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ORIGINAL ARTICLE

Discrepency between Disability and Reported Well-being after Traumatic Brain Injury in Developing Countries

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ABSTRACT

Aim: To study the discrepency between disability and reported well-being after traumatic brain injury.
Study design: Prospective study.
Place and duration of study: Ghulam Muhammad Mahar Medical College Sukkur and S. M. Benazir Bhutto Medical University Larkana from 7th July 2021 to 15th Jun 2022.
Methodology: Two hundred and sixty patients suffering from brain injury were enrolled. The patient's of traumatic brain injury which was represent able through brain computed tomography scan and was reported within 24 hours of the injury and age 10-55 years were included. Scoring tests as Glasgow outcome scale extended and Short Form as well as quality of life scoring was performed in all cases. Functional outcomes were also observed with a follow up of 6 month post traumatic brain injury. There were mild cases of traumatic brain injury as well as moderate to severe cases which for interpretation purposes were divided into two groups.
Results: The mean age of these two groups was 36±3.5 and 29±9.7 years and there was more males than females. The satisfaction level for support from hospitalization was seen significantly higher in all cases with no significant variance while it was poorly reported from rehabilitation centers outpatient support to moderate to severe traumatic brain injury cases. The cases with severe disability of upper and lower regions have a very poor functional outcome in cases with moderate to severe traumatic brain injury. The score for quality of life and mental physical well-being was not in normal ranges for moderate to severe cases of traumatic brain injury.
Conclusion: There are discrepancies in patients reporting of well-being and disability outcomes in traumatic brain injury cases.
Keywords: Discrepancy; Disability; Traumatic Brain Injury

INTRODUCTION

Disability post traumatic brain injury (TBI) is a commonly observed concern. It is defined as physical and mental difficulties experienced by an individual while interacting with the social environment[1-3]. Traumatic brain injury is a jolt or violent blow to the head or body. Serious traumatic injury can severely effects brain tissue whereas mild or moderate injury causes temporary damage of tissue. TBI patients usually experience physical, cognitive and social impairment and limitations throughout their life[4,5].

Traumatic brain injury can be managed in accordance with the person's perception towards the quality of life and their dependency upon others for their daily tasks. However, healthy person or family members of the patient are mostly unable to comprehend the bad impact of disability and chronic illness on patient' well-being[6,7]. Moreover, quality of life of patient is also in accordance with their own health perception. It can be termed as disability paradox which is a discrepancy between good quality of life experienced by the patient but severe disability to the others.[8,9] Neurological impairment can result in to anosognosia (lack of disability awareness). Environmental, behavioural and personal factors also influence the overall well-being of the patient including pre-injury mental health, employment status, social support, social cognition problem, frontal lobe syndrome and coping. World health organization also described the similar relation between disability and health which stated that, environment has great influence on overall well-being and health of the person[10-12].

The current study was planned to determine the health related quality of life and functional outcome after traumatic brain injury. Environmental factors, personal and injury related variations were also taken into consideration while planning this study component. Variation and stratification within study group was also made to determine the difference in severity predictors.

MATERIALS AND METHODS

This prospective study was conducted at Ghulam Muhammad Mahar Medical College Sukkur and Shaheed Mohtarma Benazir Bhutto Medical University Larkana from 7th July 2021 to 15th June 2022.. After IRB permission 260 patients suffering from brain injury were enrolled. The traumatic brain injury which was representable through brain CT scan and was reported within 24 hours of the injury and age 10 to 55 years were included. Those patients who had a long term history of traumatic brain injury or were already suffering from psychotic conditions were excluded from the study. The sample size was calculated by Epi sample size calculation method. The confidence interval was taken 95% and ma5% margin of error. The incidence of traumatic brain injury in accidents and fall cases was considered as 45-57% as reported previously. All clinical data and radiological assessment record was entered in a well prepared proforma which also included patient's demographic information as well as related history. There were mild cases of TBI as well as moderate to severe cases which for interpretation purposes were divided into two groups. The functional outcomes of the traumatic brain injury as well as disability were measured through Glasgow outcome scale extended (GOSE). The scale comprises of 8 scores including mortality, vegetative state, lower or upper severe disability, lower or upper moderate disability and lower or upper good recovery score. The scoring was assessed through interview based information, MRI scans and other radiological imaging. The health associated quality of life was assessed through questionnaire based on Short Form-12 V.2 also named as SF-12v2 and the QOLIBRI-OS (HRQoL). These assessment techniques included physical well-being, functioning and emotional health. The mental component summary covered the mental aspects of patient's health. The GOSE was evaluated as a well-thought-out interview or questionnaire filled by the patient or caregiver. At six months follow-up, assessment was conducted through a format applying interview in 79% cases while questionnaire in 20%. The GOSE was scored centrally combining the ratings of the interviews and the questionnaires. Information regarding pre brain injury period was gained through patient itself or the attendant for better detailed comparison. Age and gender of the patient was also kept in focus to avoid discrepancies in interpretation of the results. Personal and injury-related factors which were relevant to health-related quality of life (HRQoL) such as age, gender, marital status, employment type, intracranial abnormality presence, extra cranial injury (MEI) were completely evaluated. TBI was reflected mild in cases with GCS 13–15, moderate in GCS 9–12 and severe in cases with GCS of 3–8. Mild' injury meant that patients may have abnormality seen on CT scan.

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MEI was well-defined Injury Scale≥3 in context to face, thorax/chest, thoracic or lumbar spine, abdomen or pelvic contents as well as extremities and pelvic girdle/external (skin), and excluding head and neck. Environment factors involve satisfaction with social support, satisfaction with support from the hospital and health services and satisfaction with support from rehabilitation services 6 months post-injury. Data was analyzed by using SPSS-26.0. Chi square tool was used for analyzing with a p value assessment method used for significance testing. A p value <0.05 was taken as significant.

RESULTS

The mean age of these two groups was 36±3.5 and 29±9.7 years respectively with a significant difference in both. There were also more males than females in this study as well as significant variance in the unemployment level and divorcee within mild to moderate or severe cases of traumatic brain injury (Table 1).

The satisfaction level for support from hospitalization was seen significantly higher in all cases with no significant variance while it was poorly reported from rehabilitation centres outpatient support to moderate to severe TBI cases after six months post-injury. The moderate to severe TBI cases represented with upper good recovery to a average level while it was effectively good in mild TBI cases. Similar was the case with upper moderate disability post 6 months assessment. The cases with severe disability of upper and lower regions have a very poor functional outcome in cases with moderate to severe TBI. Patients following moderate/severe TBI were younger, more often male and more often involved in traffic accidents than patients after mild TBI (table 1). Mild TBI rarely received rehabilitation in comparison to moderate/severe TBI. Six months' post TBI there were 9.5% patients who experienced severe disability (GOSE 3-4), while 25% had moderate disability (GOSE 5-6) and rest 65.5% had a good recovery (GOSE 7-8). On comparison of quality of life score with the GOSE it was observed that both QOLIBRI-OS as well as SF12 for physical (PCS) and mental (MCS) scoring for moderate to severe TBI was not in the normal range (Figs. 1-3).

The discordance between the disability and quality of life was interpreted as increased percentage of cases following mild TBI with upper severe-disability (GOSE 4) reported the HRQoL scores in the normative range in comparison to the patients with decreased moderate disability (GOSE 5) having MCS as 50% versus 30%; and QOLIBRI-OS as 42% versus 35% respectively. In the cases with mild TBI almost half had normative score for QOLIBRI-OS as well as MCS scores at 6 months. However few cases having severe disabilities were having normative PCS scores In cases with moderate and severe TBI, more individuals having severe disability had normative value for QOLIBRI-OS and also for MCS scores at 6 months. The variance in PCS and the MCS at recovery level in context to GOSE showed that patients having severe disability had larger variance in mean of MCS and PCS when compared with patients having moderate disability and also good recovery (Table 2).

Tale 1: Demographic features of cases with traumatic brain injury (n=260)

Variables	Mild (n=115)	Moderate to Severe (n=145)	P value
Age (years)	36±3.5	29±9.7	0.008
Gender			
Male	73 (63.4%)	102 (70.3%)	0.045
Female	42 (36.5%)	43 (29.7%)	0.56
Working status			
Unemployed	56 (48.6%)	63 (43.4%)	0.046
Employed	59 (51.3%)	82 (56.6%)	0.65
Marital status			
Married	60 (52.1%)	68 (46.9%)	0.98
Unmarried	40 (34.7%)	53 (36.5%)	0.85
Divorced	15 (13.04%)	24 (16.5%)	0.032

Table 2: Percentages with HRQoL scores having normative range at 6-month post- TBI, variance in MCS and PCS

GOSE	QOLIBRI-OS >61	SF-12 MCS >45	SF-12 PCS >45	Mean MCS – PCS (SD)
Mild TBI (n=115)				
3 (n=5)	20%	40%	20%	9.63 (15.57)
4 (n=7)	43%	50%	22%	8.67 (17.33)
5 (n=15)	35%	31%	28%	0.67 (17.21)
6 (n=18)	55%	47%	43%	1.32 (16.22)
7 (n=22)	66%	58%	63%	0.00 (14.45)
8 (n=48)	87%	83%	80%	1.80 (11.43)
Moderate and severe TBI (n=145)				
3 (n=42)	31%	37%	12%	9.50 (20.77)
4 (n=51)	37%	40%	26%	3.98 (15.83)
5 (n=109)	55%	52%	44%	3.10 (14.97)
6 (n=100)	71%	56%	54%	0.98 (12.79)
7 (n=74)	71%	41%	46%	0.12 (14.52)
8 (n=90)	96%	86%	82%	0.83 (9.21)

Fig. 1: Moderate to severe GOSE with QOLIBRI-OS association

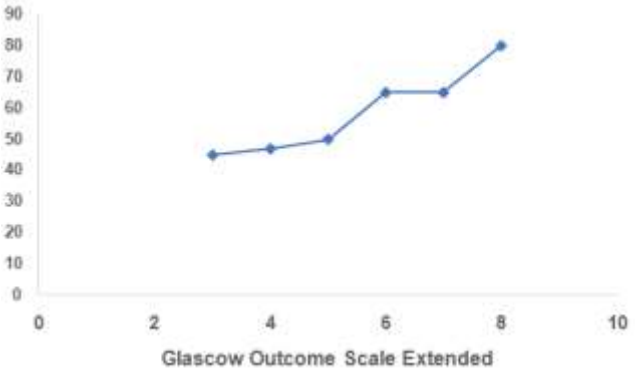


Fig. 2: Moderate to severe GOSE with SF 12MCS and SF12 PCS ssociation

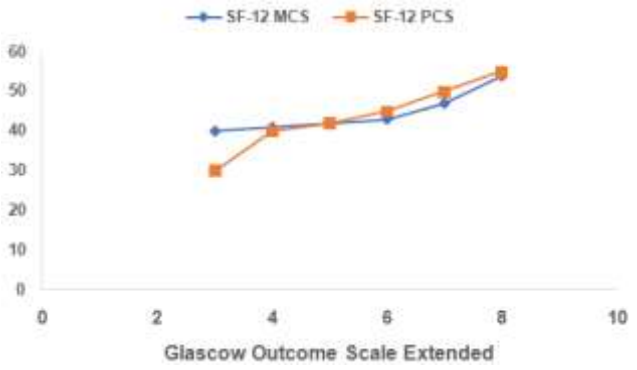
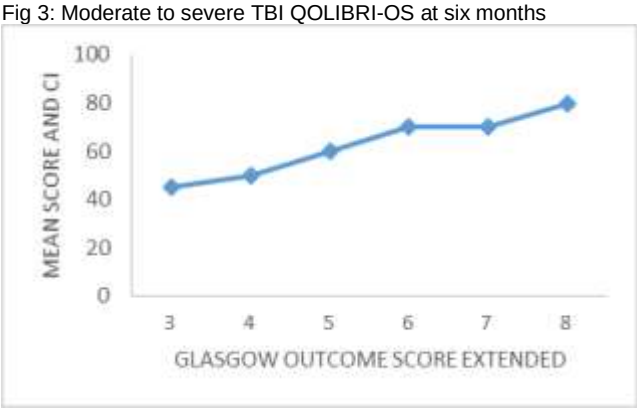


Fig 3: Moderate to severe TBI QOLIBRI-OS at six months



DISCUSSION

Traumatic brain injury usually affects overall wellbeing of the patient both physically and emotionally. Health related quality of life (HRQOL) of the patient can be depends upon various elements mainly personal and environmental factors. Disability paradox is also considered authentic while assessing the mental health of patient. Present study was designed to determine the discrepancy between disability and reported well being after traumatic brain injury. Findings of the presnt study will prove a good source for future researchers for the estimation of influencing risk factors on quality of life after serious brain injury.[11,12]

In the present study, relationship with disability was assessed using HRQOL and GOSE after traumatic brain injury. Patient suffered with range of problems after mild traumatic brain injury and patient classified it after consistent awareness. Patient with severe disablity represent higher MCS scores as compared to the patients with moderate or mild disability. Health related quality of life also not decreased lineraly with advancement in scores. Most of the TBI patient show HRQOL within normative range. Result of our study is inconsistent with the previous finding and highlights that, satisfactory HRQOL score is not a paradox and most of the patient experience good quality of life after serious brain injury.Discrepancies between health related quality of life and disbality is also described in previous studies as well.[13-16]

Lack of knowledge and awareness among patients with severe disability also make a great hurdle in accurate finding of the study. Patients were mostly biased towards responding the outcome assessments. Positive ratings and good HRQOL scores among severely disabled patient might be the outcome of lack of awareness and knowledge.[17] Awareness and education exacerbate the chances of alteration in attitude and responding towards quality of life questionnaire for accurate finding and predicting disability and pain level. Thus may reduce discrepancies with the actual and documented wellbeing of the patient.[18-20]

CONCLUSION

There are discrepancies in patients reporting of well being and disability outcomes in traumatic brain injury cases. Patients reports satisfaction in cases where disability is more significant and vice versa specifically in moderate to severe cases of TBI.

Conflict of interest: Nil

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