A Study on Relationship between Road Accident and Socioeconomic Conditions of Drivers

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Abstract: Road traffic accidents and injuries have now emerged as a serious man-made epidemic in Bangladesh. Each and every year many accidents are occurring and many people are losing their lives and many are being injured for road accidents. However the present study has conducted to identify the range of factors, including economic imperatives, regulatory and governance failures, and behavioural deficits that render roads severely unsafe in Bangladesh and to know the socioeconomic factors of the stakeholders whose engagement is central to any effective redressal of unsafe roads. The study was conducted in Dhaka District in Bangladesh. There are some bus terminals, truck stands and rent a car spots. The survey was conducted at Mohakhali bus terminal, Gabtoli bus terminal, Sayedabad bus terminal, Amin Bazar truck stand and Tejgaon truck stand. Five rent a car spots were selected such as Lake circus, Maghbazar, Mirpur 1, Pallabi and Jatrabari. The study was survey type. Purposive sampling method was used for the study. From each bus terminal 20 bus drivers were selected. Among them, 10 bus drivers and 10 mini bus drivers. So total 60 bus and mini bus drivers were selected. From each truck stand 20 truck drivers were selected. So, total 40 truck drivers were selected. From each rent a car spot 20 drivers were selected. Total respondents of the study were 200. Data were collected from primary and secondary sources. Primary data were collected from the respondents of the study area. Secondary data were collected from books, research report, journal annual report of World Health Organization, internet etc. Collected data were analyzed by using computer software Statistical Package for the Social Sciences. From the result it was found that the overwhelming majority of the surveyed drivers are in the age bracket 41-50 years which was maximum. The drivers had education. From the result it was found that 47% drivers' monthly income was 15001-20000 taka which was the maximum, From the result it was found that 86% drivers replied that they got their payment by monthly trip-based payment which was the maximum. Most of the drivers did not have their own house, they lived in rented house or mess, it's a tension for them. Economic conditions of the drivers are not so well, 50% drivers replied that they are staying break-even point but it is vulnerable. Very few drivers had valid license, 92% drivers replied that they had to pay bribe to get the license, 52% drivers replied that they had to make repeated visits, 39% drivers replied that they had to take help of middlemen and 5% drivers replied that the middlemen gave fake license.

The overwhelming majority 81% have acquired their driving skills through a process of informal learning. An additional 16% obtained their driving skills through a combination of both processes. For this reason they did not know the accurate ways of driving which cause accidents. The drivers of did not learn driving from qualified trainers, 78% drivers replied that they had learned driving from their Ustad which was the maximum and 3% drivers replied that they had learned driving from their friends or relatives which was minimum. On the other hand it is matter of concern that only 5% drivers had replied that they had learned driving from Government Institutions. Most of the drivers worked more than 8 hours in a day, 49% drivers replied that they worked 9-12 hours in a day and 19% drivers replied that they work 13-16 hours in a day which was a reason of accident. Many drivers use mobile during driving, 44% drivers replied that they use mobiles during driving time which is very alarming for the security of drivers, vehicles and common people. Many drivers did not conduct regular servicing of their vehicles regularly and it a matter of great sorrow that 48% drivers replied that they don't conduct regular servicing of their vehicles regularly. From the result it was found that 58% drivers replied that after accident no fatalities with minor damage to vehicle. It indicates that there are many accidents occurred but the number of fatality is less. On the other hand 14% drivers replied that fatality occurred and damage of vehicle also occurred. From the result it was found that 41% drivers replied that after accident they faced no penalty which was the maximum but 2% drivers replied that after accident their license impounded which was minimum. The accidents occur due to the high speed and lack of seriousness of the drivers. Overtaking competitions are also responsible for accidents. In some cases accidents occur due to the lack of seriousness of pedestrian. Drivers, drivers' assistants, pedestrians, traffics should be more cautious. Road Safety system should be digitalized. CCTV camera & required number of Control station should be provided all over the Country as required. Arrangement should be made to identify the wreck less Driver /vehicle and penalty should be ensured through the software development. An efficient Traffic Management System should be made by Auto Signaling system. The wreck less driver & the unfit vehicles users should be identified and there should have suing system by software development. More Administrative approach should be taken Frequent Mobile Court operation & evection program should be conducted in regular basis. Bazaar/Hat should be removed permanently from the Highway.

Key words: Road accident, drivers, training, pedestrian, license, economic conditions.

INTRODUCTION

Road accidents are the new 'epidemic' comprehensive across much of the developing world. For rapid urbanization and exponential growth of transport networks, safety on the roads has emerged as an inescapable priority in Bangladesh. Global leaders set an ambitious goal for humanity encapsulated in the now ubiquitous SDGs (Sustainable Development Goals). A new epidemic has reared its head. Road accident is a new epidemic blighting the developing world. The World Health Organization

(WHO) has identified road traffic injuries as the eighth leading cause of death globally and the leading cause of death for young people within the age bracket 15-29.
According to World Health Organization, Global Status Report on Road Safety 2018, the numbers underscore this unsettling development: over 1.35 million annual deaths due to road accidents and an additional 20 to 50 million non-fatal injuries that often lead to economic ruin for the affected families. The bulk of these road traffic deaths are in the low and middle income countries: 18.3 and 20.1 per 100,000 populations in low and middle income countries respectively compared to 8.7 deaths per 100,000 populations in high income countries.

According to World Health Organization, Global Status Report on Road Safety 2018, the calamity of road traffic accidents is not only humanitarian but also economic. A number of countries have seen success in reducing road traffic deaths over the last few years, but progress varies significantly between the different regions and countries of the world. There continues to be a strong association between the risk of a road traffic death and the income level of countries. With an average rate of 27.5 deaths per 100,000 population, the risk of a road traffic death is more than three times higher in low-income countries than in high-income countries where the average rate is 8.3 deaths per 100,000 population. In 2016, the number of road accidents was 2316 in Bangladesh, which grew to 3,349 in 2017. In 2018, up until September, the number of road accidents is 2,672 (Source: https://www.thedailystar.net/country/road-accident-in-bangladesh-2018-survey-blames-rising-of-bikers-1641166)

Drivers become visible large in the road safety agenda. Their quality, their adequacy, their attitudes and motivations, their sense of responsibility vis-a-vis rules and regulations as well the pressures under which they work have a strong bearing on how safe the roads are likely to be. It is thus important to know who the drivers are their solo-economic profiles-1-as well as their viewpoints on the causes of accidents and how these may be better prevented.

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1. To identify the range of factors, including economic imperatives, regulatory and governance failures, and behavioural deficits that render roads severely unsafe in Bangladesh.

2. To know the socioeconomic factors of the stakeholders whose engagement is central to any effective redressal of unsafe roads.

METHODOLOGY OF THE STUDY

Study area: The study was conducted in Dhaka District in Bangladesh. There are some bus terminals, truck stands and rent a car spots. The survey was conducted at Mohakhali bus terminal, Gabtoli bus terminal, Sayedabad bus terminal, Amin Bazar truck stand and Tejgaon truck stand. Five rent a car spots were selected such as Lake circus, Maghbazar, Mirpur 1, Pallabi and Jatrabari.

Study design: The study was survey type.

Sampling method: Purposive sampling method was used for the study.

Sample size: From each bus terminal 20 bus drivers were selected. Among them, 10 bus drivers and 10 mini bus drivers. So total 60 bus and mini bus drivers were selected. From each truck stand 20 truck drivers were selected. So, total 40 truck drivers were selected. From each rent a car spot 20 drivers were selected. So, total 100 rent a car drivers were selected. So, total respondents of the study were 200.

Sources of data: Data were collected from primary and secondary sources.

Sources of primary data: Primary data were collected from the respondents of the study area.

Sources of secondary data: Secondary data were collected from books, research report, journal annual report of World Health Organization, internet etc.

Data analysis: Collected data were analyzed by using computer software Statistical Package for the Social Sciences.

RESULTS AND DISCUSSION

Table 1: Number of accidents and damage due to accidents from 2009-2016

Year	Number of accidents	Deaths	Injury
2009	3381	2958	2686
2010	2827	2546	1803
2011	2667	2546	1641
2012	2636	2538	2134
2013	2029	1957	1396
2014	2027	2067	1535
2015	2394	2376	1958
Up to July 2016	1489	1422	1289

Source: FIR Report

From the above table it was found that from 2009 to 2014, the number of accidents decreased but it increased from the year 2015. Maximum 3381 number of accidents occurred in 2009. From 2009 to 2013, the number of deaths decreased but it increased from the year 2014. Maximum 2958 number of deaths occurred in 2009.

Drivers' Age

Table 2: Drivers' Age

Age group (in years)	Frequency	Percentage (%)
24-35	94	47
36-40	40	20
41-50	54	27
51 and above	12	6
Total	200	100

Source: Field Survey, 2017

Drivers' Age has shown in the above table. From the result it was found that the overwhelming majority of the surveyed drivers are in the age bracket 41-50 with only 6% above the 51 years and above age range (Table 1). Nearly half (47%) are within a younger age bracket of 24-35 while 21% are within 36-40 years and the remaining 28% within the 41-50 age bracket.

Educational Qualification

Table 3: Drivers' Educational qualification

Educational qualification	Frequency	%
Illiterate	16	8
Can read and write	24	12
Primary	60	30
Secondary/equivalent	96	48
SSC/equivalent	2	1
HSC/equivalent	2	1
All	200	100

Source: Field Survey, 2017

Drivers' Educational qualification has shown in the above table. From the result it was found that 80% of the surveyed drivers had some education (Table 3). The single highest education group among the drivers was secondary or equivalent education (48%). Only 8% were wholly illiterate.

Table 4: Drivers' Family size

Family size	Frequency	Percentage (%)
1 member	2	1
2 member	4	2
3-4 member	80	40
5-6 member	86	43
7 and above	28	14
Total	200	100

Source: Field Survey, 2017

Drivers' Family size has shown in the above table. From the result it was found that 43% respondents had 5-6 family members which was the maximum, 40% respondents had 3-4 family members. From the result it was found that most of the respondents (70%) are single earners in their families.

Housing status

Table 5: Housing status in Dhaka

Type of residence	Frequency	Percentage (%)
Own residence	8	4
Rental house	66	33
Mess	42	24
Vehicle/Bus/Car	82	38
Others (Garage/hotel etc.)	2	1
Total	200	100

Source: Field Survey, 2017

Drivers' housing status in Dhaka has shown in the above table. From the result it was found that 38% drivers who may have rural residences but sleep in the vehicles they drive while in Dhaka city which was the maximum, only 4% live in their own residence in Dhaka city, 33% live in rented premises while another 24% live in rented dormitories popularly known as mess and 1% drivers sleep in Garage/hotel etc.

Income status

Table 6: Monthly income

Monthly income (in Taka)	Frequency	Percentage (%)
10000-15000	38	19
15001-20000	94	47
20001-25000	32	16
25001-50000	32	14
50000 and above	4	2
Total	200	100

Source: Field Survey, 2017

Monthly income has shown in the above table. From the result it was found that 47% drivers' monthly income was 15001-20000 taka which was the maximum. On the other hand only 2% respondents' monthly income was 50000 taka and above which was the minimum. The lowest monthly income bracket was Taka 10001-15000 taka and this is enjoyed by 19% of the sample. 16% drivers' monthly income was 20001-25000 taka and 14% drivers' monthly income was 25001-50000 taka. Corroborating information on the few high income earners indicates that they may also be owning a vehicle and having dual earning as driver as well as owner.

Table 7: Mode of Salary Payment

Mode of Salary	Frequency	Percentage (%)
Regular monthly salary	18	9
Monthly trip-based payment	172	86
Payment on a commission basis per month	24	12
Monthly meal/food allowance	46	23
Extra monthly income over monthly salary	106	53

*Sum of percentages and frequency are more than 100 and 200 respectively as some drivers had multiple responses

Source: Field Survey, 2017

Mode of Salary Payment has shown in the above table. From the result it was found that 86% drivers replied that they got their payment by monthly trip-based payment which was the maximum. On the other hand only 9% drivers replied that they got their payment by regular monthly salary which was the minimum. 12% drivers replied that they got their payment on a commission basis per month, 23% drivers replied that they got only for monthly meal/food allowance instead of money payment and 53% drivers replied that they got extra monthly income over monthly salary.

Self-assessed poverty status

PPRC has always found it useful to supplement economic status indicators of households by an indicator status. Findings on this indicator show that only mm

Table 8: Drivers' assessed poverty status

Family expenditure status	Frequency	Percentage (%)
Always deficit	16	8
Occasional deficit	30	15
Break-even but vulnerable	100	50
Surplus	54	27
Total	200	100

Source: Field Survey, 2017

Drivers' assessed poverty status has shown in the above table. From the result it was found that 50% drivers replied that they are staying break-even point but it is vulnerable which was the maximum and 8% drivers replied that they are always in deficit condition. On the other hand 27% drivers replied that they are surplus in income i. e. each month they can save their income and can deposit the income.

Licensing

The issue of driver licensing is an important element of the road safety agenda. The driver survey sought some information pertaining to the issue.

Table 9: Type of license held by drivers

Type of License	Frequency	Percentage (%)
For light vehicles (Private car/Jeep/Pickup)	14	7
For medium sized vehicles (Microbus/Minibus)	32	16
For heavy duty vehicles (Bus/Truck/Lorry etc.)	150	75
Had no authorized license	4	2
Total	200	100

Source: Field Survey, 2017

Type of license held by drivers has shown in the above table. From the result it was found that 75% drivers replied that they had license for heavy duty vehicles (Bus/Truck/Lorry etc.) which was maximum but only 2% drivers replied that they had no authorized license which was minimum. On the other hand 7% drivers replied that they had license for light vehicles (Private car/Jeep/Pickup) and 16% drivers replied that they had license medium sized vehicles (Microbus/Minibus)

Table 10: Licensing process details

Process	Details	Frequency	Percentage
Driving test	Facing test	162	81
	License without facing any test	38	19
Location from where license obtained	Dhaka	104	52
	District office	96	48
Problems in obtaining license	Faced harassment	122	61
	No harassment	78	39

Source: Field Survey, 2017

Licensing process details drivers has shown in the above table. From the result it was found that 81% drivers replied that they got the license by facing test but 19% drivers replied that they got the license by without facing any test. 52% drivers replied that they got license from Dhaka and 48% drivers replied that they got the license from their own district. 61% drivers replied that they faced harassment during getting license and 39% drivers replied that they got license without any harassment.

Table 11: Nature of Harassment

Nature of Harassment	Percentage (%)
Had to pay bribe	92
Had to make repeated visits	52
Had to take help of middlemen	39
Middlemen gave fake license	5

`Multiple responses; do not add up to 100

Source: Field Survey, 2017

Nature of drivers' Harassment has shown in the above table. From the result it was found that 92% drivers replied that they had to pay bribe to get the license, 52% drivers replied that they had to make repeated visits, 39% drivers replied that they had to take help of middlemen and 5% drivers replied that the middlemen gave fake license.

Table 12: Trade union membership

Trade union Membership category	Frequency	Percentage (%)
Had membership of one or more trade union	164	82
Had no membership in any trade union	36	18
Total	200	100

Source: Field Survey, 2017

Drivers' Trade union Membership category has shown in the above table. From the result it was found that 82% drivers had membership of one or more trade union and 18% drivers had no membership in any trade union.

Training

Table 13: Ways of becoming driver

Ways of becoming driver	Frequency	Percentage (%)
Formal training	6	3
Informal learning	162	81
Combination of both	32	16
Total	200	100

Source: Field Survey, 2017

How a driver becomes a driver has shown in the above table. From the result it was found that only 3% of the drivers learned their driving skills through a process of formal training. The overwhelming majority 81% have acquired their driving skills through a process of informal learning. An additional 16% obtained their driving skills through a combination of both processes.

Table 14: Learning driving skills

Trainer	Frequency	Percentage (%)	Average Training hours
Friends/Relatives	6	3	614
Ustad	156	78	1541
Government Institutions	10	5	9
Private Institutions	20	10	93
Others	8	4	141
Total	200	100	

Source: Field Survey, 2017

Drivers' place of learning skills has shown in the above table. From the result it was found that 78% drivers replied that they had learned driving from their Ustad which was the maximum and 3% drivers replied that they had learned driving from their friends or relatives which was minimum. On the other hand it is matter of concern that only 5% drivers had replied that they had learned driving from Government Institutions, 10% drivers replied that they had learned driving from Private Institutions and 4% drivers replied that they had learned driving from other sources.

Table 15: Learning of traffic signals/rules

Learning category	Frequency	Percentage (%)
Learned fully Good	130	65
Learned moderately Good	50	25
Learning good	20	10
Total	200	100

Source: Field Survey, 2017

Drivers' learning of traffic signals/rules has shown in the above table. From the result it was found that 65% drivers replied that they had learned fully good which was maximum, 25% drivers replied that they had learned fully good and 10% drivers replied that they had learned Good which was minimum.

Table 16: Ability to drive

Ability to drive	Frequency	Percentage (%)
Can drive well	130	82
Can drive moderately well	50	15
Training was not useful	20	3
Total	200	100

Source: Field Survey, 2017

Drivers' ability to drive has shown in the above table. From the result it was found that 82% drivers replied that they can drive well which was maximum, 15% drivers replied that they can drive moderately well and 3% drivers replied that they cannot drive moderately well.

Work-load

Table 17: Days worked in a week

Days worked in a week	Frequency	Percentage (%)
Up to 4 day	82	41
5 days	86	43
6-7 days	34	16
Total	200	100

Source: Field Survey, 2017

Drivers' work worked in a week has shown in the above table. From the result it was found that 43% drivers replied that they worked 5 days in a week which was maximum, 41% drivers replied that they worked 4 days in a week and 16% drivers replied that they worked 6-7 days in a week which was minimum.

Table 18: Hours worked in a day

Hours worked in a day	Frequency	Percentage (%)
Up to 8 hours a day	64	32
9-12 hours a day	98	49
13-16 hours a day	38	19
Total	200	100

Source: Field Survey, 2017

Drivers' work worked in a day has shown in the above table. From the result it was found that 49% drivers replied that they worked 9-12 hours in a day was maximum, 32% drivers replied that they worked 8 hours in a day and 19% drivers replied that they work 13-16 hours in a day which was minimum.

Mobile-phone use while driving

Table 19: Use of mobiles during driving time

Use mobiles during driving time	Frequency	Percentage (%)
Use mobiles during driving time	88	44
Don't Use mobiles during driving time	98	56
Total	200	100

Source: Field Survey, 2017

Drivers' use of mobiles during driving time has shown in the above table. From the result it was found that 56% drivers replied that they don't Use mobiles during driving time and 44% drivers replied that they use mobiles during driving time which is very alarming for the security of drivers, vehicles and common people. The use of mobile-phones while driving has been recognized as a safety hazard.

Condition of vehicles

Even if the drivers were skilled and fully conscientious, safety hazards would remain if the vehicles they had been driving are unsafe. Information was sought from the drivers on the condition of the vehicles they had been driving. A caveat here is of course the possibility that drivers may exaggerate the fitness of their vehicles.

Table 20: Condition of vehicles

Condition of vehicles	Frequency	Percentage (%)
Very good	36	18
Good	44	22
Moderately good	58	29
Unfit	62	31
Total	200	100

Source: Field Survey, 2017

Condition of vehicles has shown in the above table. From the result it was found that 31% drivers replied that their vehicles were unfit which was maximum and this condition of vehicles are matter of sorrow for the safety of drivers and common people. 18% drivers replied that their vehicles were very good which was minimum. On the other hand 22% drivers replied that their vehicles were good and 22% drivers replied that their vehicles were moderately good.

Table 21: Drivers' regular vehicles servicing of status

Servicing category	Frequency	Percentage (%)
Conduct servicing Regularly	104	52
Don't conduct servicing Regularly	96	48
Total	200	100

Source: Field Survey, 2017

Drivers' regular vehicles servicing status has shown in the above table. From the result it was found that 52% drivers replied that they conduct regular servicing of their vehicles regularly and it a matter of great sorrow that 48% drivers replied that they don't conduct regular servicing of their vehicles regularly.

Table 22: Drivers' accident experience

Types of vehicles accidents	Frequency	Percentage (%)
Bus	96	48%
Mini-bus/truck	46	23%
Truck	44	22%
Micro-bus	8	4%
Covered van	6	3 %
Total	200	100%

Source: Field Survey, 2017

Drivers' accident experience has shown in the above table. From the result it was found that 48% drivers replied that from the vehicles 48% bus faced accidents which was the maximum but covered van faced 3% accidents which was the minimum. On the other hand 23% minibus/truck faced accidents, truck faced 22% accidents and microbus faced 4% accidents.

Table 23: Damages occurred after accident

Damage type	Frequency	Percentage (%)
Fatalities and damage to vehicle	10	5%
Fatalities with no damage to vehicle	28	14%
No fatalities with moderate damage to vehicle	34	17%
No fatalities with minor damage to vehicle	116	58%
No damage to vehicle	12	6
Total	200	100%

Source: Field Survey, 2017

Damages occurred after accident has shown in the above table. From the result it was found that 58% drivers replied that after accident no fatalities with minor damage to vehicle. It indicates that there are many accidents occurred but the number of fatality is less. Only 5% drivers replied that after accident fatalities and damage to vehicle which was minimum. On the other hand 14% drivers replied that fatality occurred and damage of vehicle also occurred 17% drivers replied that fatality do not occurred but damage of vehicle occurred, 6% drivers replied that no damage to vehicle.

Table 24: Situation faced after accident

Type of punishment	Percentage (%)
Faced no penalty	41%
Paid a fine	35%
Faced court case	11%
Temporarily released from duty	6%
License impounded	2%
Others	16%

(Multiple answers: percentages do not add up to 100)
Source: Field Survey, 2017

Situation faced after accident has shown in the above table. From the result it was found that 41% drivers replied that after accident they faced no penalty which was the maximum but 2% drivers replied that after accident their license impounded which was minimum. On the other hand 35% drivers replied that after accident they paid fine, 11% drivers replied that they faced court case after accident and 16% faced other punishment

Table 25: Type of assistance required by the drivers after accidents

Type of assistance	Percentage (%)
Assistance not required	43%
Cost of litigation/fine	41%
Re-instatement after temporary dismissal	35%
Legal assistance	11%
Partial family allowance during treatment	6%
Others	16%

(Multiple answers: percentages do not add up to 100)
Source: Field Survey, 2017

Type of assistance required by the drivers after accidents has shown in the above table. From the result it was found that 43% drivers replied that they did not require assistance after accidents which were maximum but 6% drivers replied that they need partial family allowance during treatment which was minimum. On the other hand 41% drivers replied that they need cost of litigation or fine after accidents, 35% drivers replied that they need re-instatement after temporary dismissal after accidents, 11% drivers replied that they need legal assistance after accidents.

Table 26: Injured drivers' treatment

Treatment taken place	Percentage (%)
Private Clinics	54%
District Hospital	22%
Pharmacy	24%
Total	100%

Source: Field Survey, 2017

Injured drivers' treatment has shown in the above table. From the result it was found that 54% drivers replied that after accident they get treatment from private clinics which were the maximum but 22% drivers replied that after accident they get treatment from District Hospital which was the minimum and 24% drivers replied that after accident they get treatment Pharmacy.

Table 27: Unions providing support

Name of Unions providing support	Percentage (%)
Road Transport Workers‟ Union	45%
District Bus/Minibus Worker's Union	26%
Bangladesh Inter District Truck/Covered Van Owners' Association	14%
Bangladesh Inter District Truck Drivers' Union	12%
District light vehicle Transport Workers' Union	3%
Total	100%

Source: Field Survey, 2017

Unions providing support after accident has shown in the above table. From the result it was found that 45% drivers replied that after accident they get support from Road Transport Workers' Union which was the maximum but they get support from District light vehicle Transport Workers' Union which was the minimum. On the other hand 26% drivers replied that after accident they get support from District Bus/Minibus Worker's Union, 14% drivers replied that after accident they get support from Bangladesh Inter District Truck/Covered Van Owners' Association and 12% drivers replied that after accident they get support from Bangladesh Inter District Truck Drivers' Union.

CONCLUSION AND RECOMMENDATIONS

1. Laws and policy should be updated:

a) Sarok Poribahan Ain 2018 and Bangladesh Sarok Poribahan Kartripakkhaw Ain 2017 (Bangladesh Road Transport Authority Act 2017) should be implemented strictly by the concern authority.
b) Coordination Role of the National Road Safety Council (NRSC), DRSC and URSC should be fully activated.
c) Capacity-building of the road safety divisions at RHD and LGED should take actions.

2. Traffic management and enforcement should be more effectively

a) Comprehensive review of current system of traffic management should be provided by police with a view to professionalization and dedicated traffic management.
b) National Traffic Training Academy should be established.
c) Highway police capacity and performance should be strengthened
d) Effective community policing should be promoted on traffic congestion in major cities of the country and at accident black spots on the highways.

3. Budgeting should be sufficiently

a) Separate economic code and budget should be provided in order to ensure proper and sustainable road safety. Related concerns and activities should be more cautious in this matter.

4. Engineering aspects of road safety should be more modern

A. Road design

a) Geometric design standard should be adopted in all local and highway projects.
b) A national workshop of all stakeholders including especially engineers should be arranged to consider road designing priorities in Bangladesh to ensure maximum road safety standards.
c) A set of guidelines should be prepared to be taken into account in designing and maintaining the roads with safety concerns adequately being addressed

B. Quality of road structures

a) All major highways should be improved to 4-lane with road dividers, this will reduce head on collisions.
b) Regular maintenance should be prioritized to ensure that road surfaces are free from potholes, undulations, rutting, cracking.
c) Bridges & Culvert in highways should be well maintained and safe.
d) Grade separation should be implemented in major intersection with proper engineering design.
e) Treatment of Road shoulders
f) Lane should be separated for non-motorized vehicles and designated truck/bus lanes.
g) Safety audit management into the road planning, design and construction implementation processes as well as safety inspection and assessment of existing roads by expert engineers.

C. Signs, road-markings and signals

a) Road signs are very important to guide the driver in his desired directions; drivers should be trained up about road signs and signals to alert the driver for upcoming road situations, to show the directions, speed limits etc. Reflecting signs are very effective to guide the driver at night.

b) Road signals are particularly important at intersections. Automated signals and audio signals are most important at level crossing.
c) Road markings, cateye are also essential to keep the driver in lane, show the direction of road, particularly at night.
d) In Primary levels of education, there should have lessons related to road safety, road signals, signs etc.

5. Access control and road-side activity should be more efficient

a) A certain level of realistic access control of highways has to be implemented. Road side barriers should be provided wherever possible, large bus bays and their proper use are also important.
b) Traffic management in bazaar sections, bus stands, residential/industrial/commercial areas, schools and other educational organizations needs to be of good standards, such as, prominent road markings, signs, and signals have to be provided and enforcement of law should be strictly followed.
c) Major road side activities in market areas of highways should be reduced or enforcing legislation that market and other major infrastructures cannot face the highway or direct access from the highway should be restricted.
d) Access or exit from a minor highway to a major highway should be provided with proper engineering applications such as, merging or diverging. If a crossing needs to be provided without grade separation, a roundabout, rumble strips, give way signs, road median, channelization etc. required should be provided for safe passage of vehicles.
e) Pedestrian access to highways is difficult to restrict in Bangladesh, however, there should be some control such as, in important locations foot over bridges or tunnels or zebra crossings, and road side barrier with traffic calming arrangements should be provided.

6. Pedestrian facilities should be improved

a) Pedestrian should be incorporated facilities including for disabled people in all road projects.
b) Optimal location of foot-over bridges and their adequate numbers should be ensured.
c) Wasteful structures that are cost-heavy but pedestrian-unfriendly should be avoided.
d) Political drive against encroachment of foot-paths and similar pedestrian facilities should be avoided.

7. Accident spots (black spots) should be identified and structures should be improved

a) Accident black spots should be made and updated time to time.
b) Road safety audits should be arranged at regular intervals to ensure routine updating list of black spots.
c) Fast-tracking new project proposal by RHD should be implemented to undertake improvement of identified black spots.
d) Promoting awareness-building and community policing programs at identified black spots.

8. Vehicle management should be done more appropriately

A. Vehicle licensing

a) A comprehensive plan should be undertaken and implemented for capacity up-gradation and professionalization of Bangladesh Road Transport Authority to provide quicker service avoids corruption and ensure that unfit vehicles have no opportunity for registration.
b) Inclusion of vehicle licensing standards should be ensured and these issues should be upgraded in the proposed new road transport and traffic law.
c) Vehicle testing program should be outsourced to accredited and technically competent technicians or companies.

B. Vehicle safety standards

a) Weighing stations should be set up on all national highways to control overloading of trucks. Trucks carrying more weight than permitted, damage roads destroy bridges and cause road accidents.
b) Locally made bus bodies are not built to specification, resulting in over-turning at high speed. This has to be re-examined thoroughly for the sake of safety.

9. Road-users should be more cautious

A. Drivers

a) Current loop-holes that allow obtaining licenses without tests or fake licenses through bribery should be addressed seriously as part of a major overhaul of BRTA performance.
b) Quality driving schools should be provided with a strict process of accreditation with BRTA.
c) Regular awareness should be undertaken- building programs targeted to drivers at major bus/truck terminals with a focus on safety issues.
d) Driver's Pay scale, wages & allowances should be Updated & functioning.
e) Convenient work schedule and health Program for drivers should be ensured,
f) Life insurance, Childs education program & social welfare should be provided for drivers and their families etc.
g) Drivers' rest center should be constructed for long route i.e. at the important national highways road side at convenient location.
h) Drivers should be motivated through Religious aspect & Life values &consciousness about drugs.
i) Best driver hunting, recognition & award Program should be arranged so that the drives try to become best driver.

B. Pedestrians

a) A regular basis awareness-building programs should be undertaken implemented jointly by government and civic platforms targeted to pedestrians and local community.
b) A focused social communication package should be developed and delivered on road safety issues including use of zebra crossing, foot-over bridges, standing at safe distances, meaning of signs and symbols and the importance of following them.

10. Accident and post-accident issues should considered

A. Accident investigation

a) Accident investigation should be made legally mandatory.
b) A focused training program should be undertaken for selected police personnel to build capacity for competent accident investigation.
c) Current practice of focusing should be changed on the vehicle involved in accident and not on the place of environment of occurrence.

B. Medical facilities

a) Emergency care in all major hospitals should be strengthened.
b) Trauma treatment facilities should be increased and should be ensured adequate trained manpower for such facilities on all major highways and major urban centres.
c) A basic training program should be introduced on CPR targeted to the local community in selected pilot areas and gradually scale up across the country.
d) An awareness program should be introduced on on-site preparation of ID tags of accident victims for optimal utilization of the post-accident golden hour and minimize delays in tertiary treatment.

C. Victim support

a) Legal provisions should be strengthened for compensation claims by accident victims.
b) The accident insurance sector should be reviewed and should be ensured a more victim-friendly operation of the sector
c) The options for an effective support program should be reviewed for required post-traumatic treatment.
d) Post-accident treatment should be included as a vital issue and emphasis should be given to establish quick response team at every Upazilla Health Complex.

11. Road Safety system should be Digitalized

a) CCTV camera & required number of Control station should be provided all over the Country as required.
b) Arrangement should be made to identify the wreck less Driver /vehicle and penalty should be ensured through the software development.
c) An efficient Traffic Management System should be made by Auto Signaling system.
d) The wreck less driver & the unfit vehicles users should be identified and there should have suing system by software development.
e) A Drone can be introduced in mapping safety strategic plan to solve the congestion as well as road safety improvement in Highway.
f) Automated toll collection system should be developed at different toll plaza of Bridges and Highways to be launched.

12. More Administrative approach should be taken

a) Frequent Mobile Court operation & evection program should be conducted in regular basis.
b) Bazaar/Hat should be removed permanently from the Highway.
c) Meeting should be organized with FGPs frequently.

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