Functional Disability Measurement of Frozen Shoulder Patients Attended at Selected Centers in Dhaka

Md. Mohiuddin[1], Sumon Chandra Debnath[2] Rajib Hasan[3], Md. Kaoser Bin Siddique[4], Md. Badrul Alam[5]

Abstract

Background: *Frozen shoulder which is a painful conditions results in restriction of active and passive mobility of shoulder and functional deficits. It is also common disabling problem that exemplify by progressive limitation of shoulder movement. Among many scoring systems to evaluate shoulder function SPADI is one of the commonest tools used internationally and this study used as well. The aim of this study is to measure functional status & disability of frozen shoulder patients.* **Methods:** *Cross sectional study design was used to collect 64 sample from Center for the Rehabilitation of the Paralyzed (CRP) and IBN SINA Trust. For measuring functional ability two validated measuring scale: Shoulder Pain and Disability Index (SPADI) & Visual Analogue Scale (VAS) were used. Data were analyzed with SPSS version 20. Verbal and written consent was taken from patient ethical permission was taken from the authority.* **Results:** *This study identified the level of functional disability of frozen shoulder patients where majority 72% patients had complained of severe pain and 56% suffered by pain with movement loss. Majority 67% had moderate difficulty during dressing, 19% had severe difficulty during shopping, 73% were severe difficulty during hair brushing, 61% had moderate difficulty during bathing. It is also showed significant association (p<0.05) between SPADI pain scale and VAS pain scale.* **Conclusion:** *Majority of patients complained severe pain and restricted movement as a result it restricted their activities of daily living. Consideration should be given to the responsiveness of SPADI in Clinical physiotherapy practice to get better outcome. Further large scale study can be done in similar setting.*

Key words: *Functional Disability, Frozen Shoulder, Activities of Daily living.*

[1] Md. Mohiuddin, Physiotherapist, Bangladesh University of Engendering & Technology (BUET),

[2] Sumon Chandra Debnath, Field Supervisor, FDMN-HI Project, DGHS, Mohakhali, Dhaka.,

[3] Rajib Hasan Deputy Director (Planning), JPUF, MoSWF, the Peoples Republic of Bangladesh,

[4] Md. Kaoser Bin Siddique, Coordinator-Research, Evaluation & Development, LMRF Healthcare & PhysioCare, Physiotherapy Rehab & Research Centre (PPRRC),

[5] Prof. Md. Badrul Alam, Professor- National Institute of Neurosciences (NINS)

Corresponding Author:

Md. Mohiuddin, Physiotherapist, Bangladesh University of Engendering & Technology (BUET),
Email: drmamunpt@gmail.com

Introduction

Frozen shoulder is a painful conditions result in restriction of active and passive mobility of shoulder and functional deficits. It is a self limiting disease that interferes with daily living activity. Shoulder pain is the third most common musculoskeletal condition (Camarinos and Marinko, 2009). It is also common disabling problem that exemplify by progressive limitation of shoulder movement (Antony et al., 2014). Frozen Shoulder is a well-defined condition with its phases of severe pain, increasing stiffness, and the gradual recovery of full movement of the shoulder. No other joint seems to become affected in a similar way (Hus et al., 2010 and Stam, 1994).

There are numerous scoring systems to evaluate shoulder function: Constant-Murley Score (Constant and Murley, 1987), Simple Shoulder Test, Oxford Shoulder Score (OSS), American Shoulder and Elbow Surgeons (ASES) score, The University of California at Los Angeles Shoulder Rating scale (UCLA), Disabilities of the Arm, Shoulder and Hand (DASH) score, most common pain rating scale visual analog scale (VAS) also used measuring shoulder pain. Long lasting frozen shoulder is a challenge for the functional status (Neviser and Hannafin, 2010).

To evaluate functional status and or disability of shoulder SPADI one of the commonest tools used internationally. The study used SPADI is the form of

diagnostic procedure to measure functional disability of frozen shoulder patients. The aim of this study is to measure functional status & disability of frozen shoulder patients.

Materials &Methods:

Study Design: A cross sectional descriptive type of study was used.

Study Site: The study was conducted at Center for the Rehabilitation of the Paralyzed (CRP) and IBN SINA Trust.

Study Duration: The total duration of study was One year.

Sample Size Calculation: According to sample size calculation equation the sample was 72 but due to resource constrain this study taken 64 samples.

Sampling Technique

Purposive Sampling technique was used for taking sample.

Inclusion Criteria: Patients willing to participate in this study. Patients with Frozen Shoulder diagnosed either by doctor and/or physiotherapist. Patient's age ranged between 30-70 years.

Exclusion Criteria: Patients who had severe medical condition such as CKD, respiratory distress, acute stroke and who had needed emergency medical management.

Study Tool Development:

A semi-structured questionnaire in Bangla was used to collect information on socio demographic variable such as age, sex, educational stage, average monthly family income. occupational history including types of job, any repetitive activity, duration/working hour, hobbies, occupational or hobby related exposure including task related exposure, information related to daily living activities, life style including physical activity related information were also asked. For measuring functional ability two validated measuring scale: Visual Analogue Scale (VAS) & Shoulder Pain and Disability Index (SPADI) were used. Field test were done among 10 participants before final data collection (Roach et al., 1991).

Data Collection Procedures: Face to face interview was done by the researcher.No assistant was taken for the purpose of interview.

Data Processing and Analysis: Descriptive and inferential statistics was used for data analysis. Continuous variables were expressed as mean ± SD, and categorical variables as percentages Descriptive statistics refers method of describing a set of results in terms of their most interesting characteristics (Hicks, 1999, p. 284). Data were analyzed with statistical package for the social science (SPSS) version 20.0.

Ethical Consideration: Verbal and written consent was taken from patient ethical permission was taken from the Ethical Review Board of BHPI.

Results:

The mean age of 64 patients was 55.78 ± 6.73 years. Majority of the patients 34 (53.1%) were female. Maximum patients [51(79.7%)] had frozen shoulder to their left shoulder and the highest number of patients [27 (42.2%)] were suffering from 5-8 months. Maximum [46 (71.9%)] patients had complained of severe pain. Among 64 patients, 52 (81.3%) patients were suffering from diabetes mellitus.

Among 64 patients, maximum [42 (65.6%)] had moderate difficulty during dressing, 12 (18.8%) had severe difficulty during shopping, 47 (73.4%) were severe difficulty during hair brushing, maximum [39 (60.9%)] had moderate difficulty during bathing.

Table 01: Level of Measuring Pain by SPADI (Pain Score)

SN	SPADI (Pain Score)	4	5	6	7	8	9	10
1	At its worst	-	-		11 (17.2%)	11 (17.2%)	17 (26.6%)	25 (39.1%)
2	When lying on the involved side	-	-	-	5 (7.8%)	22 (34.4%)	17 (26.6%)	20 (31.3%)
3	Reaching for something on a high shell	-	-	5 (7.8%)	4 (6.3%)	21 (32.8%)	29 (45.3%)	5 (7.8%)
4	Touching the back of your neck	-	-	16 (25.0%)	3 (4.7%)	-	17 (26.6%)	28 (43.8%)
5	Pushing with involved arm	3(4.7%)	13 (20.3%)	3 (4.7%)	18 (28.1%)	17 (26.6%)	10 (15.6%)	-

Table 02: Level of Measuring Functional Disability by SPADI (disability Score)

SN	SPADI (Disability Score)	4	5	6	7	8	9	10
1	Washing your hair	-	-	-	-	4 (6.3%)	39 (60.9%)	21 (32.8%)
2	Washing your back	-	-	-	-	-	35 (54.7%)	29 (45.3%)
3	Putting on an undershirt or jumper	-	-	4 (6.3%)	5 (7.8%)	29 (45.3%)	11 (17.2%)	15 (23.4%)
4	*Putting on a shirt that buttons down the front	9 (26.5%)	-	6(17.6%)	4(11.8%)	11(32.4%)	4(11.8%)	-
5	Putting on your pants	-	8 (12.5%)	10 (15.6%)	19 (29.7%)	17 (26.6%)	5 (7.8%)	5 (7.8%)
6	Placing an object on a high shell	-	-	-	16 (25.0%)	14 (21.9%)	34 (53.1%)	-
7	Carrying a heavy object of 10 pounds(4.5kg)	-	-	-	6 (9.4%)	17 (26.6%)	4 (6.3%)	37 (57.8%)
8	*Removing something from your back pocket	-	-	-	-	4(13.3%)	11(36.7%)	14(46.7%)

In SPADI disability scale, Maximum patients [37(57.8%)] were score 10 out of 10 when carrying a heavy object of 10 pounds (4.5kg). It was found 9 score washing hair [39(60.09%)], washing back [35(54.7%)] and placing object on high shell [34(53.1%)] flowed by 8 score were putting under shirt or jumper [29(45.3%)] and putting pants [17(26.6%)] also found putting pants 7 scored 19 (29.7%) of respondent. Maximum respondent [14(46.7%)] among male score 10 out of 10 during removing something from back pocket (Table: 02). More than 60% (41) patient reported severe pain in their activities and above 80% (54) patient reported disability (Distribution of pain & disability score table not included here).

Table 03: Patients Distribution by Relationship between SPADI pain scale and VAS pain scale

SPADI pain Category	VAS Pain Category			Total	Test Statistics	p value
	Mild Pain	Moderate Pain	Severe Pain			
Below 69%	0(0.0%)	0(0.0%)	5(100.0%)	5		
70% to 79%	5(27.8%)	10(55.6%)	3(16.7%)	18	$\c^2$ = 28.729*	0.000**
80% to 89%	0(0.0%)	13(61.9%)	8(38.1%)	21	df =6	
90% and above	0(0.0%)	3(15.0%)	17(85.0%)	20		
Total	5	26	33	64		

*Fisher exact test, **Significance at 0.05 level*

According to SPADI, about one third [21 (32.8%)] had pain 80% to 89% and maximum patients [33(59.8%)] had disability ranged 80% to 89%. According to VAS scale, maximum patients [35 (54.7%)] complained moderate pain, about one third of the patients [22 (34.4%)] had complained severe pain and only 7 (10.9%) patients had mild pain (Table: 03).

Table 04: Relationship between SPADI disability scale and VAS pain scale

SPADI Disability Score	VAS pain category			Total	Test statistics	p value
	Mild Pain	Moderate Pain	Severe Pain			
70% to 79%	0(0.0%)	8(80.0%)	2(20.0%)	10		
80% to 89%	5(13.9%)	15(41.7%)	16(44.4%)	36	$\c^2$ = 14.023*	0.003**
90% and above	0(0.0%)	3(16.7%)	15(83.3%)	18	df =4	
Total	5	26	33	64		

*Fisher exact test, **significance at 0.05 level*

There was highly significant association (p<0.05) was found between SPADI pain scale and disability scale with VAS pain scale (Table 04).

Discussion:

In this study, it was found that majority [46 (71.9%)] patients had complained of severe pain, 13 (20.3%) patients had complained moderate pain and 5 (7.8%) patients had complained mild pain. Another cross-sectional study conducted by Cagliero et al., 2002 and found that maximum patients were suffering from severe pain which matched with this study moderate to severe pain. However, A study by Simmonds, 2007 found the 10% mild pain, 27% moderate pain and 18% had severe pain. These inconsistencies may be due to different measurement scales and different study samples & comorbidities.

This study revealed that 10.8% (n=7) has only pain, 4.7% (n=3) has only stiffness, 4.7% (n=3) also has only movement loss. Most of the participants 56.2% (n=36) suffered by pain with movement loss and 17.2% (n=11) has suffered by pain, stiffness and movement loss. According to Hazleman, 1972, 50% (n=31) of the patients reported that shoulder was either painful or stiff or both at the time of follow up. 19% (n=12) had mild pain, 16% (n=10) had mild stiffness and 15% (n=9) had both and also other study shows that 60% (n=37) of the 62 participants demonstrated some restriction of motion. Only 11% (n=7) had mild functional limitation. This study reported that majority patients [49 (76.6%)] cannot lie on the affected side. This result matched with Shaffers et al., 1992 (69%), however, differs with Balci et al., 1999 which was 29%.

Susan et al., 1997 conducted a study by SPADI index and found that mean scores on the SPADI were higher for the pain dimension (X=46.3, SD =27.5, range=0-100) than for the disability dimension (X=33.9, SD=28.1, range= 0-100). In SPADI, the responsiveness was very good for the outpatient clinic but doubtful for primary care and hospital patients (Desai et al., 2010). Disability score reflected the percentages they had disability in individual items which matched with study done in different countries.

Among 64 patients, maximum patients [39(60.9%)] were scored 9 (Out of 10) on difficulty in hair washing followed by 35(54.7%) were scored 9 on difficulty in washing back, putting on an undershirt or jumper was distributed in different scatter pattern and maximum patients [29(45.3%)] scored 8. There was highly significant association (p<0.05) was found between SPADI pain scale and VAS pain scale. It was observed from the table 04 that those who had disability (90% and above) in SPADI scale (69.2%), they had severe pain in VAS pain scale.

Conclusion and Recommendations:

This study identified the level of functional disability of frozen shoulder patients where majority 72% patients had complained of severe pain and 56% suffered by pain with movement loss. It is also showed significant association (p<0.05) between SPADI pain scale and VAS pain scale. Therefore, Consideration should be given to the responsiveness of SPADI in Clinical physiotherapy practice. Further large scale study can be done

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