

Road safety research in Bangladesh: constraints and requirements

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ABSTRACT: The problem resulting from road traffic accidents, injuries and property lose is an emerging, challenging and one of the major concerning issues in Bangladesh like many other developing countries in the world. To counteract this problem, road safety research has proven beneficial in documenting the road accident problem, appraising the current situation in terms of priorities and problem areas and has provided the means to develop and evaluate countermeasures. In respect to the magnitude of the problems, the safety initiatives are at a very infant level and the progresses in very slow for the causes of enormous constraints at different levels in Bangladesh. Indeed, the allocation for road safety research and intervention is very low in comparison to other diseases and disasters. In this paper, the authors briefly reviewed some major road safety initiatives in Bangladesh. The key issues of this paper is to evaluate the road safety research constraints in Bangladesh and future requirements for developing research based scientific, pragmatic and cost effective counter measures to improve the carnage on road. At the very outset of the paper, the scale and magnitude of road safety problems in Bangladesh has also been highlighted.

1 INTRODUCTION

Safe, sound and sustainable mobility is one of the fundamental necessities of human being. Unfortunately, mobility or transport is become a ‘global tragedy’ with ever-rising trend and represent a major cause of premature deaths and disabilities worldwide. Road trauma has now been recognized as one of the significant diseases of industrial societies and is an increasing public health and economic issue in developing countries like Bangladesh.

According to police statistics, there are about 4,000 deaths and many more serious injuries each year on roads in Bangladesh. Fatalities per 10,000 motor vehicle is one of the highest in the world. Pedestrians, bicyclists, motorcyclists and those using informal transport including the bus and truck passengers are the most vulnerable road user group contributing almost 80 percent of road fatalities. There is an huge scope to reduce and control this man-made epidemic by implementing strategic programs that will effectively address such a major growing issue of road traffic accidents and injuries. Although some initiatives have been taken by the government and various non-government agencies, are very infant level and many of those are not fully effective for the causes of enormous constraints at different levels particularly for the lack of target oriented research based program. Indeed, an effective and integrated research program is fundamentally important and is seen as the basis of development and subsequent evaluation of a comprehensive road safety strategy.

These paper deals with the needs of road safety research, constraints and fundamental requirements in Bangladesh. Magnitude of the road safety problems and some recent initiatives are also discussed.

2 MAGNITUDE OF THE ROAD SAFETY PROBLEMS IN BANGLADESH

2.1 *Accident Statistics*

Like many other countries in the world, police are officially responsible for reporting and recording of road accidents and casualties in Bangladesh. According to the police reported official statistics, there were at least 3764 fatalities and 3284 injuries in 4426 reported accidents in 2008 (PFIR, 2008). Reported road traffic accidents statistics of the last decades are given in Table 1.

Table 1: Number of Road Accidents, Fatalities, and Injuries in Bangladesh

Year	No. of Accidents		No. of Fatalities		No. of Injuries		Total Casualties		Traffic fatalities per 10,000 vehicles (on road vehicle)*
	FIR ¹	MAAP ²	FIR ¹	MAAP ²	FIR ¹	MAAP ²	FIR ¹	MAAP ²	
1998	4769	3533	3085	2358	3997	3297	7082	5655	78.24
1999	4916	3948	3314	2893	3453	3469	6767	6362	79.60
2000	4357	3970	3430	3058	1911	3485	5341	6543	78.09
2001	4091	2925	3109	2388	3127	2565	6236	4953	66.39
2002	4918	3941	3398	3053	3772	3285	7170	6338	67.18
2003	4749	4114	3289	3334	3818	3740	7107	7074	61.03
2004	3917	3566	2968	3150	2752	3026	5720	6176	53.71
2005	4949	3322	3187	2960	2754	2570	5941	5530	52.86
2006	3794	3549	3193	3160	2409	2123	5602	5283	50.44
2007	4869	3910	3749	3250	3273	2102	7022	5352	56.41
2008	4426	-	3764	-	3284	-	7048	-	53.93

Source: Police reported Micro Computer Accident Analysis Package (MAAP) data base

* Note: Traffic fatalities per 10,000 vehicles (on road vehicle) calculated considering the FIR data as there is reported more number of fatalities

¹FIR: First Information Record, the case entry record in the police log-book

²MAAP: Microcomputer Accident Analysis Package, Police reported accident database in the prescribed form.

While around 4000 deaths annually are reported to the police, it is estimated that over 10,000 deaths resulting from road crashes occur annually. The annual socio-economic costs represents around 2% of GDP (Howard & Breen, 2008).

2.2 Fatality Rate

Figure 1 shows fatality rates in various countries as function of per-capita income. The Indian fatality rate (represented by the red square) is in the middle of the range for low-income countries (Mohan, 2004) and the Bangladeshi fatality rate (represented by the red circle) is in the bottom of the range for low-income countries. This may be attributed to significant amount of underreporting as well as high population density coupled with low motorization level. As incomes in Bangladesh increases along with motor-vehicle use, Bangladesh is becoming a middle income country, the present trends fatalities per million persons and the experience of some mid-income countries suggest that fatalities could see a dramatic rise before they start to drop, consistent with the so-called Kuznets curve (e.g., McManus, 2007). However, future trends may be altered if vehicle design, road building, education and traffic management policies include the latest scientific countermeasures.

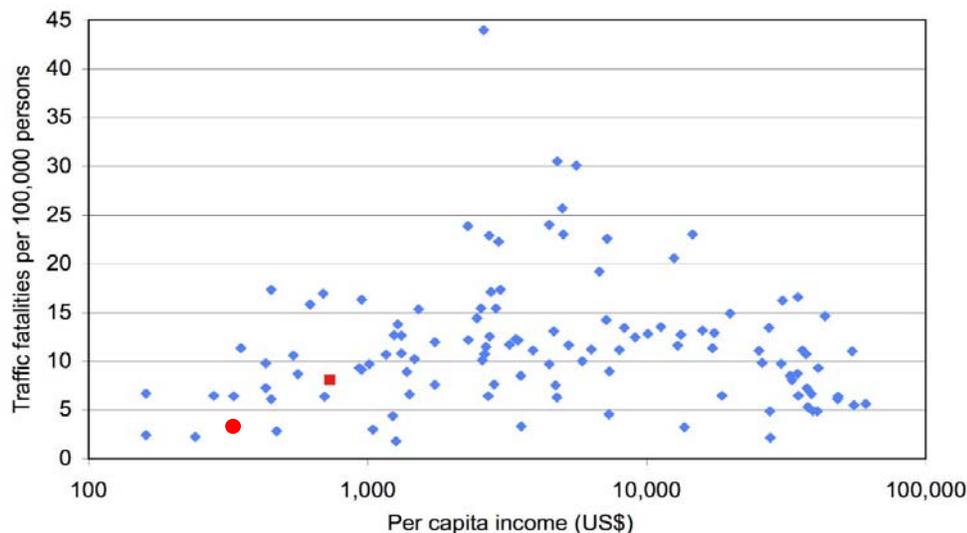


Figure 1: Traffic Fatality rates per 100,000 persons in 116 countries. Bangladesh is represented by red circle and India is represented by the red square (Mohan, 2004)

The ‘fatality rates’, i.e. the estimated number of road traffic accident fatalities per 10,000 on road motor vehicle for Bangladesh (over 50) is very high by international standards, as the fatality rates for motorized countries is usually less than 2 (2 in the United States of America and 1.4 in the United Kingdom of Great Britain and Northern Ireland). “A Review Of Global Road Accident Fatalities” conducted by Jacobs and Thomas showed that the Bangladesh has one of the highest fatality rates in road accidents, over 40 deaths per 10,000 registered motor vehicles (Jacobs et al, 2000). Table 1 also shows the trends of fatalities per 10,000 on road motorized vehicles in Bangladesh.

2.3 Fatalities per 100 km RHD Road

In Bangladesh, Roads and Highways Department (RHD) and Local Government Engineering Department (LGED) are the main authorities of road. LGED is mainly responsible for local road which is use only for local connectivity and RHD is responsible for the major road including National, Regional and Local roads which is the main transport network for motorized transport and almost all of such vehicles are operated on those roads. There were about 21 thousands kilometre of roads under Roads and Highways Department (RHD) comprising National road 3,478 km, 4,222 regional and 13,248 km feeder road in 2007. In 1972 there were only 4,202 km of such road. Road network has been increased about five times consequently the fatalities per 100 km RHD roads also have been increased about 4 times, 4.48 in 1972 to 17.83 in 2008.

2.4 Fatalities per 100 Million Vehicle Kilometers

Accident and Fatality rates with respect to vehicle kilometer are calculated based on vehicle Operation Survey data conducted by Roads and Highways (RHD) department in different years. Table 3 represent the total vehicle kilometer travel by motorized vehicles and the accidents and fatalities per 100 Million vehicle kilometers over a period of 5 years (1999 to 2004).

Table 2 : Accidents and Fatalities per 100 Million Vehicle Kilometers

Year	Total veh-km	No. of accidents	No. of accidents per 100 million veh-km	No. of fatalities	No. of fatalities per 100 million veh-km
1999	13,419,385,000	4,916	37	3,314	25
2000	12,719,533,000	4,357	34	3,430	27
2002	14,125,435,000	4,918	35	3,398	24
2004	21,042,770,900	3,917	19	2,968	14

Source: RHD (1999, 2001, 2003, 2005a)

The above table shows that in a span of five years total annual vehicle kilometers driven by motor vehicles have increased by 57 percent. The corresponding accident and fatality rates have decreased by 49 percent and 43 percent respectively per 100 million vehicle kilometers of vehicles plying on road.

3 MAJOR ROAD SAFETY INITIATIVES IN BANGLADESH

In order to improve the road safety situation as well as to minimize the recurrent losses of valuable lives and properties, several initiatives have been taken by the various government, non-government and donor agencies in Bangladesh in the form of policy implementation, institutional development, geometric improvement of roads, sanction of legislation and enforcement, capacity building of professionals and academician and awareness development of mass people. Some of the major initiatives are:

3.1 Adoption of National Land Transport Policy (NLTP)

National Land Transport Policy (NLTP) has been adopted in 2004 by the Planning Commission of Bangladesh, which sets vision for "providing safer roads" and policies there-for, such as (i) road safety auditing at all phases of road projects, road construction & maintenance, (ii) speed restrictions on roads, (iii) safety improvement of existing roads etc. which are needed to achieve the vision (RHD, 2005b).

3.2 Preparation of Safety Manual, Hand Book and Guidelines

RHD has prepared different Manual, Hand Book and Guidelines for road safety such as the Guidelines for Road Safety Audit, Road Safety Improvement Works Manual, Road Safety Users Guide, Road Geometric Design Manual, Police Training Handbook, Road Safety Engineering Toolkit, Pavement Design Guide, Guidelines for Identification of Sites for Road Safety Improvement Works, A Guide to Safer Road Design, among others with the help of development partners under different projects. In addition, Traffic Sign Manual has been developed by Bangladesh Road Transport Authority (BRTA) in 2000 (BRTA, 2000).

3.3 Establishment of National Road Safety Council (NRSC)

The National Road Safety Council (NRSC) was established in 1995 under the auspices of the Ministry of Communications. Initially with support of WB funded road improvement project of RHD; now a unit of BRTA. The NRSC acts as apex body for approving and driving forward the national policy and plans. The NRSC also formulated the National Road Safety Action Plan. Besides, the NRSC is responsible for holding periodic meetings to provide policy level guiding decisions and directives to road safety related stakeholder organizations.

3.4 Establishment of Road Safety Cell and District Road Safety Committee

Besides NRSC, District Road Safety Committees (DRSCs) at the district and metropolitan levels have been formed by the involvement of DC and SP along with BRTA, road authority and other transport / road user agencies, which implement programs and policies of NRSC and will undertake local road safety programs according to local needs. There is an Executive committee headed by the chairman BRTA to co-ordinate NGO regarding road safety issues (Hossain, 2002).

3.5 Establishment of Accident Research Institute (ARI) at BUET

In response to the growing accident problem in Bangladesh, the concerned authorities have started to realize the need for scientific study and research regarding the causes of accident and commensurate remedial measures. The highest level of commitment in this regard came from the Honorable Prime Minister to establish an independent Accident Research Centre (ARC) within the top priority programs of the government. Accordingly, the ARC has been established at Bangladesh University of Engineering and Technology (BUET) in 2002. After the successful completion of the project period, ARC becomes an institute named Accident Research Institute (ARI) under education ministry at BUET in 2007.

3.6 Development of Road Safety Unit at RHD and LGED

With the technical assistance of DFID, RHD has established road safety division in January 1999 with a view to deal with the safety aspects of national, regional and feeder roads. (Hossain, 2002). There are severe lacks in man-power, logistics and facilities; hence yet to become fully functional. Recently, MoC approved proposed upgrading of the Unit, its roles and functions and procedures for implementing roles and functions. LGED has planned to create Road Safety Unit within LGED; and undertaking activities in this regards (RHD, 2005b).

3.7 Establishment of Highway Police

With the aim of increasing of the safety and improving traffic management on highways, the Government of Bangladesh created the Highway Police in 2005 with a view to maintain and ensure discipline, enforce traffic rules and regulation on the highway, traffic management, prevent highway crime, collect and disseminate of intelligence, police patrolling as well as ensure safety on road etc.

3.8 Formation of Road Safety Voluntary & Advisory Group

In addition to government organizations, many road safety non-government voluntary or advisory groups have been formed at national, regional as well as local levels in Bangladesh. Nirapad Sarak Chai, Work for Better Bangladesh (WBB), Safe Community Foundation, Poribesh Bachao Andolon etc. are pre-dominant at national level.

3.9 *Approval of Speed Limit Zoning and Speed Restriction Rules*

Excessive and inappropriate speed is the most important factor contributing to the road injury problem faced by many countries (GRSP, 2007). Incognizance with these facts Speed Limit Zoning & speed restriction rules have been developed for different highways in Bangladesh. It has been approved and published in a gazette by BRTA in 2005 (Bangladesh Gazette, 2005).

3.10 *Preparation of National Road Safety Strategic Action Plans*

From the establishment of The National Road Safety Council (NRSC) in 1995, drew up first National Road Safety "Strategic Action Plan" covering the period from July 1997 to June 1999 and subsequently 2000 to 2002, 2002 to 2004 & 2005 to 2007 have developed. Subsequently the National Road Safety Council (NRSC) of Bangladesh formulated an updated "National Road Safety Strategic Action Plan 2008-2010" with the hope that it will provides an important opportunity for improving safety in a comprehensive way and makes an effort to approach the issue holistically.

3.11 *Development of Accident Database*

A standard format for accident information recording was designed in 1995 as an initiative under Institutional Development Component (IDC) program was adopted by Police Department and promulgated appropriate rules for mandatory use as part of "First Investigation Report" of accident cases by Police. Besides, MAPP5 software based accident database system has been developed and data has been being stored in this software since 1998. In addition, Under Institutional Development Component (IDC), RHD has conducted road inventory survey and has prepared inventory book to identify the accident locations and find out Black spot on the road as well as to treat that location through different site-specific intervention. Computerized data base for recording registered motor vehicle and officially licensed driver's data have also been established at BRTA by the Dhaka Urban Transport Project (DUTP) funding under IDC program (RHD, 2005b).

3.12 *Preparation of RTA Annual Report*

The Bangladesh Road Transport Authority (BRTA) has been collecting and analysing road traffic accident statistics since 2001. Since its inception in January 2001, BRTA has been preparing reports based on the National Road Traffic Accident (RTA) database. Since 2005, the Bangladesh Road Transport Authority (BRTA) has been continuing this process of data collection and analysis independently, without international assistance.

3.13 *Training of Road Safety Professionals*

Efforts are underway for strengthening the capabilities of the key agencies through organizing different long and short term training program both local and overseas for the professionals and providing facility to participate different workshops, seminars and conferences on road safety.

3.14 *Safety Awareness and Training*

Different safety awareness campaign and training programs have been taken at different levels in the country including professionals, transport owners & workers, students, cadet, BNCC, mass people by different government and non-government organizations under different projects and by individual initiative.

3.15 *Implementation of Road Safety Audit*

Incognizance with the facts, RHD road safety unit has introduce formal road safety audit on the different locations or spot of national highway from the past few years under different projects.

3.16 *NGO Initiatives towards Road Safety*

The Non-Government Organizations (NGOs) are becoming active in the area of road safety in Bangladesh. The activities of two leading NGOs such as BRAC and Center for Rehabilitation of the Paralyzed (CRP) are quite noticeable in this regard, (Quazi, 2003). The major programs being undertaken include are Community Road Safety; Training of Students; Road Safety Training for Office Staffs; Community Road Safety NGO

Network; Publicity and Awareness; Research; Driver's Training; Treatment and Rehabilitation of Paralyzed People.

3.17 *Geometric Improvement of Roads*

Significant improvement works have taken place on the national highways as well as regional and feeder roads of all over the country in the past decade by RHD and LGED with the support of Government of Bangladesh and donor agencies. Construction of new and strategic road, realignment of existing road, widening of road, surface treatment, road and roadside improvement like shoulder improvement, removal vision obstruction, providing loading and unloading facilities were the major link improvement work among them. Besides, some of the hazardous road locations both spots and links have been improvement with the prime objective of safety improvement on the different national highways in Bangladesh.

3.18 *Procurement of Safety Equipments and Logistics*

Different types of enforcement and road safety equipments have procured by the concerned agencies including police, BRTA in different times under different projects in particular SRNDP funding. Besides, office equipment and logistics also have been procured to setup and organized of Road Safety Unit of RHD and LGED.

3.19 *Establishment of International/Regional Cooperation Regarding Road Safety*

Various concern organizations of Bangladesh have developed effective linkages and professional exchange programs with different institutions, organizations, universities etc. at local, regional and international levels viz. GRSP, VTI, ESCAP, ADB, WB, REAAA, TRL, TRIPP and other international aid agencies and the specialized institutes in order to facilitate exchange of knowledge and technologies regarding road safety.

4 ROAD SAFETY RESEARCH IN BANGLADESH

It is argued that to improve road safety two tasks are fundamental, one is conducting scientific research and other is disseminating knowledge and information. Effective research on road safety issues is an essential prerequisite to better understanding of the problem and provides the framework against which effective policies and counter-measures should be developed. Indeed, road safety research is needed to clarify the current situation in terms of priorities and problem areas, as research provides the framework of knowledge against which policy decisions can be taken and countermeasures devised. This is usually best carried out by specialist researchers in universities or road research institutes, but can also be done by others with an interest in road safety. Much research has been undertaken internationally in road safety and many of the findings of such research can be of value to researchers and practitioners in all countries. Unfortunately, with a few notable exceptions, relatively little research had been undertaken in many developing countries, Bangladesh in particular.

4.1 *Progress in Road Safety Research in Bangladesh*

Like many other developing countries, research is usually undertaken in Universities and Research Institutes and is normally financed by the country in which the Research Institute or University is located. In a few instances, collaborative research are undertaken which spans several countries or institutes and which is funded from several different sources but this is the exception rather than the rule. It is the facts that it was the believes that road accidents are accidents, acts of God, there is nothing to do. Results, road safety investment as well as research were very insignificant in Bangladesh. During the 1990s, the number of research program in the field of traffic safety was conducted by individual initiative under the university guidance and assistance. In recent years, this view is gradually changing and people are realizing the needs of road safety interventions and programs as well as road safety research. In view of this, in many instance, parallel with the operational work on improving traffic safety in Bangladesh road system, long term research and specific development work have been started particularly in recent years.

Even, the Government of Bangladesh has realized that due to the complex nature of road accidents and the many different sectors involved in the operation of road safety, local research is required to provide a scientific and objective approach to reducing the suffering and losses caused by road accidents and established Ac-

cident Research Institute (ARI) at BUET in 2002 and was given the responsibility for a substantial part of traffic safety research.

Now, ARI is continuing its effort to conduct road safety research and investigation from the very beginning of its establishment. As a newly established institute with huge limitations and constraints, ARI are particularly focused on documenting the accident problem characteristics, identifying the potential location and causative factors and to develop potential countermeasure which would provide the means to develop and evaluate effective countermeasures.

Financing of traffic safety research is at present fully the responsibility of the Government of Bangladesh. The administration does not carry on research of its own, but both research institutes and universities can apply for funds for research projects. No industry or private organization has focused on safety research issues and funding support yet. Work on a joint traffic safety research program is trying to carry out at present in co-operation between the donor agencies like the World Bank, UNICEF and the other government organizations and institutions.

4.2 Expenditure and Funding for Road Safety in Bangladesh

Financial resource crisis for developmental work is acute in developing country, like Bangladesh posing threat to sustainable road development. Very small proportion of required fund could be allocated per year. During financial year 2005-06 development fund allocated from National ADP for RHD and LGED are Tk. 2004 Crore (RHD Website) and Tk. 3069 Crore (LGED Office, 1 US\$ = Tk. 70.00 and 1 Crore = 10 million) respectively with about 10% year to year annual increase (MOC, 2006-07).

There was a significant increase in major periodic maintenance in 2004-05 provided by DFID (Sector Budget Support) and JBIC (dept swap arrangement). Excluding this, externally finance expenditure and ferry costs, expenditure was reasonably constant at about 350 Crore Taka per year. The total estimated expenditure on maintenance of full network is Tk. 1400 Crore which is around Tk. 450 Crore more than was spent in 2004-05 (Road Fund Office, 2006). However, RHD expenditure includes Tk. 380 Crore from International aid agencies. Without this assistance the total expenditure would only be 40% of the total requirement. Current backlog for the whole RHD road network is 1844.9 Crore Taka (MOC, 2006-07).

The amount of fund allocation and its utilization for maintenance of road network under RHD in recent years is presented in the following Table 3.

Table 3: Investments on RHD roads (year from 2004 to 2006)

Investment Year	Development (Tk in Crore)	Maintenance (Tk in Crore)
2003-2004	2462.89	375.27
2004-2005	2361.31	886.86
2005-2006	2258.72	700.00

RHD has taken up Five large projects and a future landing project called Road Sector Reforms Project (RSRP), road safety component is included in all those project.

Table 4: List of Project and Road Safety Allocation

Project	Consultants Road Safety	Funded by	Amount of fund (TK. In cr.)
JBARP	COWI-DDC –SMEC with SARM &SCPL	a) ADB for civil work	18.90
		b) NDF for consultancy	4.82
RRMP- III	ICT, Sverdrup, EPCL, ESL &PUL	a) IDA for civil works & consultancy	67.28
		b) R/S Equipment	13.92
		C) Police training	20.08
SRNDP	Fin Road Technoplanners Dev Consultants & DUL	a) Civil works	10.65
		b) Consultancy	8.75
RNIMP-I		a) ADB for Civil works	4.64
		b) Consultancy	-
RNIMP-II		a) ADB for Civil works	11.8
		b) Consultancy	-

Source: Hossain, 2002 & Project Report

Besides, in 1998 RHD had revised money for simple road safety engineering improvement and it was decided that they should use 2 percent of the road maintenance budget for road safety. In addition, in the financial year of 2002, a block allocation of Tk 5.70 crores was kept for road safety issues like signing and markings, guide posts and road furniture's (Hossain, 2002). But unfortunately this was continued few years and the road safety investment has been very insignificant particularly in recent years.

5 CONSTRAINTS OF ROAD SAFETY RESEARCH IN BANGLADESH

5.1 *Under Reporting of Accidents*

The widespread under reporting and incomplete collection of specific details of accident data are, however a major problem in Bangladesh. Most of the injury and property damage accidents are not reported at all. Indeed, many of the fatal accidents are not reported particularly in the remote regions. A case study on selected police stations adjacent to the highway have shown that there is a significant difference in the number of accidents between the MAAP5 accident database and the First Information Report (FIR), with lower number of accidents in the central MAAP5 Database (ARI, 2007). Due to such immense under reporting, it is difficult to understand the magnitude and economic burden of accidents and to carry out comprehensive road safety research to identify the causative factors for developing scientific and effective measures.

5.2 *Institutional Weaknesses*

Road safety improvement efforts and initiatives in Bangladesh seriously affected from several drawbacks and weaknesses in particular institutional weaknesses. Lack of support, coordination, cooperation, collaboration among safety stakeholders is could be noted as the leading barrier for institutional capacity building.

5.3 *Lack of Professional Capacity and Expertise*

A road safety research unit ideally needs several members interacting to ensure a critical mass working together and maximizing the research's potential impact on road safety policy. Training needs should be covered by university courses, short in-house courses, and overseas training. These are lack of a strong professional safety agency with adequate executive powers and responsibilities; fragmentation of responsibilities between agencies and insufficient inter-agency coordination; low level of staffing and lack of professional capacity; lack of trained traffic police for effective enforcement and traffic regulations etc.

5.4 *Resource Constraints*

According to the Technical Note No.1 Review of Recent Projects and Research. March 1996, ADB, In South Asia, India has been the most active in promoting road safety with research being undertaken by the Central Road Research Institute (CRRI) and the Indian Institute of Technology (IIT). On the other hand, road safety project in other countries like Bangladesh, include very insignificant local financing (ADB, 1996)..

Without a stable and sufficient flow of funds for road safety, any attempt to solve road safety problems is bound to fail. Therefore, it is necessary to establish national road safety funds that are run like a business and financed through road user charges and insurance company revenues and automobile companies revenues among others. The character of such road safety funds as noted in the Pakistan country paper, 2007b is listed below:

- Sound legal basis with a road safety fund administration and clear rules and regulations.
- Straing oversight by a board with qualified and powerful members from the private and public sector and representing all important groups with vested interest in road safety.
- Revenue incremental to the public budgets and coming from charges related to road use and channeled directly to the national road safety fund band account.
- Sound financial management systems with lean efficient administrative structure
- Regular technical and financial audits

All of those principles are overwhelmingly important in the context of safety improvement programs in Bangladesh.

5.5 Lack of Strong Political Support and Commitment

Funding is synonymous with political support and is required to ensure appropriate staffing and resources are available for road safety research. Funding must also be consistent and reliable to allow research adequate development time. There is a strong need of political commitment and support. For the absence of lead agency, there is no owner of road safety in the state.

5.6 Wrong Policy

The development history of road transport in Bangladesh, particularly after the independence of the country, more focus was given in developing road length and number of bridge by constructing new roads and bridges and very insignificant consideration was given for the maintenance and road safety. Road construction followed standard geometrics with least concern for road safety. Undertaking/implementing road safety program /initiatives as a component or a sub-component of other large road improvement projects resulted in lower attention by the concerned authorities of project implementation.

5.7 Lack of Integration between Concern Agencies

Road safety is a multi-disciplinary issue and the concern of government at national, regional and local levels, civil society and business. Road safety research is not an end in itself and findings need to be shared, discussed, and applied in order for the full benefits to be realized. Research findings can be disseminated through seminars and training courses, and through international conferences. Research findings should be integratable into transport policy, which requires a close working relationship and integration between different concern organizations and institutions particularly the traffic police, road engineers and researchers. In Bangladesh, different organizations are working for transport mobility and safety but there has huge lack of coordination and integration between them.

5.8 Lack of Government and Private Partnership

In Bangladesh the very few road safety initiatives which is usually undertaken particularly by the Government organization, Universities and Research Institutes and is normally financed by the country. In many of the developed and developing countries road safety programs spans several public and private organizations and which is funded from several different sources viz. industries, manufacturers, development authorities. Involvement of insurance, motor industry, and road transport industry groups (bus/truck owners association/workers Federation) should be considered in the road safety initiatives. Unfortunately, such initiatives are extremely infrequent in Bangladesh particularly in last few years.

5.9 Lack of International Linkage, Support and Cooperation

As discussed earlier, development of international linkage, support, cooperation and coordination is initiated through organizational or individual effort; but it is very infant level yet to deal with the road safety crisis. There is a strong need to develop a global partnership with international aid, funding, social welfare organizations/institutions and academic and research institutions through strong leadership and communication.

5.10 Poor Accident Data Recording System

Currently, there is only police reported accident database in Bangladesh. Hospital or insurance-based accident database has not yet been developed. ARI is continuing its effort to develop newspaper based accident database but the newspapers have large reporting inconsistencies and highlight generally on major fatal accidents particularly in the nearby core areas/around growth centers. Injury accidents or remote areas' accidents are almost unseen in the newspaper reports. Even the newspaper reporting quality is not quite significant and elaborated with respect to facts finding analysis and research. Indeed, the police reported accident database is also not sufficient and substantial for in-depth accident analysis and qualitative research. Multiple independent database is needed to reduce underreporting and to maintain and improve quality of databases.

6 PRIORITY REQUIREMENTS FOR BANGLADESH

For improving road safety situation by implementing target-oriented research based scientific and sustainable program with respect to the condition of our country, Bangladesh as discussed in the previous sections the following aspects are urgent requirements.

- Strong political commitment, efforts and need to recognized road safety problem is an man-made epidemic which is predictable and preventable and to give road safety issue a central importance in policy agenda.
- Designating central lead agency that would be the owner of the road safety of the state and will monitor and evaluate the whole activities.
- Detailed systematic accident data collection, recording, reporting and computerized database development.
- Ensure educate funding and logistics support.
- Strong co-ordination and collaboration with the different agencies.
- Institutional and professional capacity building.
- Institutional arrangements form the foundation of the road safety management system
- Strong collaboration with the international agencies and other specialized institutes viz. AusAID, World Bank, ADB, WHO, UN, ESCAP, ARRB, REAAA, GRSP, iRAP, IATSS etc.
- Professional linkage and sharing of knowledge, technology transfer, knowledge sharing and good practices.
- Private partnership and support.
- Collaborative research and education with the private organization and foreign agencies.

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