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Quality of life in trauma victims six months after hospital discharge

ABSTRACT

OBJECTIVE: Trauma is the third most important cause of death in Brazil. However, its impact on survivors' quality of life has been scarcely studied in this country. This study aimed to assess trauma victims' quality of life, cared for in an emergency hospital unit, six months after discharge.

METHODS: A total of 35 patients from the emergency unit of a university hospital in the city of Ribeirão Preto, Southeastern Brazil, were included in this study, between 2005 and 2006. Patients were interviewed in their homes, six months after hospital discharge. The short version of the World Health Organization Quality of Life (WHOQOL-BREF) instrument was applied to assess the physical, psychological, social relationships, and environmental domains. Associations between domain scores and hospital stay, age, sex and Injury Severity Score variables were analyzed with linear regression models.

RESULTS: Significant reduction in quality of life was found in the group studied, when compared to samples of normal people in national and international studies, especially as regards the physical, psychological, and environmental domains. The social relationships domain revealed the highest mean scores, with 69.7 points, whereas the environmental domain received the lowest score (52.4 points), both on the percentage scale. Variables associated with the physical domain were hospital stay ($p=0.02$), age ($p<0.01$) and sex ($p=0.03$). The analysis did not show association with the variables studied for the remaining domains.

CONCLUSIONS: Trauma victims showed a reduction in quality of life scores. Even though the physical aspect was the most affected, there is evidence that the psychological and environmental domains remained far from the ideal conditions expected for the general population.

DESCRIPTORS: Wounds and Injuries, rehabilitation. Multiple Trauma, rehabilitation. Aftercare. Rehabilitation. Quality of Life. Questionnaires. World Health Organization.

INTRODUCTION

In 2004, a total of 127,470 deaths caused by external injuries were recorded in Brazil, leading trauma to become the third most important cause of death. In 2006, a total of 791,826 patients with the same diagnosis were hospitalized in the hospitals of the *Sistema Único de Saúde (SUS)* – Unified Health System). Trauma repercussions on survivors' physical, psychological and social conditions have been scarcely studied in Brazil,^{3,4,22} unlike developed countries.^{1,9,15,17}

Instruments to assess life conditions have been studied, aiming to measure repercussions of health problems.^{12,13} Distinct quality of life definitions have

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been suggested in several countries and cultures. The World Health Organization (WHO) defines quality of life as “the perception by individuals of their position in life, in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”.²¹

In an attempt to assess quality of life in different countries, in 1991, the WHO put together a team that aimed to develop an assessment instrument with multicultural aspects.²¹ As a result, the “World Health Organization Quality Of Life - 100” (WHOQOL-100) and its short version, the WHOQOL-BREF, are recommended by the WHO to assess quality of life.²⁰ These instruments have been adapted, applied and validated in Brazil and other 25 countries.^{6,7,19}

The present study aimed to assess quality of life in trauma victims cared for in an emergency university hospital, six months after discharge.

METHODS

A descriptive study with an epidemiological survey was performed in the city of Ribeirão Preto, Southeast Brazil, in 2005-2006, where the variable of interest was quality of life in patients, victims of blunt trauma. One emergency unit of a university hospital, which is a tertiary reference service that cares for severe trauma victims in the city and its region, was selected for the study. This unit has emergency surgery, neurology, neurosurgery and orthopedics teams available on site, 24 hours a day, in addition to other professionals, such as psychologists and physiotherapists, working with the medical and nursing teams. The hospital cares for about 1,500 trauma victims per year, of which about 20% are considered severe.

There were no expected percentage estimates for loss of quality of life to calculate the sample size, whether they were general or specific to each of the domains studied. As a result, the percentage was assumed to be 50%, a value that maximizes sample size in epidemiological surveys and enables conservative values to be reached. The following classic procedure to determine “n” in this model was used:

$$n = \frac{Z\alpha^2 PQ}{d^2}$$

where: $Z\alpha = 1.96$; $P = 50\%$; $Q = (1-P) = 50\%$; $d =$ difference between actual prevalence and that expected to be determined with the survey.

A relatively broad “d” value was chosen for this study, at about 15%, due to possible refusals of participation, changes in team location, and patient not found; resulting in a sample size of 40 participants.

During the second semester of 2005 and first semester of 2006, 40 patients cared for in the emergency unit were selected, all victims of blunt trauma or contusions – defined as injuries caused by external mechanical forces without loss of skin integrity.

Patients who remained hospitalized for a length of time equal to or longer than 24 hours and also completed their treatment in the emergency unit, lived in the city of Ribeirão Preto, were aged between 16 and 65 years, and had, at the time of admission, a Glasgow coma scale ≥ 10 and Injury Severity Score (ISS) ≥ 6 were included in the study.

Clinical and demographic data were obtained from the emergency unit database.

Six months after hospital discharge, patients were contacted by phone so a home visit could be booked. After giving approval to an informed consent form, 35 patients were instructed to fill out the WHOQOL-BREF questionnaire, in accordance with WHO recommendations. With its 26 questions, the WHOQOL-BREF seeks to assess four life domains of the interviewee: physical, psychological, social relationships, and environmental. This instrument’s scores can be shown as gross values, on scales that range from 4 to 20 or from 0 to 100. Higher scores indicate better quality of life.

Statistical analysis was performed in the R software program.¹⁰ Association between WHOQOL-BREF physical, psychological, social relationships and environmental domain scores and hospital stay, age, sex and ISS variables were analyzed with linear regression models. When these models are adjusted, the coefficient of determination (R^2) provides an estimate of proportion of each domain’s variability, explained by the group of variables analyzed. Comparisons of mean scores of questionnaire domains between the male and female sexes and ISS values < 9 and ≥ 9 were performed with the Student’s t-test. Significance level adopted was 5% in all hypothesis tests.

Internal consistency of responses was assessed using Cronbach’s alpha coefficient, and values > 0.70 were considered satisfactory.²

The study was approved by the Clinical Hospital Ethics Committee at the São Paulo University School of Medicine, and an informed consent form was obtained before the beginning of each interview.

RESULTS

Mean age was 36.1 years ($sd=11.7$), of which 27 (77%) were male patients and eight (23%) were female. Main trauma mechanisms were the following: falls ($n=13$, 37%), motorcycle accidents ($n=6$, 17%) and run-overs ($n=5$, 14%). Mean ISS was 8.1 ($sd=2.8$), with 24 cases (69%) showing ISS lower than 9. Only one patient showed an ISS above 16. All patients

Table 1. Mean scores and standard-deviations for WHOQOL-BREF domains in patients, victims of blunt trauma, six months after hospital discharge. Ribeirão Preto, Southeast Brazil, 2005-6.

Score	WHOQOL-BREF domain Mean (SD)			
	Physical	Psychological	Social relationships	Environmental
Gross indices	23.7 (5.8)	21.0 (4.9)	11.4 (3.2)	24.8 (5.9)
Scale from 4 to 20	13.6 (3.3)	14.0 (3.3)	15.2 (4.3)	12.4 (2.9)
Scale from 0 to 100	59.7 (20.9)	62.5 (20.4)	69.7 (26.9)	52.4 (18.4)
Scale from 0 to 100	59.9 (20.9)	62.5 (20.4)	69.7 (26.9)	52.4 (18.4)

showed a Glasgow coma scale of 14 or 15 on arrival, characterizing the group as comprised by individuals with minimum or absent neurological trauma. Hospital stay ranged from one to 35 days, with a mean of 6.3 days (sd=7.1 days) and median of four days.

Results found for the four domains assessed by the WHOQOL-BREF questionnaire are shown on Table 1. Figures were shown in three different ways: as gross indices, on a scale from 4 to 20, and on a scale from 0 to 100. The social relationships domain had

Table 2. Multiple linear regression model for characteristics of blunt trauma patients, six months after hospital discharge, and four psychometric domains assessed. Ribeirão Preto, Southeast Brazil, 2005-6.

Variable	Coefficient	p-value	R ²
Physical domain			0.54
Constant	88.3264		
Hospital stay (in log)	-7.8227	0.02	
Age	-0.6634	<0.01	
Sex	14.4745	0.03	
ISS	-11.2536	0.06	
Psychological domain			0.19
Constant	80.5419		
Hospital stay (in log)	-2.3346	0.56	
Age	-0.5263	0.10	
Sex	8.2085	0.36	
ISS	-5.1697	0.50	
R ² = 0.19			
Social relationships domain			0.14
Constant	65.7895		
Hospital stay (in log)	4.0929	0.36	
Age	0.0731	0.83	
Sex	7.8875	0.41	
ISS	-13.9269	0.12	
R ² = 0.14			
Environmental domain			0.14
Constant	67.6354		
Hospital stay (in log)	-2.7061	0.47	
Age	-0.4049	0.19	
Sex	5.8187	0.48	
ISS	-3.5324	0.63	
R ² = 0.14			

R²: Coefficient of determination (proportion of variability of response variable, explained by the group of variables in the model)

ISS: Injury Severity Score

the highest mean score, with 69.7 points, whereas the environmental domain had the lowest score, 52.4 points, both on the percentage scale.

Internal consistency of responses was assessed with Cronbach's alpha coefficient, showing satisfactory results for all domains, with values between 0.75 and 0.80.

On Table 2, multiple linear regression analysis showed that the variables more associated with the physical domain were hospital stay ($p=0.02$), age ($p<0.01$) and sex ($p=0.03$). The coefficient for length of hospital stay was negative: the longer the stay, the lower the physical domain score. An inverted relation was observed for older ages, which also showed a trend towards physical domain reduction. Individuals with $ISS\geq 9$ were older (mean age of 40.7 years, against a value of 32.7 years for patients with $ISS<9$, $p=0.03$) and longer hospital stay (mean stay of 8.5 days, against 4.7 days for patients with $ISS<9$, $p=0.05$). Greater coefficient of determination for the regression model adjusted for the physical domain ($R^2=0.54$) was found; in other words, the hospital stay, age, sex and ISS variables formed a set of attributes more related to this domain than the others. The analysis was not associated with the variables studied for the remaining domains.

Analysis of results for different domains, according to sex, did not show statistically significant difference (Figure). Comparison between two groups with different levels of severity ($ISS<9$ and $ISS\geq 9$) shows statistical difference for the physical domain, with lower indices for the group with higher ISS (Figure).

DISCUSSION

Different approaches can be used to assess impact of traumatic injuries. Study of mortality has been frequently employed, even though this does not always give a complete view of reality and of quality of care given to the population.⁵ In the last years, there has been growing recognition that trauma has consequences, in the medium and long term, as regards increase in special needs and reduction in quality of life in victims. This impact is not only related to the initial anatomical and physiological changes, but also the social and psychological aspects of acute care and rehabilitation.¹⁴ In this way, the main purpose of trauma care becomes, in addition to maintaining the patient's life, their return to society with capacity and functionality conditions that are as close as possible to their pre-trauma condition.

Many factors can influence post-trauma quality of life, such as the quality of care provided by the health system, type and severity of injuries, number of surgical interventions, degree of sequelae, pain, access to rehabilitation and socioeconomic conditions. As a result,

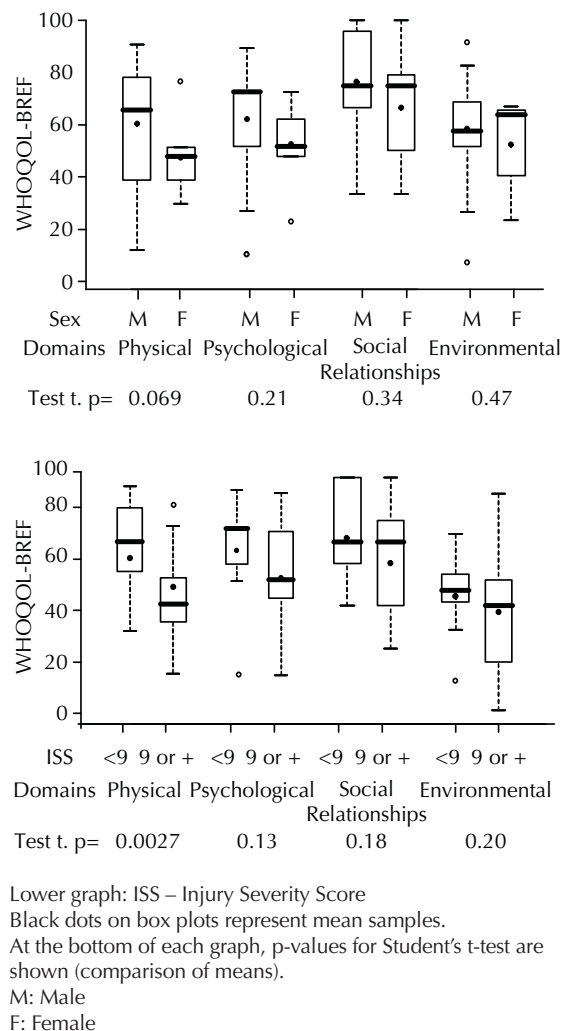


Figure. Relationships between domains and sex and between domains and severity of injuries. Ribeirão Preto, Southeast Brazil, 2005-6.

assessment of post-trauma quality of life may reflect the health care conditions of a certain region, and also identify the need for equipment and institutional services aimed at survivors' psychosocial reintegration.¹⁴

One of the difficulties to study quality of life is the choice of instrument to be used, among the great number of instruments available,¹⁸ involving discernment of its utilization, according to each situation or aspects analyzed. The WHOQOL-BREF was chosen, because it is the instrument designed by the WHO and it has a global and multicultural approach to assess quality of life. WHOQOL domains show characteristics that are more compatible with those expected from patients, victims of trauma. In addition, the instrument showed good results for discriminant validity, criterion validity, internal consistency and test-retest reliability in its validation for the Portuguese language and application in Brazil.^{6,7}

Some of the epidemiological characteristics found in the sample follow a pattern for trauma victims described worldwide, with a majority of young males. Mean hospital stay was close to one week, with low severity scores (mean ISS equal to 8.1) and practically no central neurological injuries. Thus, the population studied can be characterized as having suffered mild injuries.¹⁶

In general, patients showed low levels for all quality of life domains. Even though severity scores were low, there was a relationship between degree of injury and physical domain, in the medium term, after hospital discharge. Lower quality of life indices in the physical domain were equally related to older ages, longer hospital stays and female sex, which is compatible with other studies in the literature.¹¹ These data enable more vulnerable groups to be identified, groups that could benefit from a special approach, since the beginning of treatment.

A comparison of sample data with values obtained by Fleck et al, in the state of Rio Grande do Sul, in 2000,⁷ showed a significant reduction in quality of life in practically all domains, except for social relationships. Environmental issues had great impact on patients' assessment, even six months after trauma. It can be suggested that, even for mild injury victims, environmental adaptation and accessibility have not been guaranteed in the city of Ribeirão Preto. This same characteristic was confirmed when a comparison was made with the large sample studied by Skevington et al (11.830 patients), in a multicenter study sponsored by the WHO, in 2004.¹⁹ However, the difference in social relationships showed better results in the group from Ribeirão Preto than the sample from multiple countries.¹⁹ Apparently, lack of family support does not seem to have been a key factor among post-traumatic conditions, once it was not explicitly manifested by the patients analyzed in the emergency unit.

Compared to the trauma victims studied by O'Donnell et al,¹⁴ in Australia, it is possible to make assumptions about quality of care in the city of Ribeirão Preto. Physical and psychological domain values of both samples were similar, even though the population studied in Australia had, on average, severity scores considerably higher than the sample from Ribeirão Preto. Perhaps,

important aspects of the complete approach towards the trauma patient have not been put into practice in the population studied in Ribeirão Preto, hindering the victims' return to quality of life conditions expected for a normal population. Both Brazilian and Australian groups of patients showed great impact on quality of life scores, when compared to the general Australian population's normal standard.^{8,23} Once more, as a positive aspect, there was no significant difference in the social relationships domain between the sample studied and what is expected for the general Australian population, suggesting that family support among patients from Ribeirão Preto may have been maintained at adequate levels of care.

The main limitation to this study may have been the sample size, which, perhaps, was not representative of the whole group of trauma victims cared for in the emergency unit, during this period. In addition, the absence of patients, victims of interpersonal aggression, may have interfered with results, due to the strong psychosocial character associated with this type of trauma mechanism. Finally, the methodology's cross-sectional nature adopted imposes restrictions on the study of variable causality.

In conclusion, findings from this study reveal that trauma may be associated with a great negative impact on quality of life in victims, in the medium term. Even though the physical aspect was the most affected, when compared to national and international standards, there is evidence that the psychological and environmental domains, six months after trauma, remained far from the ideal conditions expected for the general population.

Routine experience shows that the clinical approach towards patients, victims of trauma, in the city of Ribeirão Preto, has not been sufficient to reestablish the expected standard of quality of life. However, data from this study are not enough to identify and definitely confirm these deficiencies. Thus, more in-depth studies, with larger and more representative samples, are necessary, as well as the development of national and international standards of normality for quality of life, based on the WHOQOL-BREF, and following the Australian model.

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