Appraise the Health-Related Quality of Life among Trauma Patients
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ABSTRACT

Background: Limb injuries is revolve a life-changing event that can cause significant disruptions in many important areas of life.

Objectives: The objective of our study was to appraise the Health Related Quality of Life (HRQOL) and psychosocial factors associated with pain and disability in patients following Upper limb (UL) and lower limb (LL) trauma patients.

Materials and methods: A sample of convenience 300 adult male and female patients who met the inclusion criteria was included. A short form (36) health status questionnaire was filled by a single author from each patient after one year of follow up. This part was utilized to assess the QOL among limbs traumas patients.

Results: Intraclass correlation coefficients were greater than 0.7 in five of the eight domains of SF 36 except mental health, social function and general health. Chronbach’s α was higher than 0.8 all the domains except in social function domain. There was no difference in Health Related Quality of Life in patients with upper and lower limb trauma. However there was significant difference in 4 domains related to physical components of SF 36 survey form between male and females.

Conclusion: Both upper and lower limb trauma similarly affects the Health Related Quality of Life in all age group of patients.

Keywords: Sf-36, Trauma, HRQOL
INTRODUCTION

Trauma is one of the rising public health problems and the most common avoidable reason of death among children and adults up to age 45 years. Over 100 million people visit annually emergency departments in the India, with about 36% of the visits to trauma centers. Traumas are the top one cause of death of children and young adults and the most common cause for hospital admissions for these age groups in India. It is also one of the most common reasons for hospital care and early death for older people. With the advancement of trauma care there is improvement in short term survival however studies on long term outcome is still limited.

The most common cause of death from trauma worldwide is traffic accidents, and more than 90 percent of the deaths occur in low and middle income countries. According to a report from WHO 1.3 million people are killed on the roads annually, and another 50 million are injured. Traffic-related deaths are predicted to rise by 66 percent over the next 20 years. The United Nations and the WHO have declared 2011-2020 a decade of action for road safety, with focus on increasing road safety around the world. Owed to them rate of limbs injuries has been increasing over the years, particularly accidental injuries due to increase number of vehicles in modernized era.

Lower extremity injuries are more frequent than upper extremity injuries. Tibia and fibula fractures are the most common injury observed in about 40% of cases, while vascular injuries are reported to be as high as 48% among lower extremity injuries.

Over time, in an attempt to quantify the severity of traumas and to establish guidelines for decision-making, whether to save or to trauma the mangled extremity, several scoring systems have been developed. Health related quality of life (HRQOL) has been introduced to assess people's health status. To date, a number of questionnaires have been developed to evaluate HRQOL, and the 36-item Short Form Health Survey (SF-36) is the most commonly used one. SF-36 has been proven useful in monitoring population health, estimating the burdens of different diseases and injury, monitoring outcome in clinical practice, and evaluating medical treatment effects. It is available in many languages with its content examined cross cultures.

There are growing evidences that trauma patients have impaired HRQOL after trauma compared with reported pre-injury levels and with HRQOL in general populations but there are limited studies that compared the HRQOL between UL and LL limb injuries. In this study, we aimed to appraise the HRQOL of trauma patients and identify the factors affecting the HRQOL among them with UL and LL injuries.

MATERIALS AND METHODS

The process of samples collection for this study took place during the period from January to June 2014. Patients were adults of both sexes who had undergone primary upper and lower limb trauma before 1 year and were aged between 18 and 60 years.

According to trauma; patients were divided in two groups Upper Limb (UL) and Lower
Limb (LL) trauma respectively. Participants were to be excluded from the current study if they had shown any musculoskeletal injuries. Written informed consent was obtained from each patient. SF-36 sheet for measuring the QOL were explained to the patients. The patients’ answers were recorded by the single author (CS). Each patient was interviewed individually and the data collection time for each patient lasted for almost 15 to 30 minutes. SF-36 v2 questionnaire assess scores across eight domains of health that is physical function (PF), role limitations due to physical problems (RP), bodily pain (BP), general health (GH), energy/fatigue (VT), social function (SF), role limitations due to emotional problems (RE), mental health (MH), and one single item dimension on health transition. The SF-36 dimensions are also divided into two categories: Physical Component Summary (PCS) and Mental Component Summary (MCS), which represent the physical functioning and wellbeing, and emotional wellbeing, respectively.

Statistical Analysis: The data were analyzed using Med Calc Software (Trial Version). Student t test was used to compare different domains of HRQOL in two groups. Pearson’s correlation test was used to correlate the PCS and MCS scores with eight domains of HRQOL. Cronbach's α test was performed to check the reliability of the questionnaire. Statistical significance was considered at P value < 0.05.

Results: Total of 300 consecutively trauma patients were enrolled in six month out of them 64.4% male and 35.6% female patients. Our study showed (table1) that more than half of the females (52.3%) and males (64.2%) in age group ranged from less than forty years with means 47.61 and 48.20 years respectively.

For the level of education, nearly 17.0% males or females 26.1% are illiterate and 10.3% male or 9.34% female highly educated. In relation to type of work, most of the males and most of the females (78.2 and 79.5%) are having jobs that require physical efforts. Regarding residence, most of the males and females (55.5% and 77.6%, respectively) are from rural areas.

Distribution of Clinical Characteristics of the patient’s shows 166 of patients had Upper limb trauma whereas 134 of patients had lower limb trauma (table 2). Regarding comorbidity, almost half of the patients have associated comorbid disease such as hypertension, diabetes.
Table 1: Socio-demographic characteristics of the studied trauma patients

| Characteristics         | Male (n=193) | Female (n=107) | Total (n=300) |
|-------------------------|--------------|----------------|---------------|
|                         | No | %   | No | %   | No | %   |
| Age in years            |    |     |    |     |    |     |
| <40                     | 124| 64.2| 56 | 52.3| 180| 60  |
| 40-49                   | 24 | 12.4| 16 | 15  | 40 | 13.3|
| 50-59                   | 25 | 13  | 24 | 22.4| 49 | 16.3|
| 59+                     | 20 | 10.4| 11 | 10.3| 31 | 10.3|
| Mean ± SD               | 48.20 ± 12.92| 47.61±9.86    | 47.82±11.53  |
| Educational level       |    |     |    |     |    |     |
| Illiterate              | 33 | 17  | 28 | 26.1| 61 | 20.3|
| Primary                 | 36 | 18.6| 34 | 31.7| 70 | 23.3|
| Secondary               | 104| 53.8| 35 | 32.7| 139| 46.3|
| High                    | 20 | 10.3| 10 | 9.34| 30 | 10  |
| Type of work            |    |     |    |     |    |     |
| Mental                  | 42 | 21.7| 12 | 20.5| 54 | 18  |
| Physical                | 151| 78.2| 85 | 79.5| 236| 78.6|
| Residence               |    |     |    |     |    |     |
| Urban                   | 86 | 44.5| 24 | 27.4| 110| 36.6|
| Rural                   | 107| 55.5| 83 | 77.6| 190| 63.3|

Table 2: Clinical characteristics of the sample

| Characteristics        | Male (n=193) | Female (n=107) | Total (n=300) |
|------------------------|--------------|----------------|---------------|
|                        | No | %   | No | %   | No | %   |
| Place of trauma        |    |     |    |     |    |     |
| Upper limb             | 112| 67.9| 53 | 32.1| 165| 55  |
| Lower limb             | 81 | 60  | 54 | 40  | 135| 45  |
| Comorbidity            |    |     |    |     |    |     |
| Yes                    | 95 | 49.2| 22 | 20.6| 117| 48.0|
| No                     | 98 | 50.8| 85 | 79.4| 183| 49.6|
(52.3%) and males (64.2%) in age group ranged from less than forty years with means 47.61 and 48.20 years respectively. Distribution of Clinical Characteristics of the patient’s shows 166 of patients had Upper limb trauma whereas 134 of patients had lower limb trauma (table 2). Regarding comorbidity, almost half of the patients have associated comorbid disease such as hypertension, diabetes. The internal reliability of SF-36 was measured by Cronbach's \( \alpha \) coefficient, which ranged from 0.699 (the SF domain) to 0.974 (the RP domain) for the eight SF-36 dimensions (Table 3). The PCS score were highly correlated with BP and PF domain whereas MCS score were mostly correlated with SF and MH domains. In contrast, RE and RP were the poorest measures of the physical and mental components, respectively. There was a significant difference in RP, BP, SF, VT and MH domains of HRQOL between males and females [figure 1]. However no significant difference was observed between two age groups [figure 2]. Patients with upper and lower limb trauma also had similar HRQOL [figure 3].

**Table 3: Reliability analysis of HRQOL domains**

| Domain | Item | Chronbach’s \( \alpha \) | Interclass correlation coefficient | Inter Item Correlation range | PCS | MCS |
|--------|------|--------------------------|-----------------------------------|-------------------------------|-----|-----|
| PF     | 10   | 0.992                    | 0.924                             | 0.706-1.000                   | 0.797 | 0.101 |
| RP     | 4    | 0.974                    | 0.903                             | 0.805-1.000                   | 0.752 | 0.041 |
| RE     | 3    | 0.960                    | 0.889                             | 0.841-1.000                   | 0.411 | 0.390 |
| VT     | 4    | 0.938                    | 0.799                             | 0.763-0.927                   | 0.726 | 0.211 |
| MH     | 5    | 0.861                    | 0.522                             | 0.305-0.865                   | 0.455 | 0.431 |
| SF     | 2    | 0.699                    | 0.537                             | 0.574-0.574                   | 0.546 | 0.524 |
| BP     | 2    | 0.898                    | 0.815                             | 0.822-0.822                   | 0.877 | 0.044 |
| GH     | 5    | 0.861                    | 0.554                             | 0.258-0.871                   | 0.757 | 0.196 |
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Figure 1: HRQOL parameter in male and female patients

Figure 2: HRQOL parameter in different age groups
**Figure 3**: HRQOL parameter in upper and lower limb trauma
Discussion:

Trauma is one of the common problems in the present society. A number of people have one or both limbs injury and the situation moves to an increase worldwide. Trauma is a catastrophic work injury and often a major cause of disability. Individuals with traumas have to adapt to several losses and changes to their lifestyle, social interactions, and identity. Therefore, the current study aims to assess HRQOL and to determine the factors affecting HRQOL of patients with UL and LL trauma. Since the risks of a low response rate and poor quality information are well documented in the literature when dealing with distrustful old persons and rural population. We have put a special effort in establishing a privileged access to the eligible subjects and in setting the interviews at their home in trauma patients. This has resulted in a 100% participation rate to our study.

Demet et al\textsuperscript{21} study reports that UL injury had high HRQOL (compared to lower limb amputees) is primarily related to their responses pertaining to physical disability, pain, and energy level. In contrast in our study the HRQOL was same in both upper and lower limb trauma patients. Dunn\textsuperscript{22} reported that younger amputees were having significantly high risk of developing depression than older amputees on account of activity restriction. Zidarov et al\textsuperscript{23} also report that all participants had poor scores of physical functions (ability to go outside and overall fitness) at baseline and remained poor at three month follow-up. This finding is considered to be the most important factor influencing the physical health component of HRQOL, whereas the employment status and comorbidities impacted mainly the mental health component of HRQOL in traumas. Current study showed that there were no statistically significant relations between age and Physical as well as mental health component. In contrast to our study, Dunn\textsuperscript{22} reported, higher levels of depression in younger patients. Demet et al\textsuperscript{21} also who reports that younger individuals with upper or lower limb traumas have a higher HRQOL in several domains, including emotional reactions and social isolation. In the same line a study carried out by Deans et al\textsuperscript{24}, which examined HRQOL in 75 individuals with above- or below knee traumas, indicated that HRQOL in the physical domain is affected the most in this patient group.

It is recommended that the participants receive a structured rehabilitation program which is appropriate to the specific needs of people with limb traumas in order to be able to find out its impact on their functional status and HRQOL. Studies on large scales are needed from different geographical areas to achieve more general results. Another limitation of this study was that there is a need for prospective longitudinal studies to systematically follow the change in the HRQOL of individuals with traumas over time and assess its determinants.

Conflict of interest:

Authors declared that, there is no conflict of interest

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