Severity of Disability Following Road Traffic Accidents In Bangladesh: A Cross-Sectional Study

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Abstract

Background: Road traffic accidents (RTA) cause more than one million deaths every year globally. Over the past decade or so, there have been an alarming number of car crashes in Bangladesh.

Objectives: The aim of the study was to determine the consequences of the severity of disability caused by road traffic injuries in Bangladesh.

Methods and materials: The cross-sectional study was conducted through the convenience sampling technique. The study was carried out between July 2022 and June 2023. The World Health Organization Disability Assessment Schedule (WHODAS 2.0) scale was used to demonstrate the level of disability. Data was collected through face-to-face interviews with 328 victims of road crashes, and the Statistical Package for Social Sciences (SPSS) version 25.0 was used for analysis.

Results: The participant's age mean ± SD was 29.35 ± 3.971. The majority of the participants (54.9%) were > 30 years old. The large numbers of misfortune victims in this study were males (66.8%); the most of them came from urban areas (53.4%). The majority of respondent's educational qualification was secondary level (31.4%), and previous occupation was day labourer (30.8%). It showed that people who were injured from road traffic accidents, mostly 90.5%, became physically disabled, whereas only 77.3% of the population had taken rehabilitation services. The result of the study indicates a highly significant association between the type of disability and the WHODAS 2.0 score of the participants ($\chi2 = 9.489$, $df= 3$, $p = 0.023$).

Conclusion: The study concluded that victims due to RTA had to face moderate types of disability. The people who were injured from RTA mostly became physically disabled and also had a risk of psychological problems. Immediate attempts should be taken from various sectors to reduce the incidence of accidents and subsequent disability.

Keywords: Road traffic accidents, Road traffic injury, Disability, Physical disability, Bangladesh.

Introduction

Road traffic accident (RTA) is a major cause of disabilities and deaths, which mostly occurs in developing countries [1]. According to the World Health Organization and the World Bank (2011), disability may have consequences from the dealings between individuals with impairments and the environmental and attitudinal barriers, hampering effective and full participation in society equal to others [2]. In every year, approximately 1.25 million people die due to RTA, 20-50 million injuries with fatalities occur globally, and about 5 million people remain disabled with lifelong [3]. Many incidents that are not fatal contribute significantly to disability. RTA was the fifth most prevalent cause of mortality in Southeast Asia and the tenth most leading cause of disability-adjusted life years (DALYs) globally. People with disabilities due to road crashes may vastly experience inequality in basic needs, especially in education, participation, job sectors, and health support as well [4, 5].

In India, the number of people with disabilities resulting from traffic accidents is approximated to be 2 million [5]. In Spain, there has been a notable decline in RTC victims over the last decade, with a significant decline in fatalities (8%) and serious injuries (11%) [6]. In Spain, there is projected to be 3.8 million people with disabilities, where around 10% of all disabilities are caused by accidents [7]. If action is not taken right now, it is predicted that by 2030, traffic accidents will rank as the fifth most common cause of death, accounting for an estimated 2.4 million deaths annually [8]. Road traffic injuries are the second largest cause of mortality in the age range between 15 and 30 years [5].

Rapid urbanization and motorization are considered one of the major causes of increasing the number of accidents occurred by road traffic crashes. Consequently, severe congestion of the road, lack of awareness, irresponsiveness, and personal safety problems are highly prone to road crashes. The aim of the study was to determine the consequence of the severity of disability caused by road traffic injuries in Bangladesh.

Methodology

This cross-sectional study was carried out to assess the disability status following road traffic accidents in Bangladesh. The convenience sampling technique was used to collect data from 328 participants. The population of this study was disabled people who were victims of road traffic accidents from tertiary-level hospitals and department of social services throughout Bangladesh. The study was conducted between July 2022 and June 2023. In this study, the researcher also considered eligibility criteria, which helped the researcher select suitable and appropriate participants for this study. Male and female adults who were ambulatory and victims of RTAs met the inclusion criteria. Exclusion criteria were participants who were bedridden and who refused to participate in the study.

Data was collected by using a structural-type questionnaire. The survey was designed taking into account the characteristics and goals of the current investigation. The questionnaire had two basic sections. The first part contained questions on socio-demographic information. There was a questionnaire for acquiring the participant's demographic information, including age, sex, marital status, living area, educational status, monthly income, type of disability, and taking of rehabilitation services. The researcher collected data through an individual interviewing process in a calm environment. The second part included the World Health Organization Disability Assessment Schedule (WHODAS 2.0) scale to demonstrate the level of disability.

The WHODAS 2.0 is an advanced tool used to evaluate disability within the framework of the ICF bio-psychosocial concept of disability. The six dimensions of mobility, cognition, self-care, interpersonal relationships, living activities, and social participation including disability related to the workplace are highlighted. The test's internal consistency, responsiveness, test-retest reliability, contents and face validity, and construct accuracy are all good. In simple scoring, the values "none" as 1, "mild" as 2, "moderate" as 3, "severe" as 4, and "extreme" as 5 are solely assigned and summed together without any consideration for the weighting of the distinct items [9].

The collected data were inputted into a computer and analyzed using Statistical Package for Social Sciences (SPSS) version 25.0 and Microsoft Office Excel 2013. Categorical variables were presented as percentages and frequency, and continuous variables as mean and standard deviation (SD), and the chi-square test was used to determine the level of significance between two or more variables. For analyzing, the null hypothesis was rejected at the $p < 0.05$ level. Before participating, patients got complete information about the research objectives and protocol and provided signed informed consent. Administrative entities of the Saic ethics committee and the Ethical Review Board (ERB) authorized the study. The registration number is SCMST/PT/ERB-2017-18/1-2023/26.

Results

In this observational study, three hundred and twenty-eight people who experienced RTA completed the survey. The study consists of almost all the information needed for the study. Table 1 represents the distribution of the participant's socio-demographic characteristics. The mean age ± SD of the participants was 29.35 ± 3.97. The majority of the participants (54.9%)were in the age range > 30 years. Out of 328 respondents, the majority (66.8%) were males, and 69.5% were unmarried. The maximum respondents (53.4%) were from urban areas, and 31.4% respondent's educational qualification was secondary level. The study found that the majority 30.8% of the participant's previous occupation was day laborer. The majority of the participant's monthly income was less than or equal to 20,000 taka. It showed that people who were injured from road traffic accidents, mostly 90.5%, became physically disabled, whereas only 77.3% of the population had taken rehabilitation services.

Table 01: Socio-demographic characteristics of the participants (n=328)

Demographic	%(n)	Demographic	%(n)	Demographic	%(n)
Age		*Gender*		*Education*	
Mean age ± SD	29.48 ± 3.97	Male	66.8% (219)	Illiterate	16.5% (54)
< 30 years	54.9% (185)	Female	33.2% (109)	Primary	20.7% (68)
31-40 years	39.6% (130)	*Marital status*		SSC	31.4% (103)
41-50 years	3.6% (12)	Unmarried	69.5% (228)	HSC	14.0% (46)
> 40 years	1.8% (6)	Married	30.5% (100)	Graduate and above	17.4% (57)
Occupation		*Residential area*		*Monthly income*	
Housewife	23.8% (78)	Urban	53.4% (175)	< 20000 BDT	54.9% (180)
Service holder	19.8% (65)	Semi-urban	31.1% (102)	20000-40000	36.9% (121)

Business	8.0% (26)	Rural	15.5% (51)	>40000 BDT	8.2% (27)
Farmer	6.1% (20)	*Types of disability*		*Rehabilitation services*	
Students	11.6% (38)	Physical	90.5% (297)	Taken services	82.0% (269)
Day laborer	30.8% (101)	Mental	9.5% (31)	Declined services	18.0% (219)

Table 2: showed the interpretation of community participation, social activation, daily performances, grooming, emotional issues, health issues, and gross motor function of the participants. The study explained that standing for long periods, taking care of the household, learning new tasks, problems in joining community programs, day-to-day work of the participants, and walking in long distances has markedly faced extreme difficulties in daily activities. The study also explained that washing the whole body, getting dressed, maintaining friendship, dealing with unknown, emotionally affected health problems, and concentrating for ten minutes has faced mild to moderate difficulties in daily activities.

Table 02: Assessing the disability level through WHODAS 2.0 score

SL	Traits	None	Mild	Moderate	Severe	Extreme
1	Standing for long periods	32.6% (107)	8.2% (27)	11.9% (39)	12.2% (40)	35.1% (115)
2	Taking care of the household	14.9% (49)	11.9% (39)	15.5% (51)	18.0% (59)	39.6% (130)
3	Learning new task	34.8% (114)	9.5% (31)	11.6% (38)	12.8% (42)	31.4% (103)
4	Problem in joining community program	20.4% (67)	12.8% (42)	14.9% (49)	17.7% (58)	34.1% (112)
5	Emotionally affected by health problem	32.6% (107)	7.6% (25)	11.6% (38)	22.0% (72)	26.2% (86)
6	Concentrating for ten minutes	25.0% (82)	8.2% (27)	11.9% (39)	21.6% (71)	33.2% (109)
7	Walking long distance in kilometers	19.0% (61)	12.8% (42)	14.9% (49)	17.7% (58)	36.0% (118)
8	Washing whole body	36.3% (119)	13.4% (44)	15.9% (52)	18.0% (59)	16.5% (54)
9	Getting dressed	35.1% (115)	11.9% (39)	16.5% (54)	18.9% (62)	17.7% (58)
10	Dealing with unknown	36.0% (118)	12.8% (42)	14.9% (49)	17.7% (58)	19.0% (61)
11	Maintaining friendship	42.1% (138)	18.3% (60)	14.9% (49)	12.8% (42)	12.0% (39)
12	Day to day work of the participants	13.1% (43)	11.9% (39)	15.5% (51)	18.0% (59)	41.5% (136)

Table 3 represents the association between the WHODAS 2.0 score and the type of disability. The majority of the participants 8.05% (113) had a moderate type of disability physically among the 297 physical disability participants. The majority of the participants 48.39% (15), had an extreme level of disability among the 31 mental disability participants. It was revealed that the observed Chi-square value was 9.489 and the p value was 0.023, so the result was highly significant, indicating association between the type of disability and the WHODAS 2.0 score of the participants ($\chi2$ = 9.489, df = 3, p = 0.023).

Table 3: Association between type of disability and WHODAS 2.0 score (n=328)

Types of disability	WHODAS 2.0 score				χ^2	df	P value
	None	Mild	Moderate	Extreme			
Physical disability	16.50% (49)	24.58% (73)	38.05% (113)	20.88% (62)			
Mental disability	3.23% (1)	12.90% (4)	35.48% (11)	48.39% (15)	9.489	3	0.023*

(*Significant at 95% confidence level)

Table 4 represents the association between type of disability and occupation of the participants. The majority of the participant's occupation was day laborer 30.64% (91) among the 297 physical disability participants. The most common participant's occupation was service holder (35.48%) among the 297 mental disability participants. It was revealed that the observed chi-square value was 3.747 and the p value was 0.586, so the result indicates no significant association between the type of disability and the WHODAS 2.0 score of the participants.

Table 4: Association between type of disability and occupation of the participants

Participant's occupation	Types of disability		χ^2	df	P value
	Physical disability	Mental disability			
Housewife	25.25% (75)	12.90% (4)			
Service holder	19.87% (59)	35.48% (11)			
Business	9.43% (28)	22.58% (7)	3.747	4	0.586
Farmer	5.72% (17)	9.78% (3)			
Students	9.09% (27)	6.45% (2)			
Day laborer	30.64% (91)	12.90% (4)			

Discussion

The study aimed to determine the types of disability due to road traffic accidents in Bangladesh. The mean age ± SD of the participants was 29.35 ± 3.971. The majority of the participants (54.9%) were in the age range > 30 years. A similar study was conducted with the respondent's mean age and SD was 34.95 ± 7.732 years, and 45.5% of respondents were in the age range of 31 to 40 years [10]. Our study findings contradict major study findings conducted in different countries. One study conducted with the mean age of participants was 51 [11].

In this study, out of 328 respondents, the majority (66.8%) were males. The study conducted in Portugal found that the majority of study participant's with disabilities were females [12]. The study conducted in Canada also showed that the majority of people with disabilities were female. This might be due to the cultural difference, where females also had equally given opportunity in every field [11]. In contrast, another study observed no diversity by sex or age [6]. In our study the majority of the participants (69.5%) were unmarried. In a Spanish study, the researcher found that most of the respondents (74.5%) were married [6].

The maximum respondents (53.4%) were from urban areas, and 31.4% respondent's educational qualification was secondary level. In Bangladesh, a study was carried out where most of the participants (42.3%) had the ability to sign only while a few of the participants (8.2%) passed the secondary level [13]. Another study observed the maximum 88.6% of participants were from rural areas [6]. In this study, the majority of the participants earning was less than or equal to 20,000 taka per month. In a similar study, most of the participant's earnings were lower in the amount of 10000 taka, while only 4.1% of participants were paid above 20,000 taka only [13].

The study found that the majority (30.8%) of the participant's previous occupation was day laborer. Another study identified the participants return to occupation after injury, where only one-fourth of disabled respondents were successfully employed [7]. It showed that people who were injured from road traffic accidents, mostly 90.5%, became physically disabled, whereas only 77.3% of the population had taken rehabilitation services. It is observed that the maximum (81.6%) of respondents had mobility disability [7].

The current study represented that the majority of the participants (38.05%) had a moderate type of disability physically among the 297 physical disability participants. And most of the participants (48.39%) had an extreme level of disability among the 31 mental disability participants. The result of the study indicates a highly significant association between the type of disability and the WHODAS 2.0 score of the participants. ($\chi2 = 9.489, df = 3$, $p = 0.023$). In Spain, the incidence of disability due to RTA was identified as lower compared to other developed countries [7]. In a similar study, it was found that the mild disability was the highest percentage [6].

Disability due to RTA has to face several problems in accessibility, participation, communications, and socio-economic situations [7]. RTA usually causes mild disability, but when it causes moderate or severe disabilities, it is linked to reducing working capacity and functional ability, which increase the needs of devices, family, and social support [6]. A severe type of disability is associated with health, finance, and social factors, which influence significantly on recovery from injuries [14]. Additionally, these disabled persons are subject to a higher degree of discrimination, which impacts quality of life [15]. RTA frequently causes severe disability, which is prone to psychological and neurological disorders, which significantly impair the brain and spinal cord. Moreover, head injuries and spinal cord injuries are mostly traumatic origin and are primarily origin by RTA [6].

Limitation:

The tiny sample size and shorter study duration are the drawbacks of the study. Hence, it is highly advised to raise the number of samples throughout Bangladesh. The study's findings may not be generalizable to the entire population of Bangladesh, particularly considering the gender, short duration of study, and geographical biases.

Conclusion

The study concluded that victims due to RTA had to face a moderate type of disability. The people who were injured from RTA mostly became physically disabled and also had a risk of psychological

problems. People with disabilities are vulnerable and seek appropriate care and assistance from family, society, and government. Besides, the government should provide quality care for traumatically injured patients for both of physical and mental issues.

Ethical consideration:

The article paid attention in all ethical concepts.

Author contribution:

All authors contributed equally to preparing the article.

Conflict of interest:

The authors declared no conflict of interest regarding the publication of this paper.

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