

Socio-economic Consequences of Road Traffic Accidents to the Victims and their Families in Dar es Salaam Tanzania

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Abstract: *This paper examined socio-economic consequences of road traffic accidents to the wellbeing of people in the study area. Semi-structured interviews, focus group discussion and personal observation were employed during the process. Data were supplemented by secondary information from various sources. Descriptive statistics was used to report quantitative findings and coding was used to summarize, synthesize and sort observations made of the qualitative data. The overall results indicate that police and hospital data in Tanzania is incomplete which does not allow distinguishing between degree of injury, spot areas, and social economic status of victims. Victims of road traffic accidents and their families according to findings suffer socially, psychologically and economically. Some of the victims revealed that they were neglected by relatives/spouse due to disabilities and long treatment. The study found out that treatment for road injuries was very expensive and this leads some families into miserable life. On the basis of these findings, three recommendations emerge. First, efforts should be made by stakeholders to develop a data set for a proper system of recording. Second, stakeholders should develop and implement a policy for enhancing livelihoods and wellbeing of road traffic accident victims and their families. Third, preventive interventions to combat road traffic accidents should be developed by the national and international partners.*

Key words: Road traffic accidents, physical disabilities, socio-economic consequences, coping mechanisms.

Introduction

The World Health Organization (WHO) (2013:1) “estimated that Road Traffic Accidents (RTAs) caused over 1.24 million deaths and about 50 million people are injured per year, and 91% of the world’s fatalities occur in low and middle income countries”. RTA is estimated by the research to be the eighth leading cause of death globally with the same impact caused by other communicable diseases like malaria (*ibid.*). The trend of RTA as indicated in the report by WHO (2013:1) is that it will become “the fifth leading course of death by 2030”. WHO (2013) notes

that a considerable number of RTA victims end up with permanent disability through amputation, and spinal cord injury. Unfortunately the clear picture on the data of the RTA victims who have suffered from physical and other types of disabilities is not well known (WHO, 2013). According to DFID (2000) disability and development has become a major concern in the world in recent years and 'disability is both a cause and consequence of poverty'. Road transport is the dominant mode of transport in Tanzania and it accounts for more than 80% of passenger traffic and over 70% of freight traffic in the country (United Republic of Tanzania (URT), 2002).

Increased economic performance and investments in roads transport infrastructures have resulted into increased levels of motorization in the country in general, and in the urban centers, in particular. But, increased motorization has also been accompanied by an unprecedented increase in road traffic accidents due to inappropriate road safety measures and poor transport system planning (URT, 2005). A background study conducted in Dar es Salaam region in Tanzania revealed that RTAs is a big problem that has contributed to fatalities and physical disabilities to different road users (Makuu, 2010). A similar observation was made by Museru *et al.* (2003), who indicated that RTAs in Tanzania accounts for 80% of all injured patients admitted at Muhimbili Medical Centre. It is noted in the literature that 'many victims of RTAs suffer from permanent disabilities and many families are driven deeper into poverty' (Nantulya, 2002).

As noted by various studies RTAs are caused by behavioral, vehicle, road and management factors. RTAs involve direct costs (direct medical and rehabilitation costs) and indirect costs (loss of income due to permanent disability/premature death). Grimm and Treibich (2010) note that 'road traffic injuries have to be seen in low and middle income countries as one of the most important health problem that may also entail major economic problems at household levels'.

This is because families have to use the available resources to provide care and support to the victim because in poorer countries there is no much support offered to disabled persons (Makuu, 2010). The household might as well find itself in a debt burden that may result into exposing family properties like a plot, a house, vehicle or animals for sale to repay back the debt if the situation gets worse (*ibid.*). The objective of this paper was therefore to show clearly how road traffic accidents affect the victims and their families in the study area.

Conceptual Consideration on Road Traffic Accidents

Physical disability as a result of road traffic accidents is caused by not only the elements of the transport system but also from the role of different agencies and actors on causes, impacts and intervention measures for prevention. This observation was made by Muhlrad and Lassare (2005) in making reflection of the systems theory. It is clear that road users contribute to physical disabilities resulting from RTAs based on how they assess risks and their behaviors on roads. Other groups of people involved from a road and transport systems perspective are the vehicle and road engineers as well as policy makers.



Photo 1: Brake failures for a truck that caused eight accidents at Ubungo Dar es Salaam (9/4/2008). Source: IPP Media Limited

Risk-taking road users influence RTAs due to adjustments and maladjustments on road and transport systems. As noted by Hollnagel (2004) 'accidents occur when components of a system interact with each other and these interactions are not possible to be foreseen because of complexity'. It is argued that 'indirect influences such as design and layout of the road, nature of the vehicle and traffic laws and enforcement affect behavior in important ways' (WHO, 2004).

Materials and Methods

This study was conducted between April and December, 2010 in Dar es Salaam region which has high road accidents rate (Museru et al., 2003) because of high concentration of motor vehicles, motor cycles, high population, commercial and social activities. In total, 36 participants were purposively selected out of whom 16 were the victims (who were involved in RTAs 6 months and above) in which 10 victims were engaged in focus group discussions (FGD) because they had an ability to travel and meet the researcher at the venue and 6 victims were engaged

in interviews in their respective homes because they could not manage to come to the venue). During interviews with the victims 6 family members were also interviewed. All victims were purposively selected from the physiotherapy data base; 12 medical orthopedic doctors were randomly selected from the orthopedic staff data base and they were involved in FGD; 2 informants (1 traffic police officers from the police central office and 1 social welfare officer from the Muhimbili Social Welfare Department) were engaged in a semi-structured interview. An interview guide was used to guide the semi-structured interviews and FGDs.

Two research questions guided this study:

- (i) What are the socio-economic consequences of RTAs on wellbeing of the victims and their families?
- (ii) In what ways do victims and their families develop coping mechanisms?

Tables and graphs were used to summarize quantitative data findings and excel spreadsheet was used to analyze the data. Data recorded at police headquarters and Muhimbili hospital (MOI) in Dar es Salaam was analyzed. However, some limitations were noted such as lack of demographic characteristics which made it difficult to distinguish injuries across different age and sex. Another limitation was that, police data used lacked linkage to hospital data. Qualitative data was analysed through grounded theory (inductive codes) where coding was used to summarize, synthesize and sort observations made of data.

Results and Discussions

This section presents statistics from the police and MOI, as well as data from the interviews, focus group discussions and observations.

RTAs trends in Tanzania from 2000-2007

Table 1 shows the trends of RTAs in Tanzania which were described from the police reports.

Year	2000	2001	2002	2003	2004	2005	2006	2007	TOTAL
Total Accidents	14548	13877	5490	6664	17039	6388	17677	17753	129436
Fatal Accidents	1441	1562	660	788	1851	2007	2069	2224	16043
Number of Fatalities	737	1866	994	155	2366	430	2884	2594	19763
Number of Injured People	4094	12568	5150	6825	17231	6286	15676	16308	124138

Source: SUMATRA, Updated to September 2008

The number of fatalities and injuries increased from year to year based on the available statistics but data does not allow distinguishing between the degree of injury, sport areas, occupation, demographic, medical costs and social economic status of victims. As noted by (European Transport Safety Council (ETSC), 2007) "official road accident statistics are incomplete and inaccurate in all countries and injuries are not always correctly classified by severity in police accident reports". Despite the increasing trend suggested by the available data, injuries in general and disabilities as a result of RTAs in particular have not received clear attention they deserve in most developing countries.

This is justified by the lack of empirical data and quality of the existing data. Empirical data could have revealed the magnitude of the problem and socio-economic impact of RTAs to victims and their families. As noted by Windhoek Declaration (2004) "to date road safety has received insufficient attention at the international and national levels". The RTAs increase in Dar es Salaam as indicated in some research might be explained by "high concentration of motor vehicles, commercial/ industrial, social activities, poor enforcement of traffic safety regulations due to inadequate resources, administrative problems and corruptions" (Nantulya, 2002: 1139). Although data show some fluctuations for people injured it is not sufficiently stable to allow conclusion that there was a trend decrease (e.g. the number of injured people in 2001 decreased as compared to injured people in 2000; whereas the number of people injured in 2006 decreased as compared to injured people in 2005). As

indicated in Bureau for Industrial Cooperation (BICO) report (2007), the decrease shown for July, 2005 – June, 2006 was due to renovation of Muhimbili Medical Hospital that led to decrease of 50 to 30 beds. Another factor might be the average daily fee which was very high and many victims could not afford (it was \$30-\$50 for private wards and for general ward it was \$10-\$20 (*ibid.*)).

Fatalities and Injuries in Dar due to RTAs based on Gender

The researcher found it relevant to explore who were mostly involved in physical disabilities due to RTAs as this could throw the light to the research questions. In Dar es Salaam there were more fatalities and injuries for men than women in 2000-2007.

Table 2: Fatalities and injuries in Dar due to RTAs based on gender 2000-2007

YEAR	NO OF VEHICLES	FATALITIES			INJURIES			ACCIDENTS PERIOD OF		
		MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	DAY	NIGHT	TOTAL
2000	9883	233	63	296	2870	992	3862	3674	1868	5542
2001	9583	308	67	375	2821	1105	3926	3815	2170	5985
2002	10412	322	62	384	3338	1092	4430	3852	2685	6537
2003	12206	327	68	395	4077	1435	5512	4732	2726	7458
2004	11825	325	55	380	3567	1334	4901	4522	2896	7418
2005	11361	329	85	414	3587	1337	4924	4412	2920	7332
2006	11554	344	66	410	3611	1286	4897	4522	2855	7377
2007	13142	264	20	384	3816	1649	5465	5128	3091	8219

Source: Traffic police Dar 2008

These results are supported by Peden *et al.* (2002) who note that “More than half of all global road trafficdeaths occur among young adultsbetween 15 and 44 years of age and 73% of all global road trafficfatalities are males”. This might be explained by the fact that in many African families men are the bread earners, while many women remain at home to take care of the children, sick ones and to attend house chores. The year 2005 shows that there was trend increase on fatalities for both male and female; whereas in 2007 there was a trend decrease in

fatalities for women. Unfortunately the existing literature does not provide information on reasons for this decrease.

By comparing the percentage of total RTAs in Dar es Salaam to the total RTAs in Tanzania in 2000-2007; Dar es Salaam had more than 25% of all RTAs that occurred in Tanzania for the reported data. The RTAs statistics show that more accidents occur during the day as compared to night accidents. Unfortunately the data do not indicate when more fatalities and injuries occurred. The fact that many RTAs occurred during day time can be explained by greater traffic volume during the day enhancing greater risk of RTA involvement. This is the time of the day when people travel to work, children go to school and some people are opening enterprises for business. It is common to find out that pedestrians, cattle, and all types of land transportation are using the same roads in Dar es Salaam. This is in line with Peden *et al.* (2001: 12) who argues that “the same road space gets used by modern cars and buses, along with locally developed vehicles for public transport (three-wheeled scooter taxis), scooters and motorcycles, tricycle rickshaws, animal and human drawn carts”.

Table 3: RTAs trends in Dar es Salaam in Comparison with RTAs in Tanzania 2001- 2007

Year	Total number of RTAs in Tanzania	Total number of RTAs in Dar es Salaam	Percent of Dar es Salaam RTAs to the total.
2000	14548	4158	29%
2001	13877	4301	31%
2002	15490	4814	31%
2003	16664	5907	35%
2004	17039	5281	31%
2005	16388	5338	33%
2006	17677	5307	30%
2007	17753	5849	33%

Source: Traffic police Dar 2008

The situation of inpatients and outpatients attendance and admission due to RTAs at MOI from July 1998 to June 2006 (Figure 2)

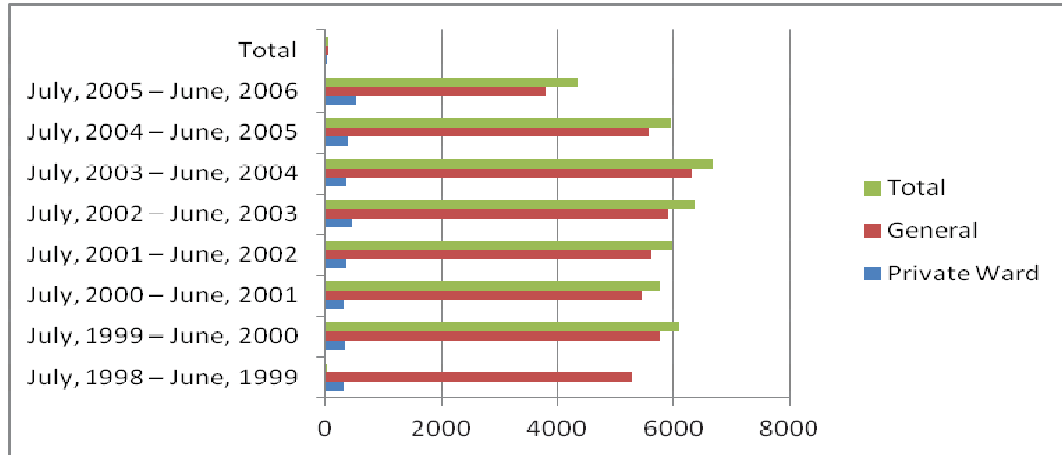


Figure 3: Inpatients admission from July 1998 to June 2006 due to RTAs
Source: MOI 2008

The statistics in Figure 2 and Figure 3, show that there was an increase in the number of outpatient and inpatient attendance and admission due to RTAs at MOI from July 1998 to June 2006. The horizontal value axis for outpatient and inpatient admission is represented by twenty thousands and ten thousands respectively, which indicates the total of 123,733 outpatient admissions from July 1998 to June 2006 and a total of 56,918 inpatient admissions for the same period. Mostly private outpatients are referral cases, follow-ups and other types of accidents according to findings. However, the average daily fee for private wards is \$30-\$50 and for general ward is \$10-\$20 (MOI, 2008). This is the indication that a considerable number of families might not afford outpatient admissions because of the financial constraints. This is justified by (ActionAid, 2010), which reported the new benchmark international poverty line of \$1.25 a day in developing countries due to the global financial crisis.

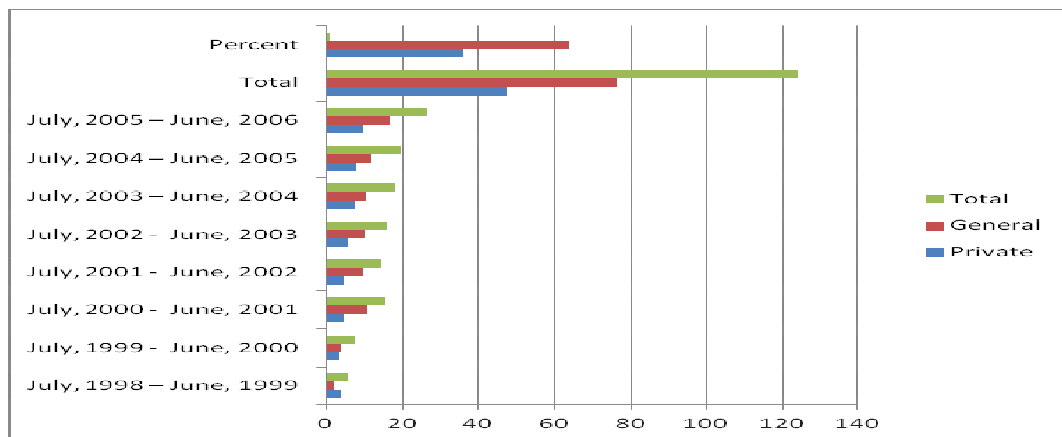


Figure 3: Outpatient admission from July 1998 to June 2006 due to RTAs
Source: MOI, 2008

Socio-economic Impact of RTAs induced PDs

The qualitative findings revealed that more than 75% of the victims who participated in interview and focus group discussion were involved in RTAs as pedestrians and two/three wheel motorcyclists. According to World Bank (2006) “vulnerable road users (pedestrians, cyclists and motorcyclists) account for a much greater proportion of road traffic collisions in low- and middle-income countries than in high income countries”. Some of the victims noted that they were neglected by their relatives and sometimes partners (wife/husband and/or boyfriend/girlfriend) after becoming disabled as a result of RTAs inducing PDs.

In addition, a considerable number of the victims said that they were perceived as burdens in their families due to long term of care and treatment which consumed much time, energy and money. They added that there was no hope of recovering to their normal life. Some victims noted that after becoming permanently disabled the community members perceived them as failures and unworthy as they were not involved in various community development issues. Furthermore, the RTAs victims noted that even the government does not recognize their sufferings because of lack of clear policy in place on how they will be assisted to meet treatment and basic needs. Through observation the researcher found out that some RTAs victims children failed to continue with higher education after the incidence because the family could not afford tuition fees and education facilities. This, according to participants, created poverty chain to their families because there was nobody prepared to rescue the rest of the family members. This finding is supported by ETSC (2007) which noted that “the burden of RTAs is borne not only by those directly involved in traffic accidents but also by their families.

From the findings, some families said that they have been forced into poverty because they had to sell family properties like houses, plots, and vehicles to rescue victims’ life. Some RTAs victims noted that they spent more than six months in hospital and even when they were allowed to go home they were not able to participate in any economic activities. This means that much time was lost in treatment for the RTAs victims and also family members lost much time in looking after the victims. This implies that no time to engage in productive activities which means vulnerability for the family as it cannot access the basic needs. As a result the victim and other family members especially children and old people might suffer from malnutrition. This might push families into debt burden as they will make some efforts to borrow money from individual

persons and from micro-credit institutions to save lives of their beloved ones. This is in line with Peden *et al.* (2004) who argue that 'many families are driven deeper into poverty by the expenses of prolonged medical care, loss of a family breadwinner, or the added burden of caring for the disabled'.

Psychological Impacts of PDs Resulting from RTAs

The findings show that it was not easy for the victims to accept the situation of becoming permanent disabled and half of the victims interviewed said they once thought of committing suicide. The reason for this was said to be difficult living conditions they never experienced before. Some of the victims said they perceived life as something meaningless as they could not manage life as they used to before. They added that reason for this was also based on their experience on how disabled people suffered in their environment without support from the community and government. As noted by the ETSC (2007) "a proportion of persons being involved in transport-related incidents develop psychological symptoms. In its most severe form this is described as post-traumatic stress disorder (PTSD) and can cause a high grade of impairment in everyday life for those affected". The incidence does not seem to be correlated with the severity of the actual injury, but rather with the perceived subjective threat to life (*ibid.*).

Some relatives during interview revealed that it was very challenging to look after the victims because some did not appreciate the care and support provided to them and they could not wait. Evidence from Ameritunga (2005) suggests that, "to understand the total social and economic consequences requires going beyond statistics and recording economic costs. Gaining a human perspective of costs incurred allows us to understand the non-economic 'costs' and the complex inter-relationship between economic and non-economic consequences" The findings revealed that some of the victims have lost hope that they would manage to improve their lives and that of their families because much concentration was based on how to bring back the lives of victims. The findings also show that some family members (husband/wife) have developed terminal diseases like blood pressure and depression because of too much stress of providing care and support to victims and the rest of the family members such as children and parents.

Economic Consequences of RTAs induced PDs

Qualitative findings revealed from victims that a lot of money was spent on treatment of injuries as a result of RTAs which has put some families

with low income into miserable life. This result concurs with Asian Development Bank (2005) which noted that “the impact of a road crash is felt most immediately at the household level. It often has an instantaneous impact on household activity, significantly affecting the quality of life”. Death of the main income earner cost of medical treatment, and loss of a job and/or income resulting from a road crash often have important adverse economic and social consequences on a household (*ibid.*). Unfortunately it was not easy to access the actual treatment cost from the victims after RTAs because some information was kept by another family member who was not around during interview. However, 75% of the victims interviewed noted that they were involved in RTAs more than six month and they had spent not less than two million Tanzanian shillings (i.e. consultations, accommodations, surgeries, theatre charges, medication, physiotherapy, transport, food etc.).

Victims said that they experienced difficulties in accessing loans from the micro credit institutions even after they have recovered to their current situation which could be used to start small projects. The reason was said to be mistrust from the microcredit institutions and the community that as disabled people they could not manage to run projects and return back the loan. They added that some conditions for the loans was to form groups in order to receive the intended loan so that every member of the group should act as a watch dog to other member to ensure that every member returns the loan. Victims said that it was difficult for some of them to be accepted by people with no disability to form a group together. Treatment cost according to victims was very high and some victims could not afford to continue with recommended treatment because they could not afford (see Appendix 1) due to life hardships. Some victims revealed that because of spending large amount of money in treatment they were living in extreme poverty and sometimes they failed to provide two meals to their families. World Bank released update global poverty estimates on 2008 based on new price survey and new benchmark international poverty line of \$1.25; but because of the global financial crisis an additional of 114 million people may be beneath the US \$1.25 a day in developing countries (Action aid, 2010).

One victim added that financial constraint forced him to move and rent a room at a student hostel nearby MOI to reduce transport cost that was Tsh 80,000 to and from hospital per day. He added that he also managed to get exemption for physiotherapy clinics that he attended for more than six months. Only some few victims said they were covered by national health insurance because of their employment status. Some victims said

they had exemption due to various reasons such as their age being 60+; and some were suffering from terminal diseases such as cancer. The process of accessing exemption was perceived by victims as complex and was associated with elements of corruption. All victims who were interviewed and those who participated in FGD said that they had not received money from insurance companies although some of the vehicle owners had already collected their insurance benefits from responsible companies. As indicated by Asian Development Bank (2005) "vehicle insurance is often considered a way to provide a social safety net for those involved in a road crash". However, many vehicles in developing countries are not insured or are underinsured and as a consequence, RTAs victims frequently do not receive adequate compensation (*ibid.*).

Insurance benefit according to RTAs victims is surrounded by various obstacles and it is not a straight forward process because of bureaucracy which creates corruption environment. Even in cases where vehicles are properly insured, compensation payments are commensurately low and insufficient to cover medical treatment and other personal costs. In many instances RTAs consume much time on investigations and this cause payment to be made after lengthy judicial processes, and not when the funds are needed for medical and other costs. It is difficult to understand why vehicle owners get insurance soon after accidents while it take long time for RTAs victims to be covered as claimed. As noted by Weisburd (2010), 'this might be related to both adverse selection and moral hazard issues'.

The findings show that some of the RTAs victims lost their original jobs due to long term treatment as a result of physical disabilities. This was also an observation by the ETSC (2007) which found out that victims with post traumatic stress disorder (PTSD) had limited chances to return to work than those without PTSD. In addition, this includes higher levels of depression, reduced time-management ability and an excessive concern or anxiety related to physical injuries. Victims noted that some of the employers do not employ disabled people due to fear of inefficiency even if the applicant has similar qualification and even higher than that of someone with no permanent disability.

Furthermore, the findings revealed that some of the victims lost their business after RTAs because money invested in the business was used for treatment and meeting family basic needs. The victims during FGDs noted that the money was used without any other means of replacing it because there was no time and ability for that. This was due to the fact that much time according to findings was devoted to look after the

victims because some injuries took very long time to heal. The researcher's personal observation revealed that some victims might not be affected by RTAs physically but may develop chronic post trauma stress disorder which hinders participation in daily activities. Mariana (2010) argues that very little is known about the economic impact of RTAs as well as long-term consequences of RTAs to victims and their families in developing countries and Tanzania in specific which call for more research in this area. Research in this area will add knowledge regarding the incidence of psychological disorder to individuals with mild injuries or with no injuries.

Coping Mechanisms

The findings show that physical disability as a result of RTAs is a burden to the victims and their families as well as the public health and governments. Victims and their families through the findings suffer from psychological, social and economic aspects. This was also an observation by Working Party on Accidents and Injuries (2005) that "road traffic injuries are worsening global disaster with enormous health, social, psychological and economic impacts on individuals, families, communities and nations". Esiyok *et al.* (2005) note that "road traffic accidents cause not only deaths and property damage but also serious disabilities". Through the findings it is clear that some families lost bread earners contribution due to fatalities, long term treatment and/or permanent disabilities which might have drown responsible families into critical poverty.

This is because people who are mostly involved in RTAs as indicated in the findings are vulnerable road users who have little influence on policy decisions in health care services. The treatment prices for RTAs victims might be a big problem for many families facing RTAs problems in Dar as because many families live in abject poverty (as said in poverty studies they live under less than one dollar a day). Large amount of money which could be directed in productive activities by the families affected by RTAs is spent in taking care of victims for hospital charges, transportation and food. According to the latest National Disability survey of 2008 in Tanzania, more than three million people or approximately 9% of the population have a disability (women, men and children) and they are living under difficult conditions of poverty. The current situation is that people with disabilities are among the most vulnerable groups in society. The response on how participants managed to cope with their new situation is based on different factors such as: negative responses, religious responses, job responses and dependency responses. All victims who participated in semi-structured

interview and FGD appreciated good treatment /physiotherapy they received from MOI. However, the victims revealed some challenges they faced based on inadequate medical facilities but doctors and nurses were struggling hard to save their lives. Some respondents said that they were also encouraged by relatives, family members, friends and neighbours who visited and encouraged them in hospital and home. Other respondents added that they cope because as they tried to compare their situation with other victims and saw that they were better off.

Conclusion and Recommendations

RTAs victims based on findings struggle to make ends meet and they face challenges on financial constraints and lack of special institution that could offer them economic support for sustainable livelihoods. From the findings some have lost resources that could be used to educate children as they were allocated in treatment of victims and family basic needs. Data from traffic police and hospital suffer from incompleteness which does not allow distinguishing between degree of injury, sport areas, occupation, demographic, medical costs and social economic status of victims. There is no clear link between police and hospital records. Much data is kept manually and only data for few years is computerized. Much of the available data from police reflected mostly on human behavior as the main contributing factor for RTAs, inducing PDs while little attention is paid on system failures. Although the data clearly show trends and the current picture of RTAs in Dar es Salaam the validity and accuracy is still questionable because of the incompleteness.

The findings of this study support the following recommendations: First, for better achievement of road safety measures there is a need to improve data from urban authorities on realities of the traffic system, to improve data from police and hospitals on the characteristic of RTAs and the associated injuries caused. System changes are needed to the system of traffic highway codes and enforcement designed to ensure that the population adheres to the controls and regulations for maintaining road safety. Therefore efforts should be made by stakeholders to develop a data set for a proper system of recording; evaluating and monitoring road traffic accident induced physical disabilities to facilitate more research in this area. Basic accident data parameters in all RTAs could include general information (exact time when RTA occurred), location of the RTA (name of the street); road user details and characteristics, injury details, vehicle characteristics and accident type. It is also important to describe the type of accident and nature of the injury. Khan (2007) argues that 'RTAs are predictable and preventable but good data is important to understand the ways in which road safety interventions can be effective'.

Second, efforts should be done by stakeholders to develop and implement a policy for enhancing livelihoods and wellbeing of road traffic accident victims and their families. It has to be understood that there is no social assistance for disabled people in Tanzania and in many developing countries; and there is no special institution dealing with disabled people in terms of enhancing their livelihoods and wellbeing. Effective policy on development of livelihoods and wellbeing of RTAs victims and families will reduce the pressure from the government and from the hospital and it will improve service delivery at MOI. Third, the government and private organisations should review the insurance system so that victims can be covered with insurance benefits as soon as they are involved in road traffic accidents. This will enable victims to receive required treatments without many delays and will also help victims and their families to meet basic requirements.

Finally, the national and international partners should strengthen the transport system to ensure that speed limits are introduced in all major roads and introduce high charges for the violation. This has to go hand in hand with education to all road users as well as insuring that more traffic police are monitoring the transportation throughout the country. In addition, the government should introduce health insurance package for the victims of RTAs with a reasonable cost so that ordinary families can access health care facilities.

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