WHOQOL-BREF Hindi questionnaire: Quality of life assessment in acetabular fracture patients

Umesh K Meena, Ramesh K Sen1, Prateek Behera1, Sujit K Tripathy2, Sameer Aggrawal1, Sreekanth R Rajoli1

ABSTRACT
Background: The incidence of acetabular fractures in India has increased over the past years but so has the operating skills of pelvi-acetabular trauma surgeons. The outcomes of surgical management need to be assessed so as to be able to devise proper treatment plan and execute the same during and after surgery, which in turn requires assessment of quality of life indices as well as functional scores. While there are studies assessing Harris Hip scores (HHS) and world health organization quality of life BREF (WHOQOL BREF) in the western population there is no study which assesses the same in Indian population. We designed this study to evaluate and define reference values for use of WHOQOL BREF Hindi scores in QOL Assessment in patients with acetabular fractures and to assess the relationship between it and HHS.

Materials and Methods: 118 patients with acetabular fractures who were treated surgically were included in this retrospective study. Assessment of reduction quality (Matta’s radiological criteria), clinical outcome (HHS) and functional outcome (WHOQOL-BREF score) were done. The affect of age, gender, fracture displacement, hip dislocation, delay in surgery and associated injury on the clinical and functional outcome was evaluated.

Results: The mean HHS was 90.65 (42–100) which showed an overall good to excellent outcome in 78.8% cases. WHOQOL-BREF Hindi score of domain-one was 63.06 ± 20.31 (13–94), of domain-two was 58.22 ± 19.57 (13–100), of domain-three was 70.49 ± 17.92 (13–100) and of domain-four was 64.48 ± 18.46 (13–100), which showed significant functional deficit in domain-one (P = 0.0001) and domain-two (P = 0.0001) but not in domain-three (P = 0.458) and domain-four (P = 0.722) when compared to score of general healthy population. The domain scores of general population norms were achieved in 59.3%, 61.9%, 69.5% and 66.1% cases in domain one, two, three and four respectively.

Conclusions: Based on these results one can conclude that WHOQOL-Hindi questionnaire is good enough for assessment of QOL in addition to clinical measures in acetabular fracture patients.

Key words: Acetabular fractures, Matta’s radiological criteria, Merle d’Aubgne and Harris hip score, World Health Organization quality of life-BREF Hindi score

MeSH terms: Hip, acetabulum, fracture, quality of life

INTRODUCTION

Quality of life (QOL) is becoming an important component of overall assessment in health care setting so the clinical outcome measures (Merle d’Aubgne and Harris hip score [HHS]) should be accompanied by a functional outcome assessment that focuses on the whole individual from the patient’s point of view, and these QOL parameters provides measurement of functioning and well-being rather than of diseases and disorders.1-4

Over past decade various functional scoring systems have been used for acetabular fracture patients (Musculoskeletal Function Assessment score, short form (SF)-36, SF-12 score, EQ-5D score and World Health Organization-QOL (WHOQOL) score5-13 but most were devised in the developed countries and their cross-cultural compatibility has not been demonstrated.14 Quality of life assessment is extremely rare in India and one of the important reasons for this is nonavailability of a suitable instrument.14

The WHOQOL-BREF arises from 10 years of development research on QOL and health care. It is a person centered, multilingual instrument for subjective assessment and is
Materials and Methods

159 skeletally mature patients with acetabular fractures treated surgically in our institution between 1998 and 2010 by a single surgeon (RKS) were called. All patients were called for follow-up for research purpose. A total 135 patients came for follow-up, patients whose preoperative X-rays were not available and patients with <2 year follow-up were excluded from the study and hence 118 patients left for outcome analysis. Of these ten patients had undergone total hip replacement and were included in poor clinical and functional outcome groups. Data regarding the demographic profile, mechanism of injury, associated injuries, delay in surgery, and quality of the reduction, which were known to affect the clinical outcomes.

Results

Of the 159 patients, 41 patients were excluded from the study because of lack of follow-up more than 2 years and unavailability of complete data. So a total of 118 patients were included in the study.
It was observed that acetabular injuries were predominantly affecting the younger individuals; with a mean age of 38.75 ± 13.6 years (range 17–65 years). There was a male preponderance 99 (83.9%). 59 patients had acetabular fractures of the right side, 56 patients had fracture of the left side while 3 patients had bilateral acetabular fractures. Most common mode of injury was road side accident (n = 99). While in 58 cases, the acetabular fracture was the only injury sustained, 32 cases had associated lower limb with or without pelvic injuries. Sciatic nerve injury was seen in 10 patients. Average delay in surgery was 10.82 days (range 1–90 days), delay in admission and associated injuries were a major contributor to this delay.

The mean HHS was 90.65 (42–100) of available 108 patients (we excluded 10 total hip replacement patients). Of these patients excellent outcome was seen in 62.7% cases while good, fair and poor outcomes were seen in 16.1%, 6.8% and 14.4% of cases respectively.

The clinical outcome was significantly affected by the degree of initial displacement (P = 0.001), presence of dislocation at the time of initial injury (P = 0.0001), presence of associated injuries (P = 0.046), delay in surgery (P = 0.003) and quality of reduction (P = 0.002) but not by age (P = 0.550), sex (P = 0.080) and fracture type (P = 0.160) [Tables 1 and 2].

On analysis of functional outcome using WHOQOL-BREF Hindi questionnaire, the mean score of domain one was 63.06 (range 13-94; SD 20.31), of domain two was 58.22 (range 13-100; SD 19.57), of domain three was 70.49 (range 13-100; SD 17.92) and of domain four was 64.48 (range 13-100; SD 19.46), which showing significant functional deficit in domain one (P = 0.0001) and domain two (P = 0.0001) but not in domain three (P = 0.458) and domain four (P = 0.722) when compared to score of general healthy population. The Domain scores of General population norms were achieved in 59.3, 61.9, 69.5 and 66.1% cases in domain one, two, three and four respectively.

On analyzing the factors affecting the functional outcome, it was observed that the presence of dislocation, degree of initial displacement, associated injuries, and delay in surgery and reduction quality was significant variables [Tables 3 and 4]. On comparison of functional outcome by WHOQOL score with HHS, strong correlation [Table 5].

Another aspect which needs to be considered is that 17 (14.4%) cases had a poor clinical result, and ten of these had been converted into total hip arthroplasty. Remaining seven patients had not had an additional operation at the time of writing but had been offered a total hip replacement or arthrodesis.

### Discussion

Increasingly, health care planners recognize that measures of disease alone are insufficient determinants of health status. Over the past few decades, two classes of complementary health status measures have emerged to fill the information gap – objective measures of functional health status and subjective measures of...
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Table 3: Factors affecting WHOQOL-BREF Hindi score

| Factors | WHOQOL D1 | WHOQOL D2 | WHOQOL D3 | WHOQOL D4 |
|---------|-----------|-----------|-----------|-----------|
| Age     | <71.1 | ≥71.1 | <63.0 | >63.0 | <68.8 | >68.8 | <61.26 | >61.26 |
| ≤55 years | 37 | 62 | 34 | 65 | 27 | 72 | 29 | 70 |
| >55 years | 11 | 8 | 11 | 8 | 9 | 10 | 11 | 8 |
| Sex     | Male | 38 | 61 | 38 | 61 | 27 | 72 | 32 | 67 |
|         | Female | 10 | 9 | 7 | 12 | 9 | 10 | 8 | 11 |
| Displacement | ≤20 mm | 13 | 32 | 12 | 33 | 7 | 38 | 12 | 33 |
|          | >20 mm | 35 | 38 | 33 | 40 | 29 | 44 | 28 | 45 |
| Dislocation | Present | 25 | 23 | 24 | 24 | 20 | 28 | 20 | 28 |
|           | Absent | 23 | 47 | 49 | 16 | 54 | 20 | 50 |
| Reduction quality | Good | 26 | 64 | 27 | 63 | 24 | 66 | 28 | 62 |
|          | Fair | 14 | 6 | 12 | 8 | 5 | 15 | 5 | 15 |
|          | Poor | 8 | 0 | 6 | 2 | 7 | 1 | 7 | 1 |
| Associated injury | Present | 32 | 29 | 26 | 35 | 18 | 43 | 20 | 41 |
|            | Absent | 16 | 41 | 19 | 38 | 18 | 39 | 20 | 37 |
| Delay in surgery | ≤2 week | 31 | 64 | 28 | 67 | 22 | 73 | 26 | 69 |
|           | >2 week | 17 | 6 | 17 | 6 | 14 | 9 | 14 | 9 |

WHOQOL=BREF Hindi score is a cross-culturally valid assessment of well-being and is available in most of the words major languages.

Table 5: Distribution of WHOQOL-BREF score domains in two HHS groups

| HHS | WHOQOL D1 score | WHOQOL D2 score | WHOQOL D3 score | WHOQOL D4 score |
|-----|-----------------|-----------------|-----------------|-----------------|
| <80 | 25 | 0 | 23 | 2 | 19 | 6 | 19 | 6 |
| ≥80 | 23 | 70 | 22 | 71 | 17 | 7 | 21 | 72 |

Spearman correlation (0.000) - (0.000) - (0.000) - (0.003)

WHOQOL=BREF Hindi score in acetabular fractures outcome assessment because and it showed its competence in the assessment of patients with hip fracture. Previously, Yao et al., have shown the usefulness of a hip specific items in quality of life questionnaire for patients with hip fractures.

Our study has analyzed data from a well-defined catchment population over a period of 14 years in order to evaluate medium to long term clinical and functional outcome of operatively treated acetabular fractures by a single surgeon (RKS) at a tertiary referral center.

Demographic profile, injury profile, fracture types, surgical approaches and clinical outcome of our study were found comparable to other previous large studies. Our study has analyzed data from a well-defined catchment population over a period of 14 years in order to evaluate medium to long term clinical and functional outcome of operatively treated acetabular fractures by a single surgeon (RKS) at a tertiary referral center.

Demographic profile, injury profile, fracture types, surgical approaches and clinical outcome of our study were found comparable to other previous large studies. 

Assessment of clinical outcome was done with the use of HHS, which indicate good to excellent clinical outcomes similar to previous studies favoring operative treatment as the gold standard for displaced acetabular fractures. The HHS in our study was good or excellent in 78.8% cases and poor or fair in 21.2% cases. These results are comparable to those of Giannoudis et al., in which the HHS was graded as good or excellent in 73.2% cases and poor or fair in 26.8% cases.

Comparison with previously published series by Matta et al., Mayo et al., Madhu et al., and Briffa et al. clearly shows that clinical results, duration of followup and number of patients in present series is adequate to make useful assessments regarding clinical and functional outcome in patients with acetabular fractures. Even though the number of cases reported by Matta et al., and Madhu et al., is higher than that...
reported by us, the followup duration and the outcomes are almost identical.

On analysis of factors affecting clinical outcomes, we observed that presence of dislocation, degree of initial displacement, associated injuries, delay in surgery and quality of reduction were the main determinant of clinical outcome and these were comparable with previous studies.3,7,13,20,23,26

In our study the mean WHOQOL-BREF domain one, domain two, domain three and domain four score were 63.06 ± 20.31, 58.22 ± 19.57, 70.49 ± 17.92 and 64.48 ± 18.46 respectively, showing lack in physical (domain one) and psychological (domain two) scores but not in social (domain three) and environmental (domain four) scores when compared to general population norms [Table 6].15 Our results were comparable to the results of fracture around hip in the study by Yao et al.21 in all domains except in the social domain in which our results were significantly better than theirs [Table 6]. Domain scores of General population norms were achieved in 59.3, 61.9, 69.5 and 66.1% cases in domain one, two, three and four respectively, indicating positive functional outcome and making these patients as a functional member of society and supporting operative treatment for displaced acetabular fractures.

There are a few limitations of our study and we believe that they include the retrospective study design, attrition on followup and nonblinded assessors at followup.

Based on these results one can conclude that WHOQOL-Hindi questionnaire is good enough for the assessment of QOL in addition to clinical measures in acetabular fracture patients.

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