

Quality of Life of Road Traffic Injury Survivors Aged 15-44 Years Suffered From Moderate and Severe Head Injuries in Karachi, Pakistan

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ABSTRACT

Background: Most of Road traffic injuries are predicted to be the third leading contributor to the global burden of disease by 2020 and patients end up into head injuries which leave devastating impacts on individual and society. Quality of Life After Brain Injury (QOLIBRI) is a specific tool that measures quality of life in head injury patients.

Methods: This was a cross sectional study among 300 patients aged 15-45 years, attended emergency department of the Aga Khan University Hospital. Structured questionnaire included demography, injury details, QOLIBRI, GOSE and WHO Disability Assessment Scale (WHODAS 12 items). Severity of injury was determined by Glasgow coma score of subjects reported in emergency department on admission. This was one time telephonic survey in which bi-directional data was collected from subjects about injury and outcome (QOLIBRI). To identify the determinants of QOL among RTI survivors with head injury multiple linear regressions was applied.

Results: The mean QOL score for study sample was $69.86 \pm (15.89)$. Most of the patients 210 (70%) were motorbike rider followed by four-wheelers 69 (23%). Mean age of RTI participants was $28.10 \pm (7.68)$ years. The quality of life decreases with increase in severity of head injury by -697.32 (95% CI; $-1006.44, -388.20$).

Conclusions: This study suggests severity of head injury, recovery time, surgery resulting from RTA, employment, family system and disability to have long term impact on QOL of RTI survivors.

Keywords: Quality of life (QOL); Quality of Life After Brain Injury (QOLIBRI); Head Injury; Trauma

INTRODUCTION

Road Traffic Injury (RTI) is a foremost public health agenda; amongst the causes of preventable deaths under age 55 years. RTI shares around 85% fatalities and 90% of Disability adjusted life years (DALYs) lost globally and contributes more than half of disabilities and mortalities between age 15-45 years of age [1]. Estimated effect of RTI is suspected to project from 14% to 20% by 2020 [2]. Rapid urbanization is resulting in vehicle related injuries worldwide, hence in developing countries [3,4]. Head injury has been reported as the most prevalent cause of mortality and morbidity [2,3,5].

Due to scarcity of regional data about head injuries in Asia; some of the estimations are drawn by Global Burden of Disease

studies [3,6]. Which point out incidence rate of head injury; one in India, 0.5 in China, 0.8 in other regions of Asia and Islands and 0.8 worldwide [6,7]. In Pakistan incidence of RTI is 15-18/1000 population annually [3].

Many RTI survivors end up in permanent disabilities and diminished quality of life [8] and also reported to suffer depression, anxiety, physical impairments, sexual impairments, loss of job, relational difficulties and change in sense of self ultimately [9,10].

Primary objective of study is to estimate quality of life scores of road traffic injuries (RTI) survivors with head injuries (age 15-45 yrs) after 6 months of event. Furthermore, secondary objective

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was to measure the predictors affecting quality of life of road traffic injuries (RTI) survivors.

METHODOLOGY

Study design and setting

This was analytical cross sectional survey conducted from February 4th to May 16th 2016.

This study was conducted at Aga Khan University Hospital (AKUH), utilizing the surveillance record of road traffic injury patient. List of all the patients admitted to AKUH with Head injury during January 2012 till August 2015 was obtained. Due to limited budget and time RTI survivors were interviewed on phone, followed by obtaining record information from confidential files.

Surveillance record is also present in other 5 public and private hospitals of Karachi. Unfortunately, approaching patient became very difficult and slow process. To make data collection feasible, and also for timely completion other sites were dropped. Study proposal was approved by the Ethical Review Committee (ERC) of Aga Khan University Hospital (AKUH). Amendments and updates were reported to ERC and approval was received.

Study participants

All those RTI survivors, aged 15-44 years admitted in Aga Khan University hospital emergency department, who had moderate and severe head injuries secondary to RTI at least 6 months back, fulfill eligibility criteria and living in Karachi Pakistan, who agreed to participate in study were recruited for study.

The participants were recruited through purposive sampling technique. AKUH follows have ICD-9 criteria used for archiving the data. We retrieved the RTI case based on ICD-9 code and followed patients through phone numbers. All the individuals who had suffered head injuries (moderate and severe head injury based on GCS score) secondary to RTI at least six months back were enrolled in the study.

The major part of data was collected through telephonic interviews at community health services and hospital admission related information about RTI was gathered from patient confidentially at Human Information Management System (HIMS) AKU.

First call was made at 11 am onwards (preferably as early morning mostly expect people either sleeping or having busy routines). First of all data collectors introduced themselves and filled the eligibility form if person is eligible to participate in the study or not. Based on following possibilities interviews were conducted:

Interview was proceeded if subjects agree (Consent Based).

Non response (If subjects do not agree to volunteer the reason was noted and interview was finished).

Feasible time for subject to conduct interview was communicated by study subjects (and then participants was called again on the given time schedule).

If subjects didn't agree to volunteer, the reason was noted and interview was finished.

Statistical analysis

This study also involved the development, translation and content validity index of the adopted study tool. A well structured questionnaire was used to evaluate the factors that impact the QOL of the RTI survivors with moderate to severe head injury.

The disease specific tool for head injury (QOLIBRI) quality of life after brain injury was used to measure the outcome variable. QOLIBRI instrument consists of 37 items in four satisfaction scales: (1) "Cognition" (7 items), (2) "Self" (7 items), (3) "Daily Life and Autonomy" (7 items), and (4) "Social Relationships" (6 items), and two bothered scales, (5) "Emotions" (5 items), and (6) "Physical Problems" (5 items). Scores range from 0-100, the higher the score the better is QOL and vice versa

Data was analyzed with main exposure as severity of head injuries and outcome (QOL), using software Stata version 12.

Frequency and percentages were calculated for the categorical variables include gender, education, socioeconomic status, family system, and marital status, total income, surgery, injuries other than head injury, type of surgery, severity of injury, co morbidities and disability.

Mean with standard deviation was computed for continuous variable e.g. age and QOLIBRI scores.

To analyze socioeconomic status factor component analysis was performed. The socioeconomic status was categorized into higher, middle and lower level and was further analyzed.

Simple linear regression analysis was performed to calculate adjusted β -coefficients with their 95% C.I. Each independent variable was regressed one by one against the outcome variable (Quality of life score), then according to significance of variable (p -value <0.25) variable was processed for multivariate regression [7].

Univariate regression analysis was followed by multicollinearity assessment between all the independent variables. Finally, a parsimonious multivariable model was developed to assess the association between head injury and quality of life in the presence of other important variables.

Study questionnaire and head injury related tool (QOLIBRI) was translated into local language using WHO guidelines, Forward translation, Back-translation by experts Pre-testing and cognitive interviewing and Final version.

The QOLIBRI scale was not validated in Pakistan and had never been used in Pakistan. This has been developed by WHO in 2008 specifically for head trauma survivors so we opted for this tool in our study. A panel of experts including neurosurgeon, neurologist, nurse specialist, research specialist, psychiatrist, epidemiologists and injury research specialists were part of CVI

expert panel. CVI of greater the 80% points the high agreement and satisfies use of tool in population under study.

Sample size has been calculated using formula ($n_0 = \sigma^2 (Z_{\alpha/2})^2 / d^2$) based on predictable standard deviation of 18 for QOL scale score in TBI population from previous studies [11,12]. We used power of 80% and significance level of 5%. For sample size calculation in this study the precision was 2, however we non response rate was adjusted to be 10% and we achieved minimum sample size of 300. This sample size was calculated based on mean QOL score obtained from QOLIBRI scale.

Study was approved by ethical review committee of Aga Khan University, Karachi Pakistan.

RESULTS OF THE STUDY

Participants summary

927 Participants were approached study through telephones calls, 633 calls were received and rest was either declined, not accessible or numbers were switched off. 300 patients were recruited for study as they fulfilled eligibility criteria and agreed to volunteer for the study interview on phone. Main reason of refusal was security issues and discomfort with telephonic interviews.

Descriptive statistics: The mean QOLIBRI score was $69.86343 \pm (15.89)$. Most of the patients 210 (70%) were motorbike rider followed by four-wheelers 69 (23%). Data showed that there was a weak linear relationship between QOLIBRI and other predictors therefore we selected square transformation for QOLIBRI on the basis of significant chi-squared value.

Data of our study revealed mean age of RTI participants was $28.10 \pm (7.68)$ years (Table 1). There were more male participants 54 (18%), single 177 (59%), 162 (54%) lived with joint family system. Majority of the participants 97 (32%) were living in a house with 2-4 members in house. Greater part of participants 134 (75%) were Urdu speaking whilst by 75 (25%) of them were Sindhi speaking participants.

Table 1: Socio demographic, economic social support clinical and in jury related factors of RTI survivors with head injury. GOSE score*: 7-8 Good recovery, 5-6 moderate disability and severe disability.

Socio demographic Factors (N=300)	Frequency (%age)
Age in Years Mean \pm SD	28.10 \pm (7.68)
Gender	
Female	54(18.00)
Male	246(82.00)
Education	
Less than Matriculation	41(13.67)
Matriculation	66(22.00)

Intermediate	70(23.33)
Graduation and above	123(41.00)
Religion	
Hindus and others	19(6.33)
Muslims	281(93.67)
Ethnicity	
Urdu Speaking	134(44.67)
Sindhi	75(25.00)
Balochi	10(3.33)
Pathans	20(6.67)
Punjabi	23(7.67)
Others	38(12.67)
Socio-economic Factors	
Socio-economic status	
Low income group	127(42.33)
Middle income group	121(40.33)
High income group	52(17.33)
Employment Status	
Employed	184(61.33)
Unemployed	116(38.67)
Occupation	
Student	40(16.81)
Business	66(27.73)
Office jobs/Govt jobs	71(29.83)
Labour	40(16.81)
Health care professional	8(3.36)
Homemakers	13(5.46)
House Ownership	
Personal	223(74.33)
Rented or Employee provided	77(25.67)
Social support Factors	
Marital status	

Single	177(59.00)
Married	123(41.00)
Family Support system	
Nuclear family	138(46.00)
Extended Family	162(54.00)
No of members in each household	
2-4 members	97(32.33)
5-6 members	59(19.67)
7-8 members	75(25.00)
>8 members	69(23.00)
Injury And Health Related Factors	
Vehicle Involved in Road Accident	
Motorbike	210(70.00)
4 wheeler	69(23.00)
Pedestrians	21(7.00)
Length of stay in hospital	
Mean \pm SD	9.72 \pm (7.25)
Surgery	
No	182(60.67)
Yes	118(39.33)
Type Of surgery(N=118)	
brain or scalp surgeries	49(41.53)
long bone surgeries	23(19.49)
others	46(38.98)
Glasgow coma score (Severity of head injury)	
Moderate head injury	173(57.67)
Severe head injury	127(42.33)
Mechanism of injury	
Blunt injury	279(93.00)
Penetrating injury	21(7.00)
Injuries other then head injury	
No other injuries	249(83.00)

Facial injuries	3(1.00)
Visceral injuries	4(1.33)
Abrasion/lacerations	21(7.00)
Joint injuries	6(2.00)
Small bone Injuries	17(5.67)
Disability (GOSE Score*)	
Good recovery	264(88.00)
Moderate disability	18(6.00)
Severe disability	18(6.00)
Addictions	
None	218(72.67)
Cigarette Smoker only	45(15.00)
Chewing Tobacco	22(7.33)
Others	15(5.00)
Smoking status	
Non Smoker	248(82.67)
Smoker	52(17.33)
Sleep Problem	
No	254(84.67)
Yes	46(15.33)
Time Since Injury (months)	
Mean \pm SD	27.34 \pm (11.88)
Any stressful event since time of injury	
No	272(90.67)
Yes	28(9.33)

Out of 300 participates 173 (approx 58%) suffered moderate head injury and 118 (39%) of all participants needed surgery as a result of RTA. Moreover 51 (17%) participants also suffered injurie other then head injury and mean time since injury was recorded as 27.34 \pm (11.88), 52 (17%) study participants were smokers and 45 (15%) reported sleep problem (Table 2). In addition functional outcome of participants with head injury was examined with the GOSE. The GOSE divides functional outcome of head injury into 8 levels: dead, vegetative, lower severe disability, upper severe disability, lower moderate disability, upper moderate disability, lower good recovery, and

upper good recovery from 1-8 respectively. There were no reported cases with range 1-2 in our study.

Table 2: Mean quality of life score of RTI Patients with head injury.

Quality of life Total Score	
Variable	Mean \pm Standard Deviation (N=300)
Quality of life domains 37 Items	
Cognition(7 items)	66.36 \pm (19.45)
Daily life and autonomy	66.53 \pm (18.76)
Emotions	74.55 \pm (25.50)
Physical problems	76.38 \pm (22.29)
Self	67.14 \pm (17.66)
Social relationships	72.01 \pm (16.90)

Table 3: Factors associated with quality of life of RTI survivors with Head Injury. Others * (Addictions include marijuana, chalia, niswaar, alcohol Stressful event includes death of immediate blood relation or living in that household, break up of an relationship and loss in business or others (not any specified by participants).

Factors	Unadjusted β -Coefficients	95% CI (β)	p-values (alpha< 0.25)	R ²
Socio demographic factors				
Age (n=300)	19.33(14.97)	-10.14 48.807	<0.19	0.0056
Gender				
Female (reference) Male	134.04(299.67)	-455.69723.79	<0.65	-0.002
Education level				
Less than Matriculation				
Matriculation	-787.77(392.23)	-1575.5	<0.03	0.019
Intermediate	-6.54(387.91)	-769.95 756.87		
Graduation and above	50.67(355.70)	-649.35 750.70		
Socio economic factors				
Socio economic status				
Low income group				
Middle income group	95.72(253.60)	-403.37 594.82	0.76	0.004
High income group	-145.90(328.66)	-792.71 500.90		
Employemnt status (n=300)				

Total score of (QOLIBRI): Mean 69.86 \pm (15.89)
Quality of Life

On GOSE Score 264 (88%) had good recovery; 226 (75%) upper good recovery followed by lower good recovery 138 (3%).

Majority of patients 127(42%) belonged to low socio-economic status, however 123 (41%) participants had average graduation or above education level. In addition 116 (39%) were employed and 71 (30%) participants reported office jobs (by occupation).

Multiple linear regression analysis: On analysis linear regression presents (Table 3) increasing time since RTA, increasing number of house members living with participants and marital status were positively associated with squared QOLIBRI score. Whereas it was observed that the severity of head injury, injuries other then head injury, smoking habit and unemployment negatively impacts QOL of head injury participants of RTA.

Employed (Reference)				
Unemployed	-1335.32 (223.48)	-2670.6	<0.01	0.107
Occupation				
House wife (Reference)				
Student	-654.11(561.04)	-1759.49 451.27		
Business/Shops/Stores/Workshop	461.91(533.24)	-588.71 1512.53		
Office job/Govt Job	564.36(530.14)	-480.15 1608.88	<0.01	0.052
Labour	844.17(561.04)	-261.20 1949.56		
Doctor/nurses/health sector	372.80(789.67)	-1183.04 1928.66		
Social support factors				
No of members in each household				
2-4 members (reference)				
5-6 members	2039.69(357.57)	1459.31,2620.07	<0.01	0.184
7-8 members	2698.92(373.80)	1963.28,3434.57		
>8 members	2148.57(307.87)	1542.67,2754.46		
Marital Status				
Single(Reference)Married	1114.93(225.08)	671.98, 1557.88	<0.01	0.076
Health and injury related factors				
Severity of Head Injury				
Moderate(Reference)Severe	-1629.49(213.12)	-2048.91,-1210.06	<0.01	0.16
Mechanism of injury(n=300)				
Blunt(reference)Penetrating Injury	-721.43(449.44)	-1605.92,163.05	<0.10	0.009
Surgery(n=300)				
No(Reference)				
Yes	-364.65(234.81)	-826.76, 97.457	<0.01	0.121
Other injuries along with head injury Injuries(n=300)				
None(references)				
Tissue injuries/lacerations	-1113.85(391.42)	-1884.18, -343.53	<0.01	0.034
Small bone and joint injuries	-771.49(427.96)	-1613.73, 70.73		
Time since injury	95.22(7.983)	79.51, 110.93	<0.01	0.32
Length of stay in hospital	-44.97(15.69)	-89.94	<0.01	0.023

Comorbids and clinical conditions				
No (Reference)				
Yes	-91.56 (714.84)	-1498.33, 1315.21	<0.89	0.003
Disability (GOSE Scale)				
Good Recovery(Reference)				
Moderate disability	-3295.55(397.92)	-4078.67,-2512.44	<0.01	0.327
Severe disability	-3735.82 (397.92)	-4518.94, -2952.71		
Addictions				
Non (Reference)				
Cigarette	-394.88(325.51)	-1035.49, 245.71		
Chewing Tobacco	356.37(444.72)	-518.84, 1231.58	<0.26	0.003
Others *	639.14(530.67)	-405.21, 1683.51		
Any stressful Event*				
No (Reference)				
Yes	79.51(395.88)	-699.56, 858.59	<0.84	0.037
Smoking status (n=300)				
Non smoker				
Smoker	-531.61(302.68)	-1127.28, 64.06	<0.08	0.01

Similarly Severity of head injury, time since injury, employment status and number of house members in each house hold were strongest factor associated with QOL (Tables 3 and 4).

All covariates significant in univariate analysis were analyzed in multivariable model. Quality of life decreases with increase in severity of head injury (measured according to GCS of participants at first exposure in emergency department) by -697.32 (95% CI; -1006.44, -388.20). However, QOL is inversely associated with unemployment of individual and it declines by -529.24 (CI 95%; -845.81, -212.19) among unemployed individuals as compare to employed participants.

However, Quality of life also improves by 1101.82 (CI 95%; 554.65, 1648.99) among individuals with 7-8 members in

household followed by 5-6 members 670.18 (CI 95%; 231.44, 1108.92) compared to individuals living in a small family consisted of 2-4 members in house.

It was also found in this study that QOL varies with time for individuals who undergo any kind of surgery as a result of RTA, it means QOL increases by 37.55 (CI 95%; 11.74, 63.36) as more time elapsed for an individuals who had undergone any kind of surgery resulting from RTA as compare to individuals who did not have to undergo any surgical procedures.

The final model (Table 4) explains 69% variability in outcome variable (Adjusted R²=0.69).

Table 4: Factors associated with Quality of life of RTI survivors with moderate to severe head injury (Multivariable model). Over all adjusted R squared for the model are 0.69. Value for the model is less than 0.000.

Factors	Adjusted β coefficients (SE)	95% CI	p-values<0.05
Severity of injury			
Moderate (Reference)			

Severe	-697.32(157.04)	-1006.44,-388.2011	<0.01
Employment			
Employed (Reference)			
Unemployed	-529.00(160.95)	-845.81, -212.1904	<0.01
Sleep problem			
No (Reference)			
Yes	-837.52(214.08)	-1258.90,-416.1362	<0.01
Disability			
Good recovery (Reference)			
Moderate	-1759.18(322.91)	-2394.78, -1123.58	<0.01
Severe	-1627.66(349.61)	-2315.81, -939.50	<0.01
Other injuries			
No injury (Reference)			
Tissue/visceral	-955.73(251.59)	-1450.95, -460.52	<0.01
Small bone/Joint	-548.44(272.26)	-1084.33, -12.54	<0.04
Time since injury			
Time in Months	39.57(8.29)	23.25, 55.90	<0.01
No of house members			
2-4 members(Reference)			
5-6 members	670.18(222.90)	231.44, 1108.92	<0.01
7-8 members	1101.82(277.98)	554.65, 1648.99	<0.01
>8 members	638.06(232.23)	180.95, 1095.18	<0.01
Smoking Status			
No(Reference)			<0.02
Yes	-432.35(194.35)	-814.89, -49.80	
Surgery			
No(Reference)			<0.01
Yes	-1060.91(366.73)	-1782.76, -339.06	
Surgery # Time since injury			
	38.99(12.38)	11.74, 63.36	<0.01

DISCUSSION

To the best of our knowledge this is a first study of its kind which investigated the quality of life of RTI survivors using comprehensive categories of head injury; moderate and severe head injury. This study also aims to study the associated factors in Pakistan, on the basis of available data. Unfortunately there is very little data available in this area in order to compare findings for the QOL scores and factors distribution.

According to self-reported findings of participants mean quality of life score of RTI survivors with moderate to severe head injuries in Pakistan is $69.86 \pm (15.89)$, which is slightly better than reported QOL from other regions that have used QOLIBRI to report QOL among head injury populations. Our result of the score distribution being skewed to the right side in the total QOLIBRI and 6 QOLIBRI domains is analogous to QOLIBRI studies conducted previously [13]. The skewness points to the upper limit effect, particularly in the Social and Emotions domains; this situation may have partly resulted from our inclusion criterion that all patients with TBI were eligible for the study (Figure 1). The distributions of QOLIBRI domain scores became less skewed when transformed to squared QOLIBRI.

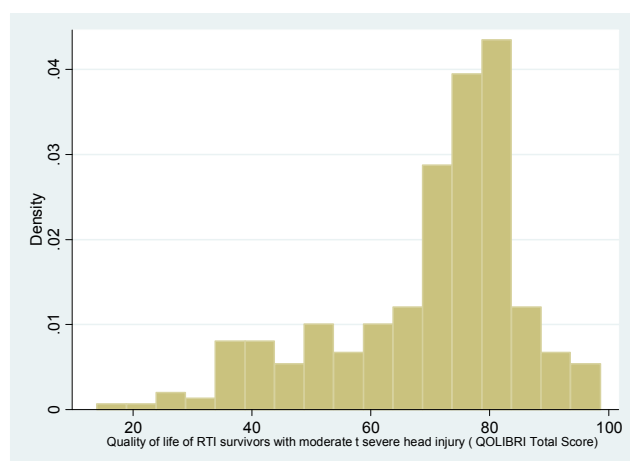


Figure 1: Histogram of quality of life of RTI survivors with moderate to severe head injury (QOLIBRI Total Score).

Healthy individuals usually meet road accidents more, mean quality of life score of our population with traumatic brain injury is greater than a study conducted in France, Taiwan and USA [14-16].

GOSE is widely accepted measure of impact of TBI as compare to other tools like WHO DAS 12 items used in study; we preferred measuring disability through GOSE [17,18]. Disability impact QOL negatively (Table 4) as compare to participants who have good recovery on GOSE scale. This is inconsistent with other studies conducted in USA, UK, Europe and other regions [12].

Our sampled RTI survivors with head injury are reasonably younger in age as compared the study samples of other regions from previous studies [13,14]. QOL score decreases significantly with increase in age, however it was not found statistically significant in our study at multivariable analysis. It also suggests

that our proportion of population that suffers RTI are relatively younger group of age which faces prolonged exposure to long term consequences of RTA [19]. In our study age didn't show any association with squared QOLIBRI, which could be due to the limited range of age and majority of sample was younger depending on strict eligibility criteria of study.

Majority of study sample was male and very small proportion was female in our study sample. Quality of life scores for female gender statistically not found significant in our study, however studies suggest females have poor quality of life as compare to males [20,21] possible explanation could be small proportion of the female gender in study sample or because of life style woman mostly have a reduced amount of responsibility in terms of jobs and bread earning, Hence they face lesser impact of head injury as compare to male RTI survivors in Pakistan.

Socioeconomic status is also considered as important variable that has huge impact on QOL of individuals, but our study did not show any association with socioeconomic status, which is merely due to strict eligibility criteria and being single center study characteristics of sample must be more or less similar. Moreover, satisfaction of unemployed individuals with QOL is congruent with previous researches [22-24].

On all the domains of QOLIBRI severity of head injury is negatively associated with QOL which is inconsistent with few studies which report intrigue relationship between both. This can be because those who face severe head injuries their cognition and daily life activities are affected more worse as compare to moderate head injuries. However other studies report contrasting impact of severity of head injury on QOL [25-27].

Our study results demonstrate head injury needs long time for recovery, which is more the time elapses after event better will be the quality of life. Furthermore surgical procedure as result of RTI and injuries other then head injury are the factors that reduce QOL of individuals with head injury among RTI survivors. However this association could not be proven in previous study that measured association using QOLIBRI [28]. Furthermore, occupation was also seen insignificant, which is also not consistent with study findings [29], this needs the detailed subjective investigation of nature of work, working hours, physical and psychological stress and Supportive relationships to colleagues [30].

Study limitations

This study possesses some of limitations.

Using cross-sectional study design puts a limitation on temporal assessment of change in quality of life among RTI survivors with TBI, which needs prospective studies. We could not study the QOL of RTI survivors with aphasia, spinal cord injuries and paralysis along with TBI. Furthermore, we did not explore change in QOL by assessing QOL score over a period of time with any interventions.

QOLIBRI is newly developed tool, Hence due to time and budget constrains we couldn't assess validity against another QOL tool. However CVI was done for construct validity.

Study strengths

This study has following strengths:

To the best of our knowledge this is first study that explore QOL among RTI survivors with TBI, moreover we did not use proxy information. Panel of 12 expert's reviewed and scored tool for content validity index (relevancy and clarity scores) was more than 80%. High quality checks were maintained to ensure the quality data collection, in depth training was given to data collectors.

RECOMMENDATIONS

Although trauma care has improved but long term effects of TBI among RTI survivors is leading to significant decrease in quality of life of individuals. Comprehensive and regular counseling of individuals suffering RTI complications can help survivors to a great extent.

There is great suffering and significant loss of health among RTA survivors in our area with provision of existing health systems, which is also evident in our study. This study is cross-sectional and further longitudinal investigations during hospital follow-ups and admission period are required to assess the factors which affect QOL of RTI survivors with TBI in Pakistani population. There should be exploratory and qualitative researches done with RTA survivors, that will provide the subjective perception of QOL of survivors and broader view of impact of RTA on survivor's and family's life.

CONCLUSION

Mean quality of life participants who suffered moderate to severe head injuries secondary to RTI is 69.87.

The main predictors identified in this study that have negative effect on score of quality of life include; severity of head injury, unemployment, smoking status, sleep problems, surgery and multiple injuries (besides head injury).

On the other hand Time elapsed since injury and family support system has been identified to have positive impact on QOL score among RTI survivors with head injury.

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