

Quality of Life during Rehabilitation of Distal forearm Fracture: A Pilot Study

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Abstract

Introduction: Rehabilitation refers to restoring health by therapy. Studies have suggested that there is deterioration of the quality of life during rehabilitation period of fractures. The aim of this study was to assess the quality of life during the rehabilitation of distal forearm fracture.

Methodology: Qualeffo questionnaire was used to determine the quality of life after obtaining permission from the International Osteoporosis Foundation. Institutional Ethics committee approval was obtained. Seven patients were randomly chosen (Mean age: 32.71 ± 23 years) from the wards of the Department of Orthopaedics, KIMS Hospital, Bengaluru, during September 2016. Inclusion criteria were patients 4 weeks into rehabilitation with distal forearm fracture. The study was explained to them and written consent obtained. The Qualeffo questionnaire was administered by interview method. A Qualeffo index $\geq 2700/4800$ was considered as deteriorated quality of life. Data were tabulated and statistical analysis performed using statistical software Statistical Package for the Social Sciences (SPSS) V18.0.

Results: Mean Qualeffo index was 3114.28 ± 800.76 . Five of seven patients (71.4%) had a deteriorated quality of life with Qualeffo index ≥ 2700 . Mean score of disability disturbance was 3.714 ± 0.88 . Mean score of the quality of life perception is 4.571 ± 0.49 . There is a positive association between age and Qualeffo score which is statistically significant ($r = 0.819$, $P = 0.023$). A negative association between affected side in distal forearm fracture and index of the quality of life perception was observed but is not statistically significant ($r = -0.471$, $P = 0.29$).

Conclusion: Quality of life is affected during the rehabilitation of distal forearm fracture. However, the results of the study have to be confirmed with a study in a larger sample size.

Keywords: Quality of life, fracture

Introduction

Quality of life may be defined as a standard of health, comfort, and happiness by an individual or a group. Quality of life is determined by a number of factors including extent to which hopes and ambitions are matched by experiences, perceptions of position in life, and things which are regarded as

a priority in one's life [1]. Distal forearm fractures commonly encountered in clinical practice include Colles' fracture, Smith's fracture, Barton's fracture, and Chauffeur's fracture. These fractures are easily treatable with a good prognosis, either by immobilization or surgical treatment modalities. Rehabilitation refers to restoring health by therapy which includes physical, psychological, and social rehabilitation [2]. Previous studies have shown that patients who have undergone a surgical intervention have a poorer quality of life [3]. Previous studies have suggested that there is deterioration of the quality of life during rehabilitation period of fractures [4]. There is a

need to study the quality of life in patients with distal forearm fracture due to lack of sufficient studies in this domain [5]. The aim of this study was to assess the quality of life during the rehabilitation of distal forearm fracture.

Methodology

Qualeffo questionnaire was used to determine the quality of life after obtaining permission from the International Osteoporosis Foundation, Geneva [6]. Institutional Ethics committee approval was obtained. Seven patients were randomly chosen by convenience sampling (Mean age: 32.71 ± 23 years) from the wards of the Department of Orthopaedics, KIMS Hospital, Bengaluru, during September

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Table 1: Characteristics of the study group

n=7	Mean±SD
Age (year)	32.7±23.4
Qualeffo score (/60)	43.14±8
Qualeffo index (/4800)	3114.28±800.76
Pain (/5)	2.57±1.04
Numbness (/5)	1.85±0.63
Stiffness (/5)	3.14±0.83
Deformity (/5)	3.71±0.88
Washing hair (/5)	3.42±1.17
Turning door key (/5)	3.57±1.29
Work (/5)	3.28±1.57
Typing (/5)	3.42±1.49
Ability to drive (/5)	4.85±0.34
Interference (/5)	4.28±0.69
Taking help (/5)	4.28±1.16
Quality of life perception (/5)	4.57±0.59

2016. As this was a pilot study, sample size was not calculated. Inclusion criteria were patients 4 weeks into rehabilitation with distal forearm fracture including those who underwent conservative and operative management. Patients with comorbid complications having an impact on quality of life and those unwilling to participate were excluded from this study. The study was explained to them and written consent obtained from the patient. After obtaining written consent, baseline details, namely age, gender, date of fracture, fracture type, and side of fracture, were collected. In case of pediatric patients, consent was obtained from the parent/guardian. The Qualeffo questionnaire was administered by interview method. The interview was conducted by a single interviewer who was the 3rd year undergraduate medical student in the vernacular language. The questionnaire was translated from English to the language best understood by the study participant. Basic clinical history was elicited and clinical examination was performed. The

average duration of each interview was between 8 and 10 min. In addition to the Qualeffo questionnaire, radiographic data, i.e., X-rays were collected. The Qualeffo questionnaire considered the following parameters, namely

- Pain in the fractured limb
- Numbness/pins and needles sensation,
- Stiffness
- Disturbance by deformity
- Ability to wash hair
- Turn a door key
- Problem while doing one's work

- Problem typing
- Ability to drive
- Extent of interference
- Help from friends and relatives
- Overall assessment of the quality of life.

Each parameter was scored on a scale of 1–5, wherein 1 was the best possible response and 5 was worst possible response. The net score was totaled to out of 60 and Qualeffo index was calculated by multiplying the Qualeffo score by 80. Qualeffo index ≥ 2700/4800 was considered as deteriorated quality of life. Data were tabulated and statistical analysis performed using statistical software SPSS V18.0.

Results

Mean age of the participants in the study group was 32.7 ± 23.4 years. Of the seven participants, six participants were right handed and one participant was left handed. Among the subjects who were a part of the study, two had fracture of the right distal forearm and five had fracture of the left distal

forearm. Mean Qualeffo score was 43.14 ± 8.00. Mean Qualeffo index was 3114.28 ± 800.76. 5 of 7 patients (71.4%) had a deteriorated quality of life with Qualeffo index ≥ 2700. Mean perception of pain score was 2.58 ± 1.04. Mean score of numbness or pins and needles sensation was 1.86 ± 0.64. Mean score of stiffness was 3.1 ± 0.83. Mean score of disability disturbance is 3.714 ± 0.88. Mean score of difficulty washing hair is 3.42 ± 1.1. Mean score of ability to turn door key was 3.57 ± 1.29. Mean score of disability to typing/writing was 3.42 ± 1.49. Mean score of the extent of receiving help is 4.28 ± 1.16. Mean score of the quality of life perception is 4.571 ± 0.49. There was a positive association between age and Qualeffo score which is statistically significant (r = 0.819, P= 0.023). There were positive associations between side of affection and pain (r = 0.196, P = 0.67), side of affection and quality of life perception (r = 0.47, P = 0.28), and side of affection and deformity (r = 0.301, P = 0.51) but were not statistically significant. A negative association between affected side in distal forearm fracture and index of the quality of life perception observed was not statistically significant (r = -0.471, P = 0.29).

Discussion

In our study, there is a deterioration of the quality of life during rehabilitation of distal forearm fractures. Previous studies by Alexiou et al. [7] and Griffin XL et al. [8] had concluded that quality of life was deteriorated in patients with hip fractures. Mean perception of pain score was 2.58 ± 1.04 which could possibly be attributed to complex regional pain syndrome (algodystrophy) [9]. Being a clinical diagnosis encompassing erythema, edema, functional impairment, and vasomotor disturbance, it is often overlooked or masked by therapeutic analgesics as a part of follow-up care.

Table 2: Correlation table of assessed parameters

	Age versus Qualeffo score	Age versus Qualeffo index	Age versus QoL	Side versus QoL
r	0.819	0.819	0.162	0.47
p	0.023	0.023	0.728	0.28
	Age versus pain	Age versus stiffness	Age versus deformity	Side versus deformity
r	0.72	0.859	0.382	0.301
p	0.063	0.013	0.5	0.511
	Age versus work	Age versus typing	Age versus help	Side versus pain
r	0.834	0.757	0.187	0.196
p	0.019	0.048	0.68	0.67

The mean index of disability disturbance is 3.714 ± 0.88 can be attributed to decreased physical, social, and emotional functionality. Mean score of the extent of receiving help is 4.28 ± 1.16 can be attributed to a social and emotional phenomenon, wherein a feeling of independence of the patient is lost which can adversely affect patient psychology. A previous study by Kiecolt-Glaser et al. [10] has shown that an impaired patient psychology has an impact on wound healing and rehabilitation. There is a statistically significant association between age and the Qualeffo score. The World Health

Organization has adopted the term active aging which involves optimizing opportunity for health [11]. Age factor shows positive association with a number of parameters including Qualeffo score, Qualeffo index, pain, stiffness, work, and difficulty typing. Conventional wisdom would suggest that side of affection would play a role in quality of life perception. Literature suggests that 10% of population are the left hand dominant [12]. In this study, there were two cases of the right limb involvement and five cases of the left limb involvement. Although there are statistically insignificant positive

associations between side of involvement with pain ($r = 0.196$, $P = 0.67$), side of involvement with quality of life perception ($r = 0.47$, $P = 0.28$), and side of involvement with deformity ($r = 0.301$, $P = 0.511$), the data suggest a positive trend which has to be confirmed in a larger study.

Conclusion

In this study, quality of life is affected during the rehabilitation of distal forearm fracture. The results of the study have to be confirmed with a larger sample size.

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