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**Workplace violence in the road passenger
transport sector in Maputo City, Mozambique:
Extent, causes, consequences and prevention**

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“Education is the most powerful weapon you can use to change the world”

Nelson Mandela

ABSTRACT

Background: Every year millions of workers around the world are victims of workplace violence (WPV). Globally, WPV is a major occupational health and safety hazard, and it has been regarded as a public health problem. There is no WPV preventive program specifically designed for low-income countries (LICs). WPV preventive intervention models usually come from high-income countries (HICs), and they may not be sustainable, feasible or effective in other settings. With regard to WPV, there is a need better to understand its extent, nature, risk factors, causes, consequences and means of prevention, especially in LICs. The overall aim of this thesis was to study WPV in the road passenger transport sector in Maputo City, Mozambique.

Methods: Four studies were conducted. In studies I-III the design was cross-sectional. A random sample of 504 participants was selected from a register of 2,618 transport workers in the road passenger transport sector. Data were collected using a structured questionnaire covering socio-demographic characteristics, access to information, literacy level, occupational experience, organizational changes, work environment, work conditions, health conditions, quality of life, and WPV and its consequences. Data were analyzed using Chi-square test, Student's t-test, linear logistic regression, and multivariate logistic regression. In Study IV the design was qualitative. Participants were purposefully selected from among drivers and conductors identified in the quantitative investigation, reported in Study I, as victims of WPV, all with six or more years of experience in the road transport sector. Data were collected in semi-structured interviews. The open questions covered individual views on causes of WPV and suggestions for its prevention, based on the interviewees' experiences of WPV while on duty. Thirty-two transport workers were interviewed. The data were analyzed using qualitative content analysis.

Results: Study I showed a life-time prevalence of physical and or psychological WPV of 77.4%, and one of 64.3% over the past 12 months. Among drivers and conductors, individual risk factors were illiteracy and long occupational experience. Work-related risk factors were high work demand, holding a supervisory position, and having the occupation of bus driver or conductor. Study II identified the consequences of WPV, which included sick leave 20.1%, physical injuries, mild 22.8% and severe 9.0%; financial loss 28.7%, and emotional reactions ranging between 27.5% and 55.6%. Exposure to workplace violence significantly associated with low quality of life. In Study III the prevalence of severe burnout was found to be 3.6%, and of mild burnout 30.1%. WPV was also significantly associated with burnout. Workers lacking social support following WPV showed a higher degree of burnout than co-workers who had received supported after an episode of violence. In Study IV it was found that the triggers and causes of WPV included fare evasion, disputes over revenue due to owners, alcohol abuse, overcrowded vehicles, and unfair competition for passengers. There were failures to meet passenger expectations, e.g. the by-passing of bus stops, the shortening of bus routes, and displays of disrespect, e.g. transport workers being rude

to passengers, and robberies. Proposals for prevention included the provision of formal, practical and moral education to workers, employers and members of the community. In addition to education, it was suggested that WPV could be prevented by control, e.g. the recording of vehicle mileage, and by conflict avoidance through managing specific situations and behaviors, and identifying particular passengers. Finally, there were proposals for a specific institution to adjudicate between workers and employers when revenue demanded was not handed over.

Conclusions: The thesis illustrates that WPV is a common phenomenon and occurs wherever workers are on duty. The studies reveal prevalence, risk factors, consequences, and views of drivers and conductors on causes and means of prevention in relation to WPV in the road passenger transport sector in Maputo City, Mozambique. Finally, a need was detected for development of a framework for WPV prevention program in the road passenger transport sector. Such a framework should include primary, secondary and tertiary preventive interventions at individual, organizational and community levels.

Key words: Workplace violence, transport sector, bus driver, taxi driver, risk factors, burnout, quality of life, workplace violence prevention.

LIST OF PUBLICATIONS

This thesis is based on the following publications:

- I. Couto MT, Lawoko S, Svanström L. Violence against drivers and conductors in the road passenger transport sector in Maputo, Mozambique. *African Safety Promotion Journal* 2009; 7(2): 17-36.
- II. Couto MT, Lawoko S, Svanström L. Exposure to workplace violence and quality of life among drivers and conductors in Maputo City, Mozambique. *International Journal of Occupation and Environmental Health* 2009; 15:299-304.
- III. Couto MT, Lawoko S. Burnout, workplace violence and social support among drivers and conductors in the road passenger transport sector in Maputo City, Mozambique. *Journal of Occupational Health. J-STAGE Advance Publication*; Apr 7, 2011. Available at:
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- IV. Couto MT, Tillgren P, Söderbäck M. Drivers' and conductors' views on the causes and ways of preventing workplace violence in the road passenger transport sector in Maputo City, Mozambique. Submitted.

CONTENTS

1. INTRODUCTION	1
2. BACKGROUND	2
2.1 Extent of workplace violence in the transport sector	2
2.2 Definition of workplace violence	2
2.3 Conceptual framework	3
2.3.1 The interactive model	3
2.3.2 The interactive model in the transport sector	4
2.4 Consequences	5
2.5 Prevention	6
2.5.1 Prevention at individual level	7
2.5.2 Prevention at organizational level	7
2.5.3 Prevention at community level	8
2.5.4 Barriers to prevention	9
2.6 Mozambique	9
2.6.1 Characteristics	9
2.6.2 Transport sector	10
2.6.3 Context of road passenger transport in Maputo City	10
2.6.4 Work conditions of drivers and conductors in Maputo City	10
2.7 Summary of knowledge and relevance of the research	10
3. AIMS AND OBJECTIVES	12
3.1 General aim	12
3.2 Specific objectives	12
4. METHODS	13
4.1 The setting	13
4.2 Study design	13
4.3 Study participants and sampling	13
4.3.1 Studies I-III	13
4.3.2 Study IV	13
4.4 Measures for studies I-III	14
4.4.1 Study I	14
4.4.2 Study II	15
4.4.3 Study III	15
4.5 Data collection and procedures for studies I-III	16
4.6 Statistical analyses: Studies I-III	17
4.6.1 Chi-square test	17
4.6.2 Student's t-test	17
4.6.3 Logistic regression	17
4.7 Data collection: Study IV	17
4.7.1 Data analysis: Study IV	18
4.8 Ethical considerations	18
5. RESULTS	20
5.1 Study I: Violence against drivers and conductors in the road passenger transport sector in Maputo City, Mozambique ...	20
5.2 Study II: Exposure to WPV and quality of life among drivers and conductors in Maputo City, Mozambique	20

5.3	Study III: Burnout, workplace violence and social support among drivers and conductors in the road passenger transport sector in Maputo City, Mozambique.....	21
5.4	Study IV: Drivers' and conductors' views on the causes and ways of preventing workplace violence in the road passenger transport sector in Maputo City, Mozambique.....	22
	5.4.1 Causes of workplace violence	22
	5.4.2 Suggestions for workplace violence prevention.....	24
6.	DISCUSSION	28
	6.1 Prevalence and nature	28
	6.2 Individual and work-related risk factors and causes.....	28
	6.3 Immediate and long-term consequences	30
	6.4 Means of WPV prevention.....	31
	6.5 Methodological considerations	32
	6.5.1 Validity aspects - Studies I-III	32
	6.5.2 Trustworthiness - Study IV.....	34
	6.6 Strengths and limitations	34
	6.7 Ethical considerations.....	35
7.	CONCLUSION	36
8.	IMPLICATIONS.....	37
	8.1 Prevention.....	37
	8.2 Research	37
9.	ACKNOWLEDGEMENTS.....	38
10.	REFERENCES.....	40

LIST OF ABBREVIATIONS

CI	Confidence Interval
DCQ	Demand Control Questionnaire
DHS	Demography Health Survey
HIC	High Income Country
HICs	High Income Countries
ILO	International Labor Organization
LIC	Low Income Country
LICs	Low Income Countries
MBI-GS	Maslach Burnout Inventory-General Survey
NTI	National Traffic Institute
OR	Odds Ratio
QOL	Quality of Life
SPSS	Statistical Package for the Social Sciences
UK	United Kingdom
USA	United States of America
WHO	World Health Organization
WPV	Workplace Violence

LIST OF FIGURES AND TABLES

Figure 1	The interactive model, showing interactions between contextual, individual, workplace and societal risk factors.
Figure 2	The interactive model to demonstrate reported risk factors in the transport sector.
Figure 3	Summary of consequences of workplace violence.
Figure 4	Summary of the public health approach to WPV prevention at individual and organizational levels.
Figure 5	Map of Mozambique.
Figure 6	Summary of results on causes of WPV.
Figure 7	Summary of results on suggestions for WPV prevention.
Table 1	Examples of the content analysis of the causes and suggestions for prevention of WPV.

DEFINITIONS

Abuse: Behavior that humiliates degrades or otherwise indicates a lack of respect for the dignity and worth of an individual [1].

Assault: Intentional behavior that harms another person physically, including sexual assault (i.e. rape) [1].

Bullying/Mobbing: Repeated and over time offensive behavior through vindictive, cruel, or malicious attempts to humiliate or undermine an individual or groups of employees [1].

Burnout: A psychological syndrome, a response to prolonged exposure to work-related stressors, with three components: exhaustion, cynicism and reduced efficacy. *Exhaustion* refers to feelings of being overextended and depleted of emotional and physical resources. *Cynicism (or depersonalization)* refers to indifference or distant attitudes towards work, and *reduced efficacy (or personal accomplishment)* refers to a feeling of incompetence or lack of achievement and productivity at work [2].

Employer: Any physical or legal person who employs one or more workers [3].

Harassment: Any conduct based on age, disability, HIV status, domestic circumstances, sex, sexual orientation, gender reassignment, race, color, language, religion, political, trade union or other opinion or belief, national or social origin, association with a minority, property, birth or other status that is unreciprocated or unwanted and which affects the dignity of men and women at work [1].

Perpetrator: Any person who engages in workplace violence [3].

Physical violence: The use of physical force against another person or group that results in physical, sexual or psychological harm. It includes beating, kicking, slapping, stabbing, shooting, pushing, biting and pinching, among others. [1].

Physical work demand or workload: Efforts made at work (e.g. high efforts in carrying heavy objects) [4].

Psychological violence: Intentional use of power, including threat of physical force, against another person or group that can result in harm to physical, mental, spiritual, moral or social development. Includes verbal abuse, bullying/mobbing, harassment, and threats [1].

Psychological work demand or workload: Stressors present in the work environment (e.g. high working pace, high pressure time, difficult and mentally exacting time) [4].

Quality of life: Social, physical and psychological well-being [5].

Support: Support received, such as emotional, instrumental, informational and appraisal support. *Emotional support* may consist in showing appreciation and attention. *Instrumental support* involves the provision of finance, time and resources or affecting change to the environment. *Informational support* takes the forms of advice enlightenment and directions. *Appraisal support* involves confirmation, feedback and realistic assessment [6].

Threat: Promised use of physical force or power (i.e. psychological force), resulting in fear of physical, sexual, psychological harm or other negative consequences for the targeted individuals or groups [1].

Victim: Any worker or employer who is the object of violence [3].

Work control: A worker's ability to control his/her own activities and skills development [4].

Worker: Any person who performs work, either regularly or temporarily, for an employer [3].

Workplace: All places where workers need to be or to go by reason of their work and which are under the direct or indirect control of the employer [3].

1. INTRODUCTION

Workplace Violence (WPV) in the transport sector is a major public health problem. Studies of taxi drivers in Europe, Australia and the USA, have estimated the prevalence of physical and or psychological violence over 12 months at between 19 and 70% [7-9]. In 2001 in London in the UK, 7,000 crimes of violence were perpetrated on bus drivers [10]. In South Africa, between 1996 and 2000, 1,096 taxi drivers were killed [11]. A study conducted in the UK among railway and airline workers indicated, over a 12-month period, a prevalence of physical and or psychological violence of 60-74% [12].

Globally, WPV is a major occupational health and safety hazard [13-17]. Despite this, there is no WPV preventive program designed for low-income countries (LICs) such as Mozambique. WPV preventive intervention models usually come from high-income countries (HICs). These models might not be sustainable, feasible or effective in other settings. With regard to WPV, there is a need to better understand its extent, nature, risk factors, causes, consequences and means of prevention in the transport sector, especially in a low-income country (LIC). The over all aim of this thesis was to study WPV in the road passenger transport sector in Maputo City, Mozambique. This may contribute to the development of a framework for WPV prevention program.

2. BACKGROUND

Every year, millions of workers around the world are victims of workplace violence (WPV) [18]. A European survey covering 31 countries in different workplace sectors reported, over the past 12 months, a prevalence of 5% for physical abuse, 2% for sexual harassment, and 5% for bullying/harassment [19]. Of the 4.9 million crimes of violence reported in the United States of America (USA) in 2009, including assault, rape, sexual assault and robbery, 16.3% were a result of violence directed against employees while on duty [20]. Studies conducted in Australia in different work sectors indicated, over the previous 12-month period, a prevalence of 19-81% for verbal abuse, 10-17% for physical assault, 17-58% for threats, and 10.5-65% for bullying [15, 21-23]. Research into WPV in the health sector has shown a prevalence of physical and or psychological violence of 8-97% in Asia [24-26], and of 4-52% in Africa [27, 28]. Further, in other work sectors, prevalence was 5-68% in education [19, 22], 3-69% in public services [15, 19], and 60-74% in the transport sector [12].

2.1 Extent of workplace violence in the transport sector

Transport comprises the air, railway, maritime and road sectors [29]. These sectors are divided into cargo transport, also known as freight, and passenger transport [29]. A study conducted in the UK among railway and airline workers indicated, over a 12-month period, a prevalence of physical and or psychological violence of 60-74% [12]; and among workers in road and pipeline transport in Europe of 11.5% [19]. Of 4,340 fatal occupational injuries reported in the USA 2009, 1.2% were homicides against workers in road and ground passenger transport [30]. Studies from Europe (the Netherlands), Australia and the USA have indicated that, over a 12-month period, between 19 and 70% of taxi drivers were subjected to physical and/or psychological violence at work [7-9]. In 2001 in London in the UK, 7,000 crimes of violence were perpetrated on bus drivers [10]. In South Africa, between 1996 and 2000, 1,906 taxi drivers were killed [11].

2.2 Definition of workplace violence

The World Health Organization (WHO) has defined violence as: “The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation” [31]. Intentionality is an important element in violent action on this definition.

The International Labor Organization (ILO), which is concerned with the occupational safety and health of workers, has developed a code of practice [3]. The aim of this code is to provide general guidance in addressing the problem of WPV in the services sector. The ILO code of practice has defined WPV as: “Any action, incident or behavior that departs from reasonable conduct in which a person is

assaulted, threatened, harmed, injured in the course of, or as a direct result of, his or her work” [3]. Under this definition, the ILO code of practice distinguishes between internal and external violence: internal WPV is that which takes place between workers, including managers and supervisors; external WPV is that which takes place between workers (and managers and supervisors) and any other person present in the workplace. The ILO code of practice has clarified the relationship between violence and work. It specifies that: “The reference to a “direct result” is to be understood to mean that there is a clear link with work and that the action, incident or behavior occurred within a reasonable period afterward” [3].

This definition of WPV covers both physical and psychological violence. Traditionally, attention has focused on physical violence [18]. However, in recent years, new knowledge has emerged of the consequences and harm of non-physical violence, often referred to as psychological violence [18]. Psychological violence includes verbal abuse, bullying/mobbing, harassment and threats [1, 18].

2.3 CONCEPTUAL FRAMEWORK

Violence is a complex phenomenon, and the identification and understanding of the variety of factors that contribute to violence is important for an effective violence prevention or control program [15-18, 32]. The occurrence of WPV can be explained as a result of multiple risk factors. This has been described in an interactive model.

2.3.1 The interactive model

The interactive model (Figure 1) postulates that interaction between contextual, individual, workplace and societal risk factors may cause or contribute to physical and or psychological WPV, with immediate and long term consequences to the individual and organizations [18].

Contextual risk factors. Globalization and rationalization processes, which may be accompanied by downsizing, layoffs, freezes in or cuts to salaries, heavier workloads, a faster pace of work, and work during unsocial hours, are associated with an increased risk of WPV [33-39]. Technological innovation, when it is not followed by adequate training and job insecurity are related to increased stress and risk of WPV [18].

Individual risk factors. The nature of the outcomes of WPV resulting from interaction between different perpetrators and victims will differ according to the work environment, the type of workplace, and the work being performed [13, 26, 40, 42]. Studies indicate that individual characteristics, such as a history of violent behavior, being male, being young, difficult childhood, alcohol and drug use, and mental ill-health increase the likelihood of being a WPV perpetrator [12, 41-47]; while being young, in poor health, work inexperience, being female, attitudes and expectations heighten the risk of being a victim of WPV [12, 41, 43].

Workplace risk factors. Studies have reported that the work environment, e.g. overcrowded, dirty, poorly ventilated, noisy or uncomfortable premises, poor physical design, and adverse managerial style, e.g. authoritarian, may increase the risk of WPV [12, 41, 44]. Also, task situations, such as working alone, with the public, carrying money or valuables, with people in distress, or with special vulnerabilities like working in a high-crime area, may elevate the risk [7-9, 45]. Further, factors such as downsizing, layoffs, freezes in or cuts to salaries, heavier workloads and faster pace of work, longer hours of effective work, less comfortable shifts, work during unsocial hours and temporary and precarious employment have been found to be related to the risk of WPV in several studies [17, 32-38, 41].

Societal risk factors. When violence is embedded in a society, it is likely to be manifested in the workplace [18]. This statement has been supported by WPV case studies in the health sector [27, 28, 46-48].

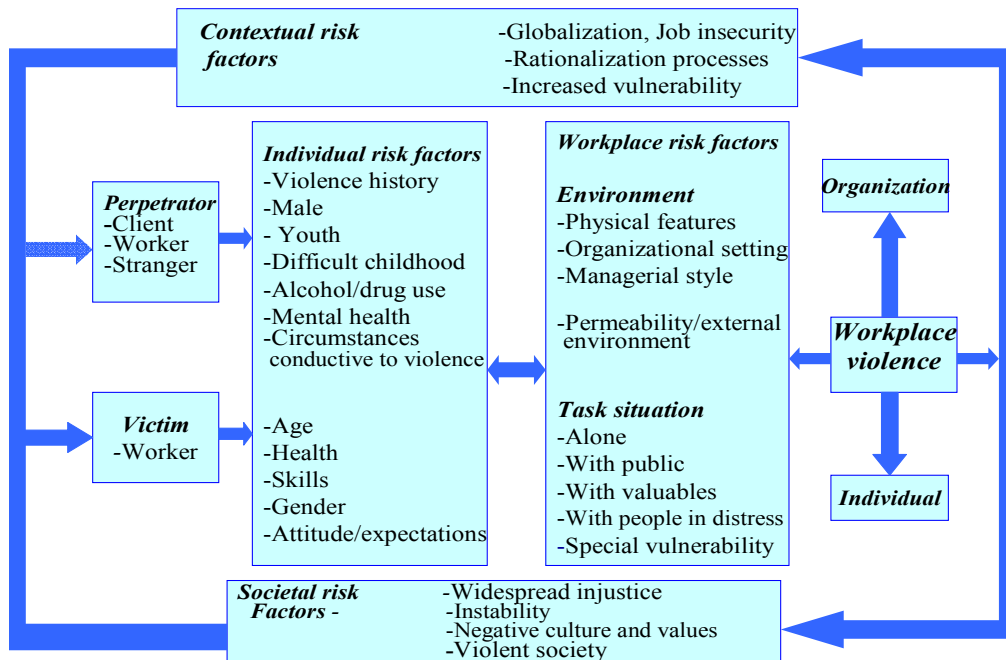


Figure 1. The interactive model, showing interactions between contextual, individual, workplace and societal risk factors (adapted from Reference 18).

2.3.2 The interactive model in the transport sector

According to the interactive model, reported potential risk factors in the literature for WPV in the transport sector (Figure 2) might be described as follows: *Contextual risk factors*: For example, working in a high-crime area [7, 18, 48].

Individual risk factors from perpetrators: Alcohol and drug use, circumstances conducive to violence, such as lack of formal or informal surveillance at bus terminals, and the absence of safety screens in taxis or for bus drivers [12, 29, 45].

Individual risk factors from victims: Failure to meet passengers' expectations, e.g. lack of information provided to passengers during delays [12, 45].

Workplace risk factors: The quality of the environment such as overcrowded, dirty or poorly ventilated premises, e.g. transport terminals, buses and trains ; task situation, such as working alone, with the public, and carrying money or valuables [7, 12, 45]. *Societal risk factors:* A violent society [18].

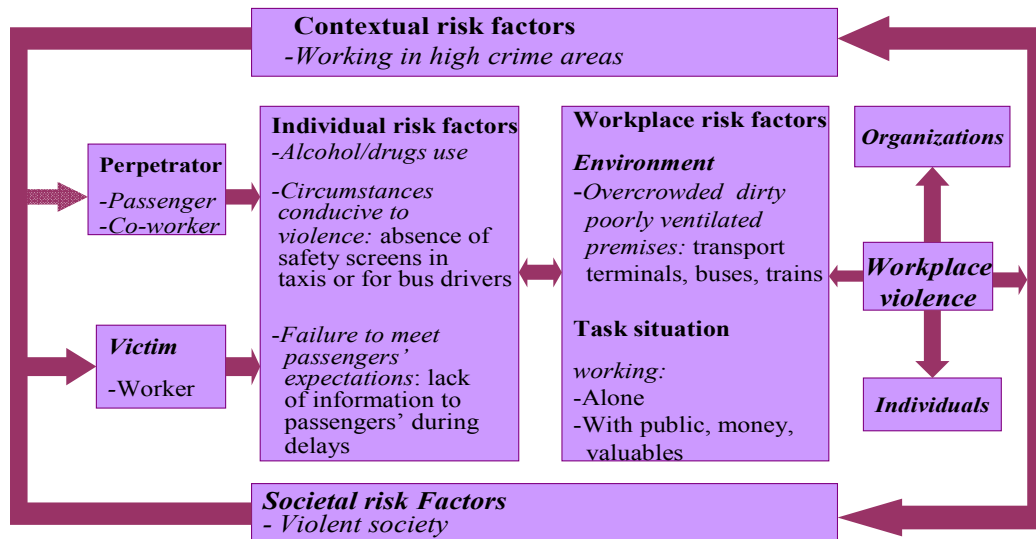


Figure 2. The interactive model to demonstrate reported risk factors in the transport sector.

2.4 CONSEQUENCES

The consequences of WPV have been investigated by several studies at individual and organizational levels. These consequences are summarized in Figure 3. At organizational level, WPV may lead to increased absenteeism, financial loss, lost productivity and increased costs, e.g. for counseling [49-52].

At individual level, employees may suffer financial loss, experience emotional reactions, such as anger, fear, helplessness, sadness and frustration, as a result of WPV, which can eventually result in poor performance and diminished job satisfaction [26, 33, 43, 53]. In addition, work-related WPV may disrupt family bonding, since abused workers may find it difficult to distance themselves from the abuse even while at home [54].

Furthermore, at individual level, WPV has significant health consequences, including physical, e.g. bruises, lacerations, fractures, partial or permanent disabilities and death; and psychological, e.g. psychosomatic complaints, emotional exhaustion,

sleeplessness, anxiety, stress, depression, post-traumatic stress syndrome (PTSD) and burnout [17, 50, 55-63].

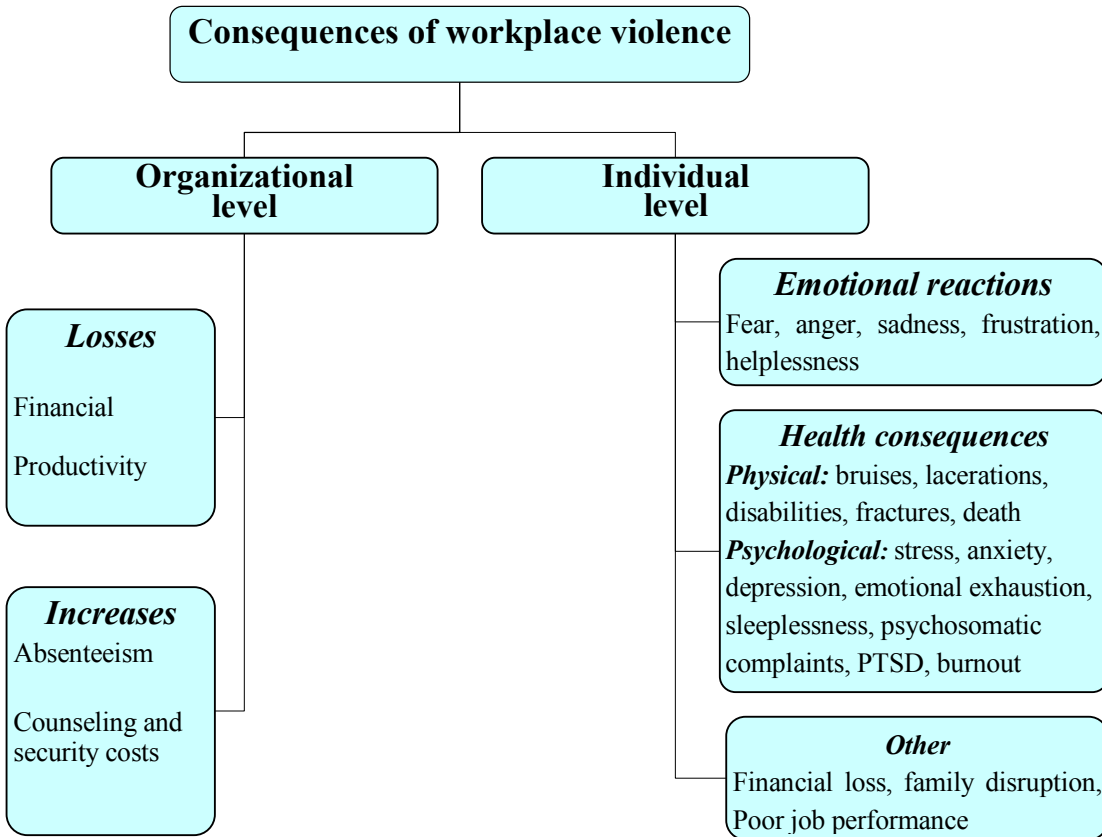


Figure 3. Summary of consequences of workplace violence.

2.5 PREVENTION

The public health approach to violence prevention considers three different levels: primary, secondary and tertiary prevention [31, 64, 65]. Primary prevention aims to prevent violence before it occurs; secondary comes into play when violence has occurred and offers several forms of immediate responses; tertiary approaches focus on long-term care in the wake of violence [18, 20, 64, 66]. Regarding WPV, the three levels of approach are applied at both individual and organizational level [18, 64, 66]. The approaches are summarized in Figure 4.

2.5.1 Prevention at individual level

Primary prevention at individual level may include interventions such as the provision of education, e.g. training employees in conflict management and in the identification of potentially violent situations [18, 64, 66, 67]. In addition to education, the pre-employment testing and screening of applicants may help to identify individuals who are suited to certain jobs, less likely to get stressed or angered because of job stressors, and consequently less liable to violent responses to WPV [18, 32, 66]. Furthermore, counseling workers about WPV may reduce trauma associated with future violent incidents [48, 67, 68].

Secondary prevention at individual level may include interventions such as medical treatment (victims of physical and or psychological violence at work should be provided with appropriate treatments) [18, 66, 68]; counseling (e.g. after WPV has occurred in order to help the worker to deal with the problem) [18, 67, 68]; debriefing (e.g. the services of a trained debriefer to talk with the worker about the violent incident; in these studies, victims of violence reported that sharing traumatic experiences with others can help to prevent problems in the future) [18, 32, 66]; and social support (e.g. to facilitate or assist victims with costs and dealing with legal issues) [41, 64, 66-70].

Tertiary prevention at individual level includes interventions such as rehabilitation, which must be made available to all victims of WPV (they should be aware of its existence and allowed all the time necessary to recover) [18, 32, 67]; support (e.g. addressing legal issues and following-up the case for as long as is necessary) [18, 32, 67], and counseling [18, 66, 67].

2.5.2 Prevention at organizational level

Primary prevention at organizational level may concern environmental measures (e.g. achieving a well-designed, maintained and pleasant environment, equipping buses and taxis with protective screens, controlled doors, video cameras, GPS phones and silent alarms.) [18, 41, 70]; work procedures/organization (e.g. sale of tickets outside vehicles or on board with credit cards; having guidelines to follow before an incident occurs; information and communication) [29, 66, 68, 69].

Secondary prevention at organizational level may include post-incident organizational planning (e.g. having a plan that details how incidents should be dealt with can help to bring such incidents quickly under control) [18, 66, 67]; provision of emergency services (e.g. appropriate medical and psychological treatment must be available to all workers at any time of the day) [18, 66,68], and also the reporting and recording of all WPV incidents [18, 64, 70]. This ensures that violent incidents can be investigated, and that safety measures can be reviewed and changed to improve future protection for employees [18, 69].

Tertiary prevention at organizational level might include adjusting post-incident support plans and strategies as required to reduce the probabilities of another violent incident [18, 66, 67].

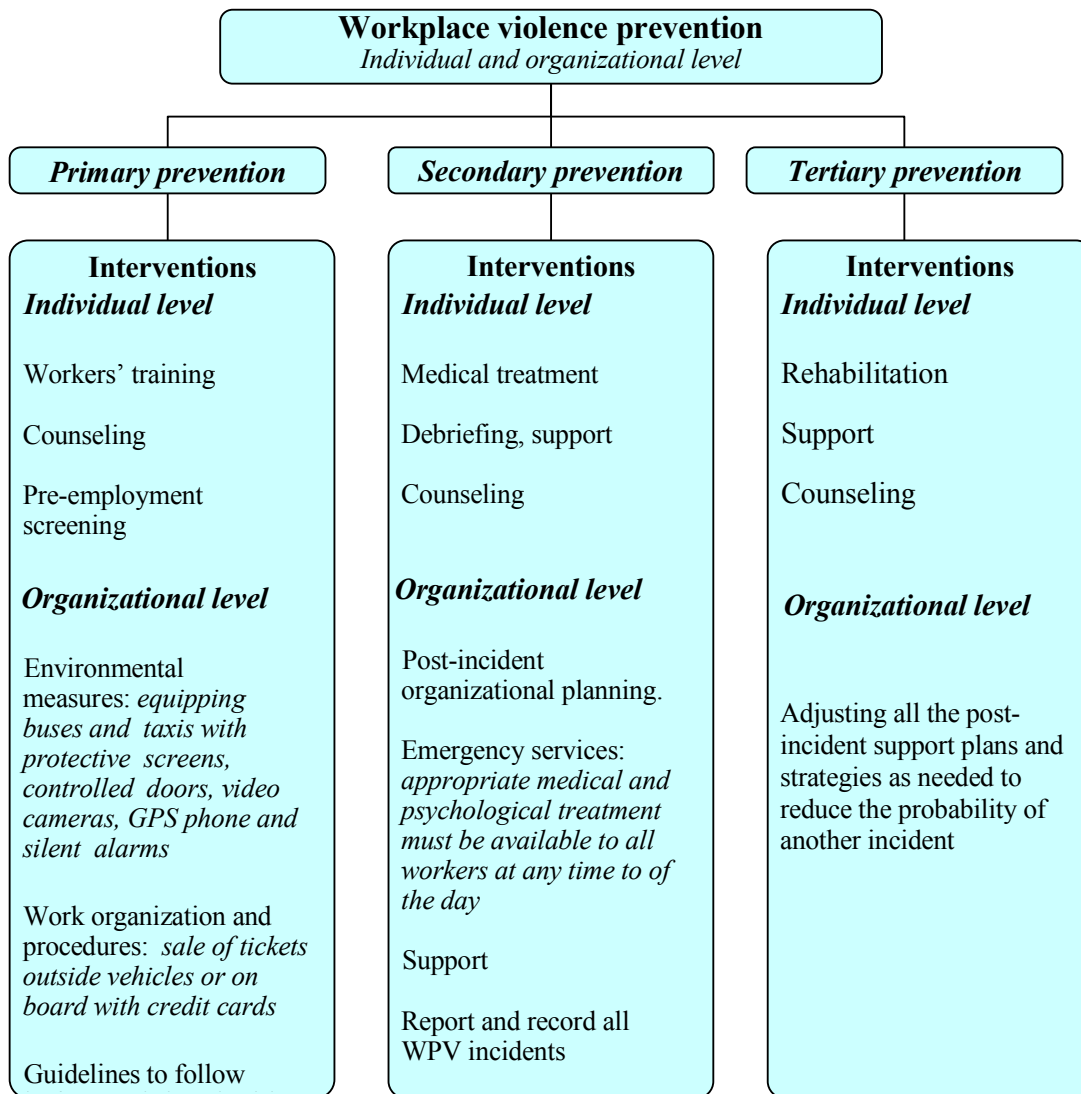


Figure 4. Summary of the public health approach to WPV prevention at individual and organizational levels.

2.5.3 Prevention at community level

At community level, there are reports of some primary preventive interventions, such as improving work conditions at the stations terminals and enhancing client satisfaction [18]. Also, to involve the community, e.g. by transport companies having meetings with members of the community in order to create better mutual understanding of day-to-day problems and working in partnership with the police [18, 29]. Finally, penalties for perpetrators of WPV on public transport to be increased [29].

2.5.4 Barriers to prevention

WPV preventive intervention models usually come from HICs. These models might not be sustainable, feasible or effective in other settings. Published studies of WPV in the transport sector are scarce worldwide, and to our knowledge none has been conducted in a LIC. Thus, there is no WPV preventive program designed for LICs. The four studies on which this thesis is based are the first conducted in the road passenger transport sector in Mozambique.

2.6 MOZAMBIQUE

2.6.1 Characteristics

The Republic of Mozambique is located in south-eastern Africa (Figure 5) [71]. Its area is 799,380 sq km, and it has an Indian Ocean coastline of 2,470 km [72]. The population was 22,416,881 in 2007, with over 14 million people living in rural areas and over 6 million in urban areas [72]. The population is young, with a median age of 17 years in 2007 [72]. Mozambique is a LIC with infant mortality rate of 118/1,000 births, life expectancy at birth of 52 years, a total adult illiteracy rate of 54.4%, and GDP per capita of 454 USD in 2010 [72]. The unemployment rate was 18.6% in 2010 [73].



Figure 5. Map of Mozambique [71].

2.6.2 Transport sector

The transport sector in Mozambique comprises air, railway, maritime and road transport. The air sector had 106 airports in 2010, with 23 paved runways and 83 unpaved [74]. The railway sector had a route system of 4,787 km in length in 2008, with rail links between the major Mozambican ports and the neighboring countries of Malawi, Zimbabwe, South Africa and Swaziland [75]. The maritime sector had two cargo ports in 2010 [74]. Finally, in 2008 the road sector had 30,400 km of road, with 5,685 paved and 24,715 km unpaved [75].

2.6.3 Context of road passenger transport in Maputo City

In Maputo City, where the data were collected (May 2007---July 2007 and December 2009---March 2010), public transport was largely provided by the buses and minibuses of private associations, but also by a government company. Passenger transport is a money-making business for the owners of the vehicles and the associations involved. Also, the transport workers are dependent on employment from the vehicle owners for their own survival and that of their families. Thus, drivers and conductors are engaged in a highly competitive struggle for passengers. There was no pre-paid fare for either the government company buses or for the buses or minibuses of the private associations. The buses and minibuses of private associations did not have time tables or organized bus terminals.

2.6.4 Work conditions of drivers and conductors in Maputo City

When the data were collected drivers and conductors from the government company only drove and collected fares, while drivers and conductors from the private associations had multiple duties. The conductors collect fares from passengers and are expected to assist the drivers in maintaining harmony among passengers. In addition, both the drivers and conductors help to load passengers' belongings and perform duties to ensure safety and hygiene in the vehicles. These duties include cleaning the vehicle, checking for mechanical problems, fixing punctures, and repairing any damage incurred to the vehicle. A driver or a conductor can also have a supervisory role, which includes resolving internal problems (between employees), and external problems (between employees and passengers). They also have to ensure that the vehicles have a valid license and undergo a yearly service, and that rules for orderly arrival and departure at pick-up stations (e.g. taxi ranks, and bus or minibus terminals) are followed.

2.7 SUMMARY OF KNOWLEDGE AND RELEVANCE OF THE RESEARCH

The prevalence of physical and or psychological violence, over a 12 month-period, found in WPV studies in the transport sector was 60-74% against railway and airline workers, and 19-70% against taxi drivers.

WPV is a multi-causal phenomenon. In the transport sector, WPV can be determined by: contextual factors, e.g. working in a high-crime area; individual

factors from the perpetrator, e.g. alcohol/drugs use, fare evasion, from the victim, e.g. failure to meet passengers' expectations; workplace factors (environmental, e.g. overcrowded premises, task situation, e.g. working alone, with the public, and carrying money or valuables); and societal factors, e.g. a violent society.

The phenomenon has social, financial, physical and psychological health consequences for workers. Also, there are adverse consequences for the organizations/employers involved, such as financial loss, lost productivity, increased absenteeism and increased costs, e.g. for counseling.

Prevention of WPV requires interventions to impact on individual, workplace, contextual and societal factors at primary, secondary and tertiary levels. Preventive intervention models usually come from HICs. These models might not be sustainable, feasible or effective in other settings. Accordingly, there is a need to explore and describe WPV with regard to its extent, risk factors, causes, consequences and means for prevention in different settings, e.g. in a LIC like Mozambique. This, in turn may provide a basis for developing a framework for WPV prevention program.

3. AIMS AND OBJECTIVES

3.1 General aim

The overall aim of this thesis was to study WPV in the road passenger transport sector in Maputo City, Mozambique.

3.2 Specific objectives

- To determine the prevalence and nature of WPV in the road passenger transport sector (Study I).
- To identify the individual and work-related risk factors for WPV in the road, passenger transport sector (Study I).
- To evaluate the immediate and long term consequences of WPV among drivers and conductors in the road passenger transport sector (studies II and III).
- To assess whether social support moderates the association between WPV and burnout among drivers and conductors in the road passenger transport sector (Study III).
- To explore and describe the views of drivers and conductors on the causes of WPV in the road passenger transport sector (Study IV).
- To explore and describe the views of drivers and conductors on ways of preventing WPV in the road passenger transport sector (Study IV).

4. METHODS

4.1 The setting

The studies were carried out in Maputo, the capital city of Mozambique (Figure 5). The city has a population of over a million in an area of 300 km² [72]. When data was collected (studies I, II and III, May 2007---July 2007; study IV, December 2009---March 2010), road passenger transport was provided by buses, minibuses and taxis, owned by one government company and two private transport associations. Each bus and minibus was run by a driver and a conductor, while each taxi utilized a driver only.

The drivers and conductors are registered at the National Traffic Institute (NTI), which is the government institution responsible for traffic control and regulation. The total population of registered drivers and conductors in the city in 2007 was 2,618, with the following distribution: 405 bus drivers, 377 bus conductors, 743 minibus drivers, 743 minibus conductors, and 350 taxi drivers. There was a male predominance in the population of registered drivers and conductors.

4.2 Study design

Quantitative and qualitative research methods were employed for this thesis. The design for studies I-III was cross-sectional. Study IV applied a qualitative design, which made it possible to obtain an emic perspective, i.e. the insiders' views [76].

4.3 Study participants and sampling

4.3.1 Studies I-III

For studies I-III a pilot study of 50 participants was conducted to determine the probability of WPV, so as to determine the required sample size for the studies. The pilot study also investigated the cultural acceptability and validity of the instruments to be used and enabled training of the interviewers in data collection. The results indicated a prevalence of WPV of about 74%. Based on these results, a power analysis was performed, and a sample size of 504 participants was considered adequate to ensure statistical power of over 80%. The participants were randomly selected from each occupational stratum to assure representativeness: 144 minibus drivers, 144 minibus conductors, 72 bus drivers, 72 bus conductors, and 72 taxi drivers.

4.3.2 Study IV

For Study IV, eligible participants were the drivers and conductors who had been previously identified as victims of WPV (Study I), and who had six or more years of work experience. For the interviews, 38 workers were purposively selected to encompass a variety of transport routes, taxi ranks, and bus or minibus drivers and conductors from different vehicles.

4.4 Measures for studies I-III

The Violent Incident Form (VIF), a previously validated instrument [77, 78], was used to measure exposure to WPV in studies I-III. Exposure to WPV was assessed by asking whether participants had ever or during the past 12 months experienced a verbal threat/aggression, been bitten, slapped, hit, pushed, spat at, scratched, pinched, punched, kicked, or faced any unpleasant experience at work (as perceived by the participant). The response alternatives were “no”, “yes, once or twice”, and “yes, several times”. Any “yes” response was operationalized as being exposed to violence. Other asked questions posed regarding WPV concerned the perpetrator (e.g. passenger, co-worker, owner of vehicle); place of occurrence (e.g. at bus/taxi stop, while driving, inside the vehicle); time of occurrence; and whether an object (e.g. knife, gun) was used.

Socio-demographic characteristics were assessed using indicators such as age, gender, marital status, highest educational achievement and occupation. Access to information was evaluated by asking whether participants had access to radio/TV or newspapers, with responses “yes” or “no”. Finally, literacy level was assessed by asking participants whether they could read or not. As described below, there were differences between studies I-III regarding the variables assessed.

4.4.1 Study I

Using VIF, a previously validated instrument [77, 78], occupational experience was assessed using questions regarding the participants’ number of years working in the road passenger transport sector; number of years working in their present workplace; and whether participants held a supervisory position.

Organizational changes were investigated by inquiring whether there had been any recent organizational changes in the workplace; possible responses were “yes”, “no”, or “don’t know”.

Further, work conditions and work environment were assessed using the Swedish Demand-Control-Support Questionnaire (DCQ), a previously validated instrument [4, 79, 80], which assesses work-related demand, control and support. Demand was assessed by five questions about intensity and pace of work, efforts devoted to work, availability of time to accomplish tasks, and conflicting demand. Control was assessed by six questions about whether work offered the opportunity for further learning, demanded high skill, offered the possibility for initiative-taking, was varied in nature; and offered the possibility for choices. The items for demand and control were scored on a 4-point scale (often=4, sometimes=3, seldom=2, never/almost never=1). Support was assessed by asking participants to take a position on six statements regarding, among other things, whether the environment was calm, pleasant and enjoyable, and whether support and understanding were obtained from colleagues. The responses were scored on a 4-point scale (strongly agree= 4, mildly agree = 3, mildly disagree = 2, strongly disagree = 1).

Individual scores on the three subscales (i.e. demand, control and support) were calculated by summing the items on each subscale. The resulting sums are on continuous scale. The higher the score, the higher is work demand, control or support.

4.4.2 Study II

The Gothenburg Quality of Life (QOL) scale, a previously validated instrument [5], was used to measure aspects of life quality among the participants. The scale contains 15 items, aggregated on 3 subscales: Social QOL was assessed using 4 questions about satisfaction with work, economy, home and family, and also housing situation. Physical QOL was assessed using 6 questions to probe level of fitness, hearing, vision, health (well-being), sleep, and energy. Psychological QOL was assessed using 5 questions to probe level of self-confidence, memory, mood, appetite, and patience. The items were scored on a scale of 1-7 (from “very bad” through “excellent, could not be better”). Total scores were calculated for the scale as a whole (total QOL with a range of 15-105), and for each subscale (social QOL with a range of 4-28; physical QOL with a range of 6-42; and psychological QOL with a range of 5-35). High scores correspond to high QOL on both the total scale and the subscales.

Immediate consequences of WPV were investigated. These included physical injury, financial loss, sick leave, anger, fear, disappointment, increased caution, and impaired job satisfaction. The participants were requested to indicate whether or not they had faced any such consequences as a result of exposure to WPV, with response alternatives “yes” or “no”. These questions form part of the VIF instrument.

4.4.3 Study III

The Maslach Burnout Inventory-General Survey (MBI-GS) [81-83], a previously validated instrument, was used to measure burnout. The instrument consists of 16 items on 3 dimensions: exhaustion (5 items), cynicism (5 items), and reduced professional efficacy (6 items). Responses were scored on a 0-6 point scale (never=0, a few times a year or less=1, once a month or less=2, a few times a month=3, once a week=4, a few times a week=5, every day=6). High scores on exhaustion and cynicism and a low score on professional efficacy are an indication of burnout. The total score was calculated, with exhaustion, cynicism and reduced professional efficacy being given different weights in the summation: $0.4 \times \text{exhaustion} + 0.3 \times \text{cynicism} + 0.3 \times \text{reduced professional efficacy}$ [85]. The categorization of burnout and its three dimensions was based on the approximate frequency of symptoms: no symptoms (sum score 0 to 1.49), mild symptoms (sum score 1.50 to 3.49), and severe symptoms (sum score 3.50 to 6). No burnout was assigned to persons who experienced symptoms only a few times a year or never; mild burnout was assigned to persons with monthly symptoms; and severe burnout was assigned to persons with weekly or daily symptoms [85-87].

The VIF instrument measured social support, which was assessed by asking participants exposed to WPV to indicate whether they had received social support after a

violent incident. Possible responses were “yes”, “no”, and “felt no need for help”. If “yes”, participants were further asked to indicate from whom support had been received. The response alternatives were “supervisor”, “co-worker” and “someone outside the workplace”.

The DCQ instrument measured work-related stressors which were assessed as described above [4, 79, 80].

4.5 Data collection and procedures for studies I-III

A structured questionnaire was used to gather information about exposure to WPV, socio-demographic characteristics, access to information and literacy level, which were of primary interest in all the studies. However, questions concerning occupational experience organizational changes, work conditions and the work environment were also of primary interest in Study I; immediate consequences of WPV and QOL were directly relevant to Study II; and burnout, access to social support, work-related stressors were of immediate concern in Study III.

Data were collected by three trained interviewers during eight consecutive weeks in 2007. The interviewers’ training included understanding of the study aims, questionnaire content and administration, and ethical issues, such as respect for privacy while performing the interviews; emphasis was placed on confidentiality and voluntary participation. The original structured questionnaire in English was translated into Portuguese, the official language of Mozambique. A translation back into English was performed by a professional translator to check the Portuguese wording. Addresses and telephone contacts of workers were obtained from the records of the private transport associations and the government company.

The participants had already been informed of the pending study, by their association or the administrator of the government company. The participants were contacted at work or at home. When contacted, the participants were offered an incentive package promising referral to a government hospital if they presented with psychological and or physical symptoms resulting from violence or with any other cause. The interviewers marked the responses of participants in the printed questionnaires during the interviews. Each interview took about 25-30 minutes.

All participants were male. The face-to-face data collection, in studies I-III, involved all the participants in the sample frame (100%). The most common age range among participants was 20-29 years-old (37.9%). Other socio-demographics characteristics were: married/cohabitant 57.9% with a primary school or equivalent education, 46.8%; and literate, 75%. Minibus drivers and conductors jointly constituted 28.6% of the sample, while 14.7% of participants had a supervisory position.

4.6 Statistical analyses - Studies I-III

The completed questionnaires were checked for completeness, consistency and accuracy on a daily basis before the data were entered into a computer. The data analysis was performed using SPSS for Windows, versions 15.0, 16.0 and 17.0 in studies I, II and III respectively. The level of statistical significance was set at a p-value of <0.05 .

4.6.1 Chi-square test

In Study I, was used to assess associations between the dependent variable (WPV) and the categorical independent variables (socio-demographic characteristics, access to information, literacy level, occupational experience, and organizational change).

In Study II, was used to test the association between the dependent variable (immediate consequences) and the categorical independent variable (WPV).

In Study III, was applied to the associations between the dependent variable (burnout) and the categorical independent variables (socio-demographic characteristics, occupational experience, literacy level and WPV), and also to the dependent variable (burnout) and the independent variables (different categories of social support among participants exposed to WPV).

4.6.2 Student's t-test

Student's t-test were used to assess the associations between WPV and the work environment and work conditions (demand, control and support) in Study I, WPV and QOL in Study II and burnout and work-related stressors in Study III.

4.6.3 Logistic regression

Linear regression was used in Study II, to examine the independent association between exposure to workplace violence and QOL, after controlling for socio-demographic and occupational characteristics.

Multiple logistic regression was used in Study I to assess the independent roles of socio-demographic indicators, access to information, literacy level, occupational factors, and work environment factors in explaining exposure to violence.

Multiple logistic regression was also employed in Study III to examine the independent association between burnout and exposure to workplace violence, after controlling for socio-demographic characteristics, such as age, marital status and occupation, and work stressors, such as WPV and control. The Hosmer and Lemeshow test was used in Study III to examine goodness-of-fit.

4.7 Data collection - Study IV

A semi-structured interview guide was constructed to explore the views of drivers and conductors on causes and prevention of WPV [76, 88]. The questions focused on the workers' views, based on their experiences of being verbally threatened or abused, assaulted, bitten, slapped, hit, pushed, spat at, scratched, pinched, punched or kicked at work.

A pilot interview was conducted to investigate understanding of the questions. The drivers and conductors were contacted face-to-face by the author of this thesis at the bus terminals or taxi ranks. Each interview occurred soon after this first contact. Six contacted participants were not interviewed because they did not want their interview to be tape-recorded. The interviews were conducted in Portuguese, and each took about 30-45 minutes. The interviews were terminated when saturation was reached, i.e. the point at which no new information emerged from the interviews [76].

The 32 interviewed workers were 8 taxi drivers, 6 bus drivers, 6 minibus drivers, 6 bus conductors, and 6 minibus conductors. In terms of socio-demographic characteristics, they were all males between 30 and 60 years-old; 14 had primary school education (<5 years in school), and 18 secondary school (10-12 years in school). Their work experience in the transport sector ranged between 7 and 16 years.

4.7.1 Data analysis - Study IV

The interviews were transcribed verbatim by the author of this thesis. Qualitative content analysis was used to explore causes of WPV and suggestions for prevention [89, 90]. To become fully familiar with content, the whole text was carefully read through several times by the two Portuguese-speaking authors (the thesis author and the third co-author). The next step was to identify meaning units concerning causes of WPV and suggestions for prevention. At a third step, the meaning units were condensed and coded, and further grouped in a matrix, based on similarities, into different descriptive categories.

The identification of codes and categories was first performed independently and later on together, by the two Portuguese-speaking authors, for verification. At a fourth step the categories were constructed into themes, according to causes of WPV and suggestions for prevention, and then translated into English. Subsequently, the three (the theses author and the two co-authors) together critically reviewed the analyses and approved the outcomes. Examples of content analysis related to causes and prevention are shown in table 1.

4.8 ETHICAL CONSIDERATIONS

The National Committee of Bioethics for Health in Mozambique approved the studies, methods and procedures.

Informed consent was obtained from all participants; voluntary participation was emphasized, and privacy respected while performing the interviews.

Participants were assured of confidentiality and anonymity, and informed that results would be reported in group format so that no individual data could be identified. Also, they were informed of their right to withdraw from the study at any time during the interview.

For Study IV, permission to tape-record the interview was sought from each participant prior to the interview.

Table 1. *Examples of the content analysis of causes and suggestions for prevention of WPV*

Causes				
<i>Mining unit</i>	<i>Condensation</i>	<i>Code</i>	<i>Category</i>	<i>Theme</i>
2- <i>MMBS5</i> . When the passenger does not want to pay and the conductor starts to demand payment there is a quarrel, with insults and threats happen from both sides	Does not want to pay, insults, threats	Does not want to pay	Managing money while transporting passengers	Money
2- <i>MMBS6</i> . There are passengers who come onto the vehicle drunk...these passengers provoke lots of problems, they insult, shove the conductor. When I stop for him to leave the vehicle other passengers gets angry because I'm causing a delay so they insult the driver and conductor	Drunk passengers, verbal abuse, pushing	Drunk passengers	Alcohol abuse	Behavioral
Suggestions for prevention				
1- <i>MA5</i> . To prevent insults, threats from passengers, there must be education for passengers, drivers and conductors. There are lot's of mass media TV, radio, magazines that can spread information how to behave in the chapa*) Or, a pamphlet could be written	Education for passengers, drivers and conductors, mass media distribution; write a pamphlet with information on how to behave in a chapa	Education for passengers and workers. (radio, magazines, TV) spread information; write a pamphlet	Practical education	Education
2- <i>MA1</i> . To prevent fights between colleagues we should have somebody to control our cars. For example, at the bus terminal, supervisors must be efficient in ensuring that two cars don't get out at the same time	Cars control at bus terminals supervisors must be efficient	At the bus terminals, vehicles must depart one at a time; supervisors must be efficient	Departure of Vehicles	Control

*) *Chapa=Bus or minibus*

5. RESULTS

5.1 Study I: Violence against drivers and conductors in the road passenger transport sector in Maputo City, Mozambique

The study assessed the prevalence and nature of WPV among drivers and conductors and identified the individual and work-related risk factors for WPV in the road passenger transport sector. Life-time prevalence of WPV was 77.4%, and in the past 12 months 64.3%. Over a 12 month-period, the most frequent types of violence were verbal abuse/aggression 47.0%, unpleasant experiences 20.8%, and pushing 20.4%. Also, 16.7 % of participants had been physically assaulted with objects, including guns, stones, bottles and sticks. Further, the most common perpetrators were passengers 51.6%, co-workers/conductors 18.1%, and owners of vehicles 11.3%. Further, violence occurred most frequently at a bus stop 45.6%, while the vehicle was in motion 22.4%, and most often in the morning 43.1%.

The logistic regression analysis of exposure to WPV over the past 12 months, after adjusting for age, marital status, education, occupation, access to information, literacy level, occupational experience and work environment, revealed that bus drivers and conductors [odds ratio (OR) 3.542 (CI 1.512-8.271) $p < 0.05$, OR 3.536 (CI 1.246-10.068) $p < 0.05$] had a higher risk of exposure to WPV than taxi drivers. Literate participants [OR 0.440 (CI 0.207-0.934) $p < 0.05$] were at lower risk of exposure to WPV than their illiterate co-workers. Similarly, participants with 0–5 years of work in the sector [OR 0.295 (CI 0.093-0.931) $p < 0.05$] were at lower risk of exposure to WPV than their co-workers with over 15 years' experience. Participants in supervisory positions [OR 4.044 (CI 2.028-8.066) $p < 0.001$] showed a higher risk of exposure to WPV than their co-workers without supervisory positions. Finally, participants with higher work demand were at higher risk of exposure than those with lower demand [OR 1.230 (CI 1.118-1.354) $p < 0.001$].

5.2 Study II: Exposure to WPV and quality of life among drivers and conductors in Maputo City, Mozambique

This study examined immediate consequences of WPV and the relationship between quality of life and WPV among drivers and conductors in the road passenger transport sector. The exposed participants reported health-related, financial, work-related and emotional reactions due to an incident or incidents of violence at work. Regarding health-related consequences, 22.8% reported mild physical injuries, and 9% severe physical injuries. The most frequently reported emotional reactions were anger 54.9%, disappointment 35.8%, sadness 28.7%, and fear 27.5%. The financial consequences reported were financial loss 27.8% and sick leave 20.1%. Finally,

concerning work-related consequences, 55.6% reported being more cautious and 9.3% decreased job satisfaction.

The linear regression analysis, after adjusting for age, education, literacy level and exposure to WPV over the past 12 months, revealed that participants exposed to WPV had a lower total QOL, and lower social, physical and psychological well-being (-0.116, -0.110, -0.043, -0.088, $p < 0.05$) than non-exposed co-workers. It was also found that, as age increased, total QOL, and physical and psychological well-being, decreased (standardized beta coefficients: -0.283 $p < 0.001$, -0.383 $p < 0.001$, -0.223 $p < 0.001$). Higher educational attainment was associated with increased total QOL, and social and physical well-being (0.144 $p < 0.05$, 0.114 $p < 0.05$, 0.131 $p < 0.05$). Bus drivers had higher social well-being, but lower physical and psychological well-being (0.608 $p < 0.001$, -0.146 $p < 0.05$, -0.130 $p < 0.05$) than conductors and minibus drivers (-0.280 $p < 0.01$, -0.219 $p < 0.05$). Bus conductors had higher social well-being (0.344 $p < 0.001$) but lower total QOL, and physical and psychological well-being (-0.318 $p < 0.001$, -0.525 $p < 0.001$, -0.459 $p < 0.001$) than the other occupational categories when viewed together. A similar pattern was observed among minibus drivers and conductors. A significant statistical association was found between exposure to WPV and QOL.

5.3 Study III: Burnout, workplace violence and social support among drivers and conductors in the road passenger transport sector in Maputo City, Mozambique

The study aims were to investigate the association between WPV and burnout, and whether social support moderates the relationship, among drivers and conductors in road passenger transport sector. The prevalence of severe and mild burnout was 3.6% and 30.1%, respectively. It was found that age group >60 years had a higher degree of burnout than the age groups 30-39, 40-49 and 50-59 years (81.8% vs 40.1%, 42.0%, 42.4%, $p < 0.001$). Also, bus drivers showed a higher degree of burnout than taxi drivers, bus and minibus conductors, and minibus drivers (63.9% vs 52.8%, 51.4%, 16.8% $p < 0.001$). In addition, participants exposed to WPV had a higher degree of burnout than unexposed co-workers (31.9 and 43.0% vs 25.7% $p < 0.05$), while widower participants showed a higher degree of burnout than single, married and divorced individuals (61.9% vs 25.9%, 34.8%, 38.6% $p < 0.01$).

A significant statistical association was found between exposure to WPV and burnout, even after controlling for age, marital status, education, occupation and work stressors in a logistic regression analysis. It was found that participants not exposed to WPV over the past 12 months [OR 0.533 (CI 0.30-0.941) $p < 0.05$] were at a lower risk of burnout than their exposed co-workers.

It was revealed that participants who had been exposed to WPV and lacked social support had a higher degree of burnout than co-workers exposed to WPV who had received support (50.0% vs 42.8% $p < 0.05$). Also, from among participants exposed to WPV who had received support from a supervisor 34.5%, co-worker 45.9% or someone outside the workplace, 36.6% tended to show a lower degree of

burnout than co-workers without such support 50%, although the differences were not statistically significant.

5.4 Study IV: Drivers' and conductors' views on the causes and ways of preventing workplace violence in the road passenger transport sector in Maputo City, Mozambique

The study aim was to explore and describe the views of drivers and conductors on the causes of WPV and ways of preventing it in the road passenger transport sector.

5.4.1 Causes of workplace violence

The problems that constituted the causes of WPV were subsumed under the following main themes: Money, Behavior, Environment, Organization and Crime. The causes are summarized in Figure 6.

5.4.1.1 Money

Money was a cause of WPV because: 1) *Managing money while transporting passengers* triggered violence when passengers did not want to pay their fares, did not have enough money, or did not agree with the fare; 2) *Managing revenue due to owners* incited violence when demanded revenue was not handed over; workers either embezzled the money or asked for a salary payment on a fixed date. Further, drivers of buses or minibuses accused conductors of embezzling the money.

One bus driver said: “... *I say to the conductor we had lots of passengers, and the money doesn't match, you took the money. Then, there is a quarrel, up to the point that the driver assaults the conductor, or the conductor the driver. This is what causes fights, between co-workers, between drivers and conductors*” (MA4).

5.4.1.2 Behavior

Behavior was a cause of WPV: 1) *Alcohol abuse* caused violence from passengers, owners of vehicles against their workers, and between co-workers, particularly from conductors towards drivers; 2) *Disdain* for the activities of drivers or conductors caused violence from passengers and between co-workers; 3) *Disrespect*, manifested in rudeness, triggered violence from passengers, between co-workers, and owners of vehicles and the company against workers (and vice-versa). Disrespect for traffic regulations, e.g. the breaking of priority rules, incited violence, particularly between drivers of buses and minibuses. Further, disrespect for taxi-rank rules triggered violence between taxi drivers; 4) *Disagreement* triggered violence between co-workers on the same vehicle. 5) *Failure to meet passengers' expectations* incited violence from passengers because of by-passing a bus stop, shortening the transport

route, not stopping at a bus stop, and transport delays, especially when passengers were in a hurry.

One minibus driver explained: *“There are passengers who come onto the vehicle drunk...these passengers provoke lots of problems, they insult, shove the conductor. When I stop for him to leave the vehicle other passengers gets angry because I’m causing a delay so they insult the driver and conductor”* (MMB6).

5.4.1.3 Environment

The environment was a cause of WPV because of: 1) *Vehicle overcrowding*, which triggered violence from passengers; 2) *Vehicle breakdown*, which incited violence from the owners of the vehicles and the company. 3) *Damage to passengers’ belongings*, which incited violence from the passengers.

A bus driver explained: *“The passengers start to argue when the bus is overcrowded, but the conductor continues to let more passengers on. If somebody steps on or shoves another one, the passenger gets furious, and insults the conductor and the driver”* (MA3).

5.4.1.4 Organization

Organization was a cause of WPV: 1) *Fighting for passengers* triggered violence when drivers of buses or minibuses blocked each other’s way so as to get passengers first. Violence also occurred between conductors when one took a passenger who was first called by another; 2) *Duty rostas* triggered violence between co-workers when some taxi drivers were given more days than others; 3) *Multiple duties* for conductors made them victims of violence from owners of the vehicles when they could not meet all demands.

A bus driver stated: *“A struggle starts because a driver won’t give way so he can take the first passengers. When we return to the bus terminal there is a fight, with threatening behavior and assault”* (MA1).

5.4.1.5 Crime

Robbery and insecurity were causes of violence against taxi drivers.

A taxi driver described the situation as follows: *“I take people who ask to be taken to secluded neighborhoods where there isn’t much traffic, but where there are rarely any police. On arrival, the taxi driver gets threatened by two or three men, and he can’t do anything about it; they beat him up and take all his money and other possessions”* (MTC/S1).

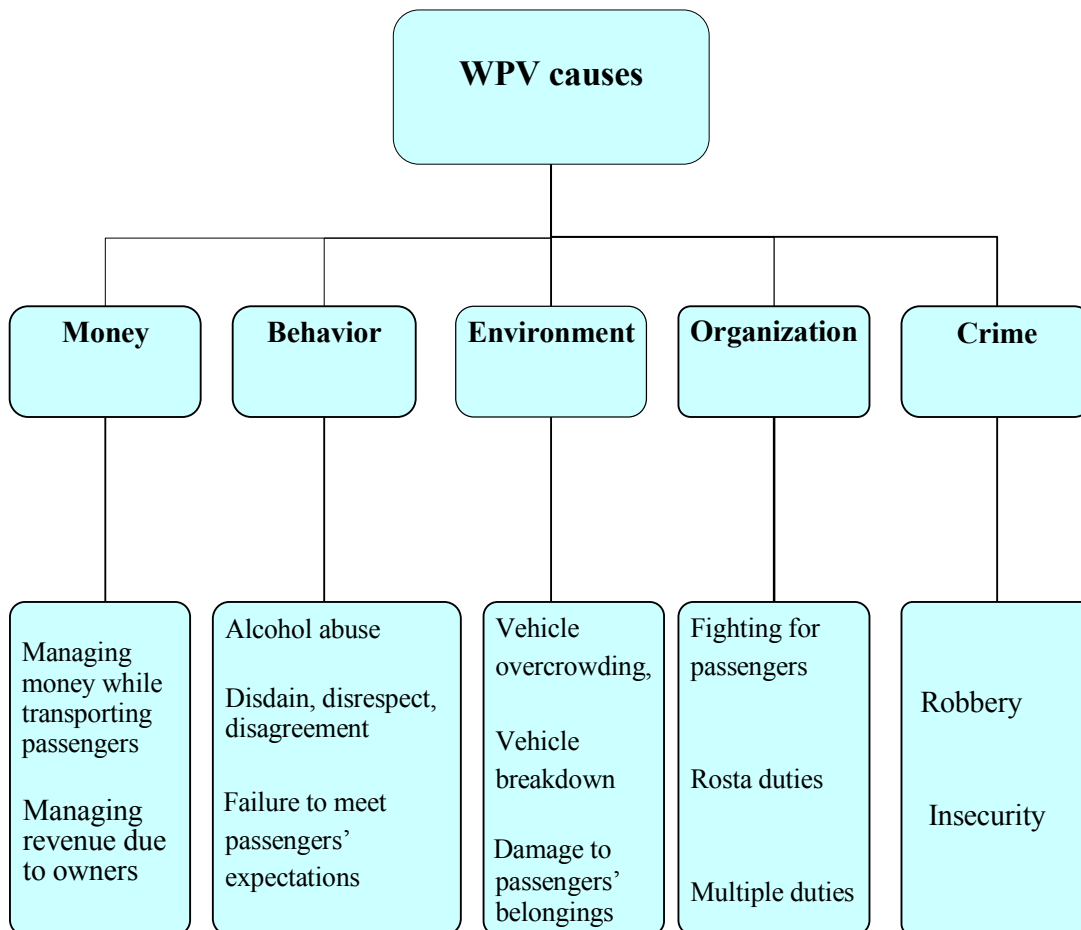


Figure 6. Summary of results on causes of WPV.

5.4.2 Suggestions for workplace violence prevention

Suggestions for prevention were subsumed under four main themes: Education, Control, Conflict Avoidance, and Institutional Judgment. The suggestions for prevention are summarized in Figure 7.

5.4.2.1 Education

It was suggested that formal, practical and moral education might prevent the WPV that resulted from money, organizational and behavioral problems. 1) There were proposals for formal education to workers, owners of vehicles and the company. The workers should attend training courses organized by the transport associations and government company, and the owners of vehicles themselves should go on courses

about the administration and management of passenger transport. 2) There were proposals for practical education for passengers, workers and owners of vehicles. It was proposed that the transport associations and the government company should have a duty to inform the community when fares rose, and also to use the media to show how to behave on public transport. Another suggestion was that owners of vehicles should stay in a vehicle for some time, getting to know what the job of a transport worker is actually like. 3) There were proposals for moral education of passengers and workers, which included learning how to behave well in the transport sector and how to respect the rules. For example, in the case of passengers, the transport associations and government company should sensitize the community in general by disseminating documents about how to behave while traveling. In the case of workers, there should be weekly or monthly meetings with counselors to learn how to behave at work.

A minibus driver said: *“I think it has to do with education, because if drivers and conductors are properly trained, they can resolve the conflicts. Training is essential”* (MMBS/2).

5.4.2.2 Control

Another suggestion for preventing WPV due to money and organizational problems was to improve control. 1) In particular, with regard to money conflicts with passengers, inspectors should be more efficient in controlling fare evasion. And the owners of vehicles or transport associations should control workers’ activities by registering mileage when handing over the vehicle, having supervisors, and finding out if there are issues involving the head of the taxi rank. 2) Regarding organizational problems between co-workers, the suggestion was that supervisors should be more efficient in controlling the departure of vehicles at bus terminals.

A taxi driver suggested: *“To prevent violence between boss and driver, the boss must tell his driver what he wants and check on his daily activities, like recording the kilometers when he hands over the car”* (MTC/S6).

5.4.2.3 Conflict Avoidance

Regarding conflict avoidance, WPV could be prevented by: 1) *Managing specific situations* 1.1) Due to money problems, such as the embezzlement of revenue due to the owners, suggestions included increasing the salaries of conductors and paying workers on a fixed day in the month; 1.2) Because of environmental problems, such as a breakdown due to careless driving, one suggestion was to apply sanctions to the workers, e.g. by making drivers pay for spare car parts. Other environmental problems, such as vehicle overcrowding and shortcutting transport routes, might be

avoided by getting the traffic police and inspectors to be more efficient; 1.3) Due to organizational problems, e.g. the struggle between drivers and conductors to get passengers, suggestions for preventing WPV included having timetables for buses and minibuses, and properly organized bus terminals with defined ways in and out for the vehicles. Further, WPV due to organizational problems, such as workers having multiple duties, could be prevented by vehicle owners employing more workers; 1.4) because of crime against taxi drivers, one proposal was that the drivers should carry firearms; 1.5) Due to behavior problems, such as not following the rules of the taxi rank, it was suggested that some workers should be banned from the rank for some days, and, if their bad behavior continued, then expelled. Also, the workers on buses and minibuses suggested that penalties should be imposed by supervisors on drivers who do not respect the queue, and fines by the police for breaches of priority rules.

2) *Managing specific behaviors.* Other suggestions to prevent WPV due to behavior problems were to avoid or manage specific behaviors. 2.1) For example, when a passenger gets abusive or loses his temper, workers should not react, but remain calm and silent instead. When drunk passengers want to get onto vehicles, a supervisor or the police should be called to intervene. 2.2) Fines were proposed for workers who incited violence. Regarding violence from co-workers, the proposal was for fining the perpetrator.

3) *Identifying specific passengers:* 3.1) To prevent WPV due to behavior problems, one suggestion was to identify potentially troublesome passengers, e.g. the ones who are drunk, and avoid taking them; 3.2) Another suggestion for preventing crime-related WPV was not to go to secluded neighborhoods, saying that the vehicle does not meet the conditions for the trip.

A bus driver said: *“The vehicles must be in good condition and not overcrowded, and the routes must be respected. To achieve this, the police and inspectors must be more efficient”* (MAS6).

A bus driver suggested: *“If necessary, surveillance with a penalty should be applied to the ones who don’t follow the queue at bus terminals, and the police must impose fines when there are breaches of priority. Surveillance must work; otherwise, there will always be problems”* (MA5).

5.4.2.4 Institutionalized Judgment.

In addition to other suggestions for preventing WPV from owners of the vehicles towards workers because of money problem, it was suggested that there should be an institution to adjudicate between vehicle owners and workers when demanded revenue is not handed over.

A driver of a minibus proposed: “*To stop vehicle owners from slapping and delivering insults when we don’t hand over the amount of daily revenue they expect, we must have a place to which the vehicle owner, driver and conductor can refer, and a judgment made over who is right; the one who is wrong should incur a penalty*” (MMB6).

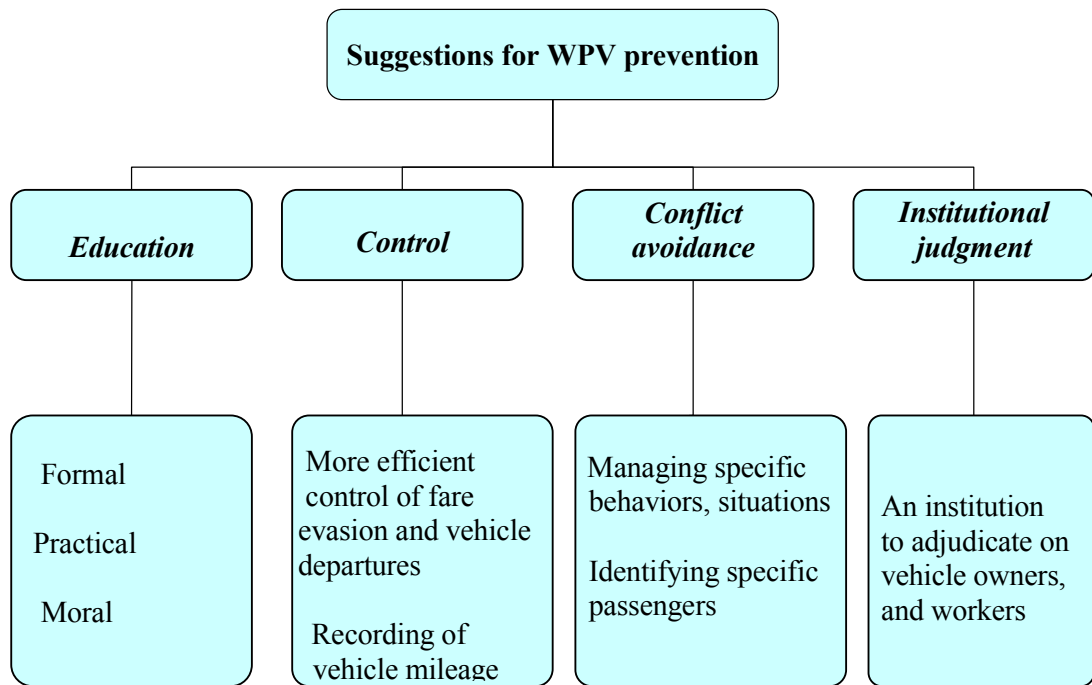


Figure 7. Summary of results on suggestions for WPV prevention.

6. DISCUSSION

Studies of WPV in the transport sector are generally scarce and, to our knowledge, no such study has previously been conducted in a LIC. The four studies on which this thesis is based were conducted in the road passenger transport sector in Maputo City, the capital of Mozambique. The city occupies an area of 300 km². The prevalence of WPV, its nature, individual and work-related risk factors and consequences, and drivers' and conductors' views on its causes and means of prevention were all explored.

6.1 Prevalence and nature

Study I showed a life-time prevalence of WPV of 77.4%, and a prevalence of 64.3% over a 12-month period. Comparable data from the transport sector regarding life-time prevalence is lacking, but our findings seem comparable with those of studies conducted elsewhere in the health sector, where the prevalence of WPV has been found to lie between 71% and 85% [91, 92]. A WPV prevalence of 64.3% is comparable with that found in a study conducted in the UK, a HIC, where prevalence was found to be in the range 60-74% [12]. The high prevalence of WPV in the road passenger transport sector in Mozambique, together with previous studies in HICs, is an indication that employment in the transport sector is associated with high vulnerability to violence.

The findings of Study I indicate that aggression at work, verbal and/or physical, is common. It occurs virtually everywhere, including on the road while the vehicle is in motion, inside the vehicle or company office, on the street, in a vehicle park or company garage, as well as at bus stops and taxi ranks. Furthermore, the most common perpetrators of external WPV were passengers (51.6%), and of internal WPV, the co-workers of occupational group conductor (18.1 %) and owners of vehicles (11.3%).

The level of occurrence of internal and external WPV, physical and/or psychological, in the road passenger sector in Maputo City, Mozambique was found to be similar to that reported in earlier studies in HICs [7, 8, 12]. The similarities between the findings of Study I and those of earlier studies in relation to types of violence, physical and psychological, and internal and external, suggest that the nature of WPV may not be related to work conditions or contextual differences between countries, in particular with regard to level of income.

6.2 Individual and work-related risk factors and causes

The findings of Study I indicate that certain individual attributes, such as illiteracy and long occupational experience, entail increased risk of exposure to WPV for drivers and conductors. At greatest risk were transport workers with over 15 years of work experience who were also illiterate. Less schooling was found to be associated with increased vulnerability to abuse [31], and illiteracy is an individual risk factor for WPV in the road passenger transport sector in Maputo City, Mozambique.

Illiteracy has not been reported as an individual risk factor for WPV in earlier studies conducted in the transport sector in HICs [7, 12, 45]. This is explained by a contextual characteristic of Mozambique, where the national adult illiteracy rate was 54.4% in 2007 [72].

Drivers and conductors with over 15 years of work experience showed a higher risk of exposure than co-workers with 0-5 years' experience. Similar findings have not been reported previously in the transport sector. It was expected that experienced workers would be better able to predict and defuse situations in which violence is likely to occur than their inexperienced counterparts. One explanation might be that drivers and conductors encounter a highly heterogeneous mix of passengers. Then, the possibility of predicting and defusing a potentially violent situation is small and independent of experience.

Drivers and conductors holding a supervisory position were found to be more vulnerable. Supervisors are called in to resolve internal problems (between employees) and external problems (between employees and passengers). This prompts assertive action from the party to a conflict, which is likely to increase the risk of exposure to WPV. In addition, supervisors have to check that the vehicles have a valid license, undergo a yearly service, and follow the orders of arrival and departure at pick-up stations, e.g. taxi ranks and bus and minibus terminals. Thus, holding the position of supervisor may increase internally induced violence from transport workers.

Furthermore, the findings indicate that work-related characteristics intrinsic to the occupations of driver and conductor entail increased risk of exposure to WPV relative to taxi drivers. The environmental conditions of bus drivers and conductors are different from those of taxi drivers. In Maputo City, Mozambique, buses tend to be overcrowded to a greater degree than taxis. An overcrowded workplace has earlier been recognized as a risk factor for exposure to WPV [12, 45]. Another work-related factor that increases the risk of exposure to WPV of drivers and conductors lies in high work demand, which is known to affect work-quality delivery [4, 79, 80]. Drivers and conductors with a high work load may fail to meet passenger expectations, which increase their risk of exposure to WPV. This notion is supported by Boyd in a study from the UK [12].

The main causes of WPV, as viewed by drivers and conductors in Maputo City (Study IV), showed similarities to reports in earlier studies. Similarities were related to individual behaviors from perpetrators (alcohol abuse, fare evasion) [12], from victims (failure to meet passengers expectancies) [12, 45]; from the workplace (environmental, e.g. overcrowded vehicles; task situation, e.g. managing money) [7, 8, 12, 45]; and from societal problems (crime, e.g. robbery) [7, 18]. However, the main difference between the current and previous investigations, as revealed by Study IV, was that, within the workplace causes, there were organizational problems in Maputo City. The major problem, as viewed by drivers and conductors, was the struggle to get passengers. To compare with another study, conducted among British

railway workers and airplane cabin crew, the greatest problem in the UK consisted in disputes over baggage [12]. One explanation for the difference relates to the different work conditions that apply in LIC like Mozambique and in a country like the UK, with high income and welfare provisions. In Maputo City, public transport is largely provided by the buses and minibuses of private associations. Passenger transport is a money-making business for the owners of the vehicles and the associations involved. Also, transport workers are dependent on employment by the vehicle owners for their own survival and that of their families. Thus, drivers and conductors are engaged in a highly competitive struggle for passengers.

Other main triggers and causes of violence, revealed by drivers and conductors, were revenue due to owners not being handed over, money being embezzled, queues at taxi ranks not being followed, and parts of transport routed being by-passed. Such triggers of violence are not reported in the earlier studies conducted in transport sectors HICs in Europe, the USA and Australia [7, 8, 12, 45]. In Maputo City, contextual and work conditions are different from those in HICs. For example, the buses and minibuses of the private associations do not have time tables, organized bus terminals, or pre-paid fares.

The interactive model in Figure 2 (see page 5), postulates that interactions between contextual, individual, workplace and societal risk factors may cause or contribute to physical and or psychological WPV, which then has both immediate and long-term consequences for the individual and the organization [18].

Interactive risk factors, which contribute to WPV in the road passenger transport sector in Maputo City include: contextual factors (carrying passengers to isolated areas (Study IV); individual risk factors on the part of the perpetrator (fare evasion, alcohol abuse) and the victim (illiteracy, over 15 years of work experience, failure to meet passengers' expectations, e.g. by-passing parts of bus routes (studies I and IV); workplace factors (environmental, e.g. overcrowded vehicle; task situation, e.g. managing money, having the occupation of driver or conductor, holding a supervisory position); organizational, e.g. the struggle to get passengers; and work conditions, e.g. high work demand (studies I and IV); and societal risk factors, such as crime, including robbery (Study IV). The occurrence of WPV in the road transport passenger transport sector in Maputo City, Mozambique can be explained as result of these factors. Understanding and knowledge of these factors are of utmost importance in designing an effective framework for a WPV prevention program suited to conditions in Maputo City or other cities in LICs.

6.3 Immediate and long-term consequences

The findings about the consequences of WPV in the road passenger transport sector in Maputo City are complex. The immediate consequences were similar to those reported from different workplaces in earlier studies from both HICs and LICs. Such immediate consequences are health-related [17, 55-57], work-related [8, 35, 57], emotional [26 37, 43, 57], and financial [49-51]. These similarities demonstrate that

WPV may have consequences for the victim independent of workplace, work conditions and context.

WPV was found to have impacted significantly on the victim's general well-being as manifested in their overall QOL (Study II). The measure of QOL used in this study incorporated constructs of physical, psychological and social well-being. The victims of violence had lower scores on these constructs than their non-victimized counterparts. Physical, psychological and social trauma may indicate the presence of long-term consequences of WPV. They suggest that WPV is likely to affect victims' well-being far and beyond the workplace, a view that reflects the notion that repercussions of WPV may be felt in other areas of workers' lives, e.g. family life. [54].

Exposure to WPV was also found to be significantly associated with burnout (Study III). This finding is in line with reported in earlier studies, which suggest that WPV, may lead to burnout in the longer term [62, 63]. Burnout was more common among workers exposed to WPV who lack subsequent social support, than among co-workers who receive support following WPV exposure (Study III). This finding reflects circumstances in which the adverse consequences of burnout are reduced by the direct and or buffering effects of social support, as reported in previous studies [93, 94].

Study III showed that the degree of burnout was higher among drivers and conductors who do not get support, and draws attention to the importance of social support at individual level in the secondary prevention of WPV. It has earlier been recognized that adverse consequences of WPV can be ameliorated by means of social support [18, 53, 68, 69]. Means of support are emotional, instrumental, informational or appraisal [6]. Emotional support might consist in showing appreciation and attention. Instrumental support involves the provision of finance, time and resources, or affecting change to the environment. Informational support takes the forms of enlightenment through advice or direction. Appraisal involves confirmation, feedback and realistic assessment.

Studies II and III explored consequences of WPV at individual level: emotional reactions (fear, anger, sadness, disappointment); health consequences (physical injury, low QOL, burnout); and other effects (financial loss, sick leave, decreased job satisfaction, increased caution). The questionnaire employed did not provide an opportunity to investigate consequences at organizational level, or other psychological consequences at individual level. The consequences, in the model summarized from earlier studies, shown in Figure 3 (page 6), highlights the need to study the immediate and long-term effects of WPV at both individual and organizational levels in the road passenger transport sector.

6.4 Means of WPV prevention

Drivers' and conductors' suggestions for the prevention of WPV (Study IV) included the proposals that police and supervisors should control fare evasion, e.g. by preventing

drunken passengers from getting into vehicles, and that education should be provided for all involved. The findings regarding education are comparable with those reported in earlier studies [45, 95], but there are differences with regard to which kinds of education should be provided. In Study IV there was a proposal for moral education, which would include teaching both passengers and workers how to behave properly during public transportation. However, moral virtues, such as honesty, responsibility and respect for others, are referred to in some other studies [96-98]. The drivers and conductors further pointed to the importance of sensitizing the community in general on how to behave while travelling on collective transport, by using the mass media, TV, radio or magazines, or by disseminating information via pamphlets.

There was also a proposal for practical education for employers, e.g. being in the vehicle for some time, in order to understand what the job of driver or conductor entails.

Other proposals for preventing WPV among the drivers and conductors in Maputo City, that are not to be found in earlier studies include: having an institution to adjudicate between employers and workers when demanded revenue is not handed over; making the driver pay for spare parts for the vehicle when a breakdown has been confirmed to be due to careless driving; and imposing fines on workers who incite violence. This lack of comparable findings has to be understood in light of work conditions and contextual characteristics in Maputo City, Mozambique.

The suggestions made for primary, secondary and tertiary WPV prevention at organizational and individual levels on the basis of earlier studies in HICs, and as summarized in the model depicted in Figure 4 (page 8), partly concern prevention barriers. For example, primary intervention at organizational level could be effected by environmental measures, such as by equipping buses and taxis with protective screens, controlled doors, video cameras, GPS phones, and silent alarms [18, 29, 70]. These interventions might not be sustainable in the road passenger transport sector in Maputo City Mozambique, due to the contextual and work conditions described above. Acquisition of vehicles, especially with advanced facilities, is expensive, and their maintenance requires knowledge. There is a question over whether the drivers and conductors of the buses and minibuses of transport associations, who check for mechanical problems, fix punctures and repair damage incurred to the vehicles in Maputo City, Mozambique, have the necessary skills.

6.5 Methodological considerations

Issues of internal, external and statistical validity were considered in studies I-III and trustworthiness (Study IV).

6.5.1 Validity aspects: Studies I-III

Threats to internal validity, such as selection bias [99], were prevented by randomly selecting participants; through careful instrumentation, e.g. by training interviewers to

administer the questionnaire in the same way to all participants, and by comparing the data in the questionnaires of the three interviewers to see if there were any systematic differences [99].

Threat to external validity [99] due, for example, to characteristics was ruled out. Although the participants varied in age, education, occupation and work experience results can be only generalized to the population of registered drivers and conductors in Maputo City.

Regarding construct validity, was ruled out the possibilities of poor reliability and low statistical power. In the case of reliability [99], all the instruments used were previously validated, and Cronbach's alpha test for reliability were 0.45-0.84 for the DCQ; 0.61-0.81 for the MBI-GS; and 0.61-0.79 for Gothenburg QOL. Low statistical power [99] was avoided by taking a sample of adequate size; the sample size of 504 participants was calculated on the basis of a pilot study, assuring a power of over 80%.

For Study I, where the dependent variable was WPV, all 504 participants responded to all items in the questionnaire. For Study II, the dependent variables were quality of life and immediate consequences of WPV (physical injury, financial loss, sick leave, anger, fear, disappointment, increased caution, and impaired job satisfaction).

In the case of Study II, the questionnaires of two participants (0.4% of the sample) were excluded from the analysis, because there was a failure to answer all the questions concerning quality of life. For Study III, the dependent variables were burnout and support. In this case also, the questionnaires of two participants (0.4% of the sample) were excluded because all the questions related to burnout were not answered.

Thus, the analyses in studies II and III were based on data from 502 participants, which represented 99.6% of the total sample size. The exclusion of the questionnaires of two participants might have led to underestimation of the impacts of WPV on quality of life and the proportion of burnout among bus conductors and minibus drivers (the occupational groups to which these participants belonged). However, the proportion of exclusions (0.4%) is so small that the results are unlikely to have been substantially affected.

The 100% response rate for studies I-III, although ideal, is unusual and might suggest bias. It is difficult to assess whether the potential biases would have resulted in underestimation or overestimation of the strengths of the relationships of interest.

A number of factors acting together may have accounted for the 100% response. Participants may have found the topic highly relevant. The project organization, information dissemination regarding the study and its objectives, training of data-collection personnel, an emphasis on ethical considerations, such as privacy and the guarantee of confidentiality, may all have boosted the response rate. Further, the incentive package offered to participants may have been a major contributor to the 100% response rate; all participants needing psychological support or medical care

due to hearing, vision or sleep problems were referred to government hospitals, where treatment is free of charge. These factors notwithstanding, the possibility of participants being coerced into taking part in the study cannot be entirely ruled out. It is plausible that employers may have signaled that participation was obligatory when informing participants of the study.

The exact effects of these factors are difficult to assess. The incentive package may have encouraged participants to over-emphasize work-related stressors, and over-report the psychological and physical problems resulting from WPV, whereas possible coercion by employers may have discouraged them from reporting violence in the workplace. Accordingly, the magnitudes of the estimates need to be interpreted with caution. However, it is important to note that the hypothesized associations were confirmed in many respects. Also, the results of studies I-III were comparable with some of the results reported in earlier studies [7, 8, 16, 33, 43, 45, 54-58, 62, 63, 94, 96].

6.5.2 Trustworthiness - Study IV

Credibility, dependability, conformability and transferability were considered in Study IV [76]. To enhance credibility, drivers and conductors were selected from different transport routes, vehicles and taxi ranks. To improve accuracy, the information obtained from the drivers and conductors was nuanced by two Portuguese-speaking researchers, before the constructed themes were translated into English.

Transferability was enhanced by thick description, meaning that a description of the research context was provided in enough detail for a reader, familiar with another context, to assess transferability to that other context.

Conformability and dependability were enhanced by maintaining neutrality during the interviews, not making any judgments about the information provided, and by suggesting solutions to problems. The views expressed by drivers and conductors are based on their individual experiences as victims of WPV in the road passenger transport sector in Maputo City, Mozambique.

The criteria for accessing trustworthiness were applied in Study IV. Thus, its results can be regarded as trustworthy, and comparable with those reported in earlier studies [7, 8, 12, 45].

6.6 Strengths and limitations

The strength of this thesis lies in the meticulous applications of the various methodologies described above. The limitations is related to the use of a cross-sectional design (studies I-III), which does not permit causal interpretation.

The results of these studies (I-III) cannot be generalized to other settings, apart from to the population of registered drivers and conductors in Maputo City. Transferability of the findings of Study IV, to other road passenger settings, is restricted to other LICs with similar transport conditions.

The 100% response rate in studies I-III, although ideal, is unusual, and discussion over whether it is strength or a weakness, or both, is warranted. Apart from the factors, described above, which may have contributed to the 100% response rate described above, the response rate may simply reflect a cultural characteristic. For example, large household surveys, such as the Demographic and Health Surveys (DHS) carried out in countries in Sub-Saharan Africa, have high response rates. The Mozambique DHS in 2003 had a response rate of about 95% [100]. Similarly, high response rates, of 97-99%, were reported in Zambia and Tanzania, in 2003 and 2005 respectively [101, 102].

6. 7 Ethical considerations

The National Committee of Bioethics for Health in Mozambique approved the four studies, and their methods and procedures. For studies I-III, there was a 100% response rate, possible explanations for which have been discussed above. For example, there is the possibility of participants having being coerced into taking part by their employers. It is probable that employers may have signaled participation to be obligatory when informing participants of the study.

In Study IV, six participants did not want to be interviewed when they heard that their views were to be tape-recorded. Reasons were not given why these six potential participants, among the drivers and conductors, did not want to be interviewed. One explanation might be that they found the revealing of causes of violence too sensitive, or they might have been perpetrators of WPV themselves.

7. CONCLUSION

The key conclusions in this thesis are:

- WPV in the road passenger transport in Maputo city, Mozambique is highly prevalent and occurs wherever workers are on duty.
- For all occupational groups, illiteracy and long occupational experience were individual risk factors for WPV.
- High work demand, holding a supervisory position and having the occupation of bus drivers or conductor were the identified work-related risk factors.
- In the road passenger transport sector in Maputo City, Mozambique, the causes of WPV are related to problems regarding money, behavior, environment, organization and crime.
- The health consequences of WPV suggest that employment in the road passenger transport sector constitutes an occupational health hazard.
- Burnout is associated with WPV, and social support appears to buffer or moderate the effect of WPV on burnout.
- Suggestions for prevention include the provision of moral, formal and practical education, adoption of control strategies, avoidance of critical situations, and the introduction of an adjudicatory or judicial system.

8. IMPLICATIONS

8.1 Prevention

WPV in the road passenger transport sector in Maputo City, Mozambique is very common, and has adverse consequences for drivers and conductors. Therefore, there is a need to develop a framework for WPV prevention in the sector.

The framework for a WPV prevention program should include primary, secondary and tertiary prevention at individual, organizational and community levels. Preventive interventions might include:

At individual level: primary prevention, e.g. formal education such as training for workers on conflict resolution; secondary prevention, e.g. medical treatment, support, and counseling; and tertiary prevention, in the forms of support and rehabilitation.

At organizational level: primary prevention, e.g. formal education such as training employers in passenger transport administration; having guidelines to follow to avoid violent incidents from occurring; work organization and procedure, including having pre-paid fares and time tables for buses and minibuses; also more efficient control of fare evasion and the arrival and departure of vehicles; secondary prevention, e.g. encouraging workers to report and record all WPV incidents, and having a strategy to guarantee workers' security while on duty; and tertiary prevention, in the form of having strategies or guidelines to prevent similar incidents from re-occurring.

At community level: primary prevention such as moral education, e.g. promoting learning among passengers on how to behave when traveling collectively by spreading information in pamphlets, and via radio and TV; secondary prevention, e.g. penalizing perpetrators of WPV on public transport.

8.2 Research

Further research into WPV in the road passenger transport sector in Maputo City, Mozambique is warranted. For example, there is a need to understand why lengthy occupational experience (over 15 years) entails increased risk of exposure to WPV among drivers and conductors, and also why bus drivers and conductors are at greater risk than other occupational groups.

There is a need to identify immediate and long-term consequences of WPV at organizational level and for each occupational group. Also to identify other long-term consequences of WPV at individual level.

Finally, before designing a framework for a WPV prevention program, other stakeholders, as well as drivers and conductors, need to be consulted, including the owners of vehicles and transport associations, policy makers, members of the community and the traffic police.

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