
26-30	10	25.0
31-35	7	17.5
36-40	6	15
Mean ±SD	28.2±6.3	

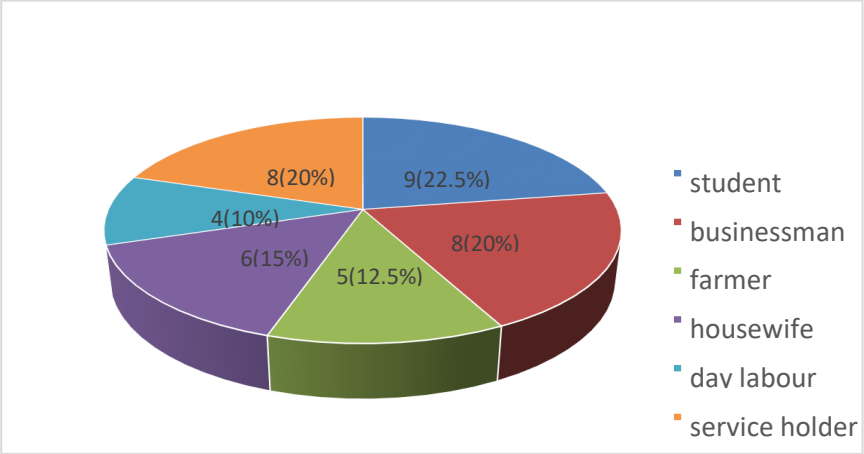
In this study, out of 40 patients 17 (42.5%) were 18-25 years of age, 10 (25%) were 26-30years, 7 (17.5%) were 31-35 years and 6 (15%) were 36-40years old. The mean(± SD) age of the patients was 28.2±6.3years and the youngest and the oldest patients were 18 and 40 years respectively. [Table 1]

Figure 1: Distribution of study population according to sex (N=40).



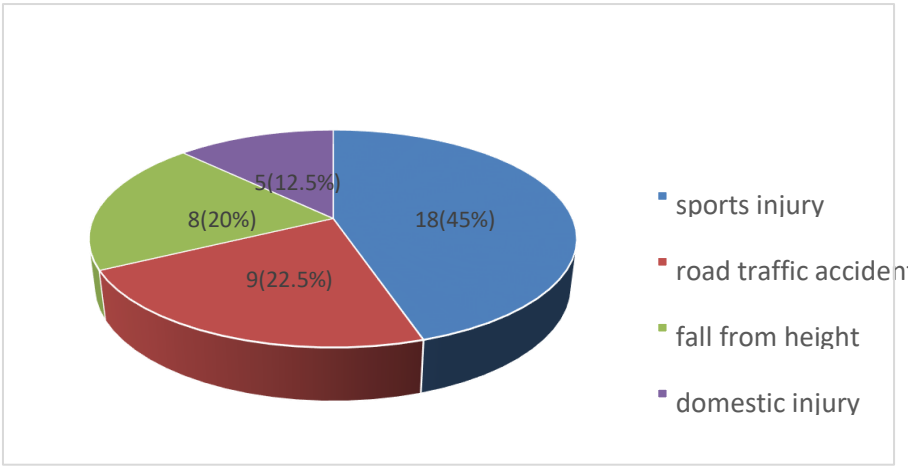
Among 40 subjects, the majority 29(72.5%) of the study subjects were male and only 11(27.5%) were female. [Figure 1]

Figure-2: Distribution of study population according to the occupation (N=40)



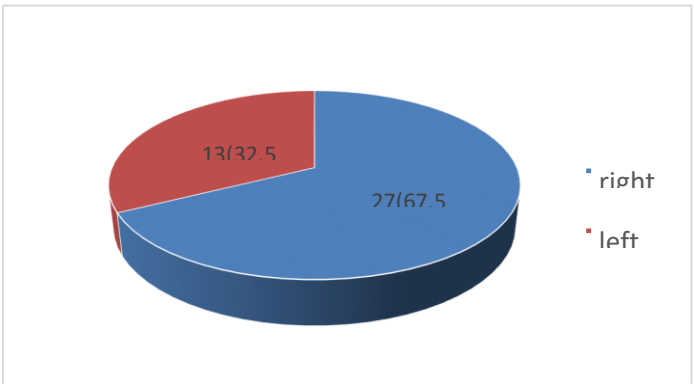
In this study, occupational categorization has been done. Among 40 subjects, students were 9 (22.5%), business 8 (20%), farmers 5(12.5%), housewives 6(15%), day labour 4(10%) and service holders 8(20%). [Figure 2]

Figure-3: Distribution of study population according to the mechanism of injury (N=40)



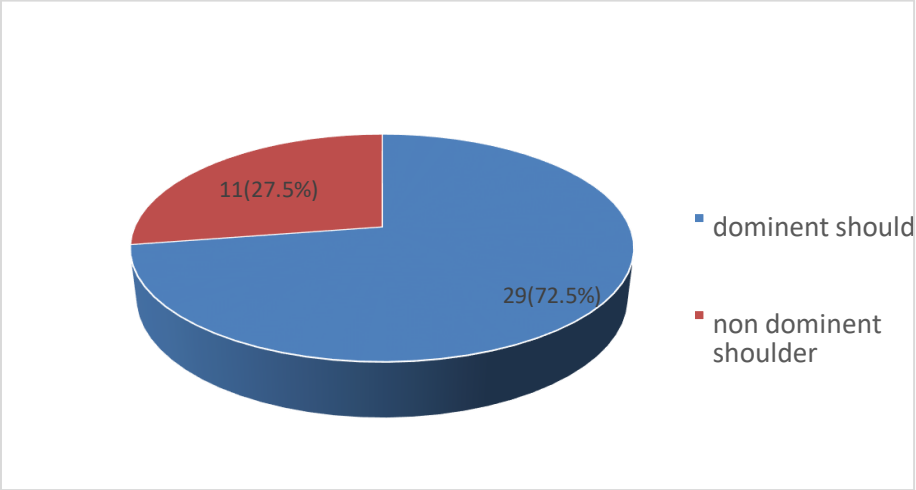
Among 40 subjects, 18 patients (45%) had a history of sports injury, 9 patients (22.5%) had a history of road traffic accidents, 8 patients (20%) had a history of falls and 5 patients (12.5%) had a domestic injury. [Figure 3]

Figure-4: Distribution of study population according to the side of shoulder dislocation (N=40)



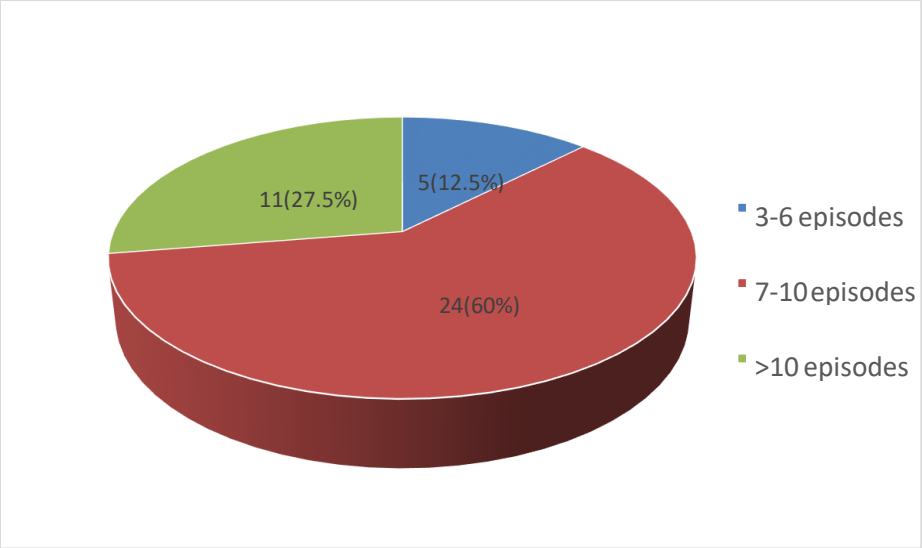
Among 40 subjects, 27(67.50%) subjects had right-sided shoulder dislocation and 13(32.50%) subjects had left-sided dislocation. [Figure 4]

Figure-5: Distribution of study population according to dominant shoulder dislocation (N=40**)**



Of the 40 patients, 29(72.5%) presented with a dominant shoulder dislocation and 11(27.5%) came with non-dominant shoulder dislocation. [Figure 5]

Figure-6: Distribution of study population according to episodes of shoulder dislocation (N=40)



Of the 40 patients, 5(12.5%) came with a history of 3-6 episodes of shoulder dislocation, 24(60%) came with 7-10 episodes and 11(27.5%) with more than 10 episodes. [Figure 6].

V. Discussion

The recurrent shoulder dislocation in this study occurs in the young adult population and the mean (± SD) age of the patients was 28.2 (±6.3) years and the youngest and the oldest patients were 18 and 40 years of age respectively. Almost similar to the findings observed by Matthes et al. (2007); Colegate-Stone et al. (2015); Motaweaa and Abouheif (2017). [12][13][14] But the studies conducted by Rollick et al. (2017) showed that a relatively older population was affected by recurrent dislocation of the shoulder which is not similar to this study. [15] Out of 40 patients 29(72.5%) were male and 11(27.5%) were female. Hoveleus et al. (2014) and da Silva et al. (2015) also found similar gender distribution. [16][8] In the present study, all the populations were students, businessmen, farmers, housewives, day labour and service holder in their occupations. In present studies, in most of the cases (45%) mode of injury was a sports injury, the remaining were road traffic accident, fall from height

and domestic injury. This finding was in agreement with the study of Moura et al. (2018); Motaweaa and Abouheif (2017) and Hovelius et al. (2004). [4][14][16] In this study, the majority of subjects 27(67.5%) presented with right-sided shoulder dislocation then left 13(32.5%) and dominant shoulder was more affected 29(72.5%) than non-dominant shoulder 11(27%). Almost similar to the findings of Longo et al. (2014) Aydin et al. (2012) & Motawea and Abouheif (2017). [17][2][14] On the contrary, Hovileus et al. (2018) found right and left shoulder was equally affected. [16] In this study for most of the patients, 24(60%) came with a history of 6-10 episodes of dislocations, 5(12.5%) patients with 3-6 episodes and 11(27.5%) with >10 episodes of dislocations. Almost similar to the findings of Moura et al. (2018); Colegate-Stone et al. (2015) and Matthes et al. (2007). [4][13][12] A study done by Ikemoto et al. (2011) on 26 male patients underwent the Latarjet procedure for the treatment of recurrent dislocation of the shoulder. Their results showed means for elevation and lateral rotation were statistically poorer on the operated side. The UCLA and Rowe scale showed that there was a statistically significant improvement in the clinical-functional results ($p < 0.001$ for both). There was a relationship between the number of episodes of dislocation and the presence of arthrosis. [18] According to a study, younger patients involved in contact or collision sports or who require overhead occupational use of the arm are more likely to have a redislocation of the shoulder than are their less active peers or older persons. [19] Anterior glenohumeral dislocation is common among athletes and may progress to recurrent instability. The patho-anatomy of instability and the specific needs of each individual should be considered to prevent unnecessary absence from the sport. Traditionally, primary dislocations have been managed with immobilization followed by rehabilitation exercises and a return to sporting activity. However, arthroscopic stabilization and external rotation bracing are increasingly used to prevent recurrent instability. In addition to the typical capsulolabral disruptions seen following a primary dislocation, patients with recurrent instability often have a coexistent osseous injury to the humeral head and glenoid. In patients without significant bone loss, open soft-tissue stabilizations have long been considered the 'gold standard treatment' for recurrent instability, but with advances in technology, arthroscopic procedures have gained popularity. [20]

VI. Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community. The sample was taken purposively So, there may be a chance of bias which can influence the results.

VII. Conclusion

This study concluded that the 18-25 years age group was the most affected group and the majority of the subjects were male. Among all patients, students experienced recurrent anterior shoulder dislocation the most. Regarding the mechanism of injury, this study showed that sports were the commonest type. The dominant shoulder was affected the most.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

VIII. Recommendations

Treatment efforts must be aimed at optimizing shoulder strength and stability. The prognosis for full recovery remains guarded. Available outcome instruments may not discriminate well between patients who do and do not choose surgery. Moreover, further studies should be conducted involving a large sample size and multiple centers to get robust data.

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