Title: Road traffic injuries in Namibia: Health Services, Public Health and the Motor Vehicle Accident Fund.

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This study examines a government sponsored motor vehicle insurance scheme in Namibia in order to establish if it is effective in providing road injury victims access to the health care, rehabilitation and social support they need following injury. The paper reports and discusses the findings from the study and makes recommendations with regards to how the system could be improved and whether it may be beneficial to other countries with similar socio-economic contexts.

Abstract

Namibia is one of five countries in sub-Saharan Africa that has a fuel tax levy designed to support road injury victims. This study examines how the scheme operates from the perspective of seriously injured or permanently disabled beneficiaries. Using qualitative methods, we conducted semi-structured interviews with RTI survivors in Namibia, and healthcare workers involved in caring for them, in order to investigate the role played by the MVAF. While some wealthier drivers continue to buy private insurance, most Namibians now rely on the MVAF. The analysis show the MVAF is effectively helping to enhance access to rehabilitation and other health services for RTI survivors. There however exist some weaknesses in the system which can be addressed. It is hoped these findings will contribute to discussions about whether the current system is fit for purpose and could serve as a replicable model in other low and middle-income countries (LMICs).

Key words: Motor Vehicle Accident Fund (MVAF); motor third-party liability (MTPL); Namibia; Road Traffic Injuries (RTI); Disability

1.0 Background

Introduction

This paper examines how the Motor Vehicle Accident Fund (MVAF) operates in providing a safety net for those injured in Road Traffic Injuries (RTIs) in Namibia from the perspective of beneficiaries of the scheme and the health care workers who are in charge of its administration. The scheme has been in place since 1990 but there has been little research on its impact from the perspective of its users or the health care providers who deliver services.

RTIs are now a major problem worldwide, greatly contributing to the burden of deaths, injuries and permanent disabilities, with their attendant negative impacts on the medical, economic, social and psychological well-being of affected individuals, their families and broader society (Moroz and Browner, 2014). Sub-Saharan Africa (SSA) is the worst affected region globally, with many people dying and many more sustaining injuries that leave them with permanent impairment and disability (WHO, 2015). However, due to a lack of research in SSA, there is little comprehensive understanding of the impact that RTIs have at a national level, the numbers of people involved, or what happens to the people who become disabled because of RTI over time (Naghavi et al, 2009; Sharma, 2008). There is also lack of clarity as to what levels of support they receive following these injuries including access to health care, rehabilitation, psychological and social services, particularly in cases where they are unable to return to their previous employment (Christian et al, 2011). Compounding this, it is accepted that in SSA and other lower and middle income countries (LMICs), poorer members of the community are disproportionately affected by RTIs because the modes of travel they use expose them to greater vulnerability than those in higher income groups (WHO, 2015). Moreover, in SSA most of those injured from the lower income groups do not have medical insurance and thus in the event of injury, are less likely to afford adequate medical care or rehabilitation.

Namibia is one of five countries (the others being South Africa, Swaziland, Botswana and Lesotho) that have a fuel tax levy fund - in Namibia this is called the Motor Vehicle Accident Fund (MVAF) - and it provides support for road injury victims. A small tax on gasoline means that drivers contribute to the fund every time they fill their tanks. Importantly, the fund covers not only drivers and passengers but also pedestrians injured by motor vehicles. The Fund is intended to cover all medical costs, including hospitalisation, medication, and assistive devices such as crutches and wheelchairs, as well as physical rehabilitation. In the event of a serious injury resulting in long-term disability, a lump sum payment and a caregiver allowance are also available.

In the SSA countries without these schemes, private motor vehicle third-party liability (MTPL) insurance is available, for those who purchase it, to cover health care costs for drivers and victims who otherwise would have to pay for the costs themselves (World Bank, 2009). With MTPL, the injured victims, including the driver, can claim compensation from the insurance company to pay for their treatment and personal injury-related expenses. However, the MTPL system is problematic in many countries. First, many drivers, especially less affluent people, drive without insurance. For those who are insured, levels of reimbursement are often low. Because of limited healthcare resources, many people are unable to access adequate medical care and rehabilitation following a road injury even if insurance money is available (World Bank, 2009). And adequate coverage is often unavailable to passengers and pedestrians, especially if they are poor and unable to obtain legal representation to make their case to the driver's insurance company.

This study explored the government sponsored MVAF system in Namibia to establish if it is effective in providing road injury victims access to the health care, rehabilitation and social support they need. In order to determine the effectiveness of the Fund, the study examined not only the structure and funding mandates of the Fund, but included in-depth interviews with individuals who have been recipients of the Fund to understand their lived experiences of accessing care and support. We also interviewed the health care workers (HCWs) involved in delivering care through the Fund to get their professional insights on how effective the fund actually is in direct delivery of care and services.

1.2 Structure of the MVAF

The Motor Vehicle Accident Fund (MVAF) is a fuel levy fund that was set up by the Namibian government in 1991, under Act 30 of 1990, with the aim of compensating people injured in motor vehicle crashes or the dependents of people killed in such crashes (MVAF, 2018). Initially, the Fund followed a "fault-based" system and compensation was not paid to injured parties if the road crash was a result of negligence or any unlawful act on the part of the driver (MVAF, 2018). Following a policy review, the Fund is now mandated in accordance with the MVA Fund Act No.10 of 2007 to provide assistance and benefits to all people injured and the dependents of people killed in road crashes regardless of fault (MVAF, 2018), although long-term coverage is still restricted for those drivers who are considered to have been at fault.

The Fund derives all its income from a fuel levy which is determined annually by actuaries and the National Energy Fund or the Ministry of Mines and Energy. For every litre of petrol and diesel sold, at an estimated cost of 13.13-13.63 Namibian Dollars (N$) (equivalent to US$ 0.86-0.89), 47.7 Namibian cents (US$ 0.03) is transferred to the Fund (MVAF, 2018). The size of the Fund is

significant. The Fund received N$ 1.66 billion (US$ 105 million) between 2016 and 2018 of which 62% went to pay claims, 27% went to administration, and 1% to investments (Shaanika, 2019).

Any individual injured in a road crash or a dependent of anyone killed in a road crash in Namibia can put in a claim for assistance from the MVAF. (Table 1 explains the way in which an injured individual is registered within the system. Table 2 lists the benefits offered by the MVA Fund, in accordance with the MVA Fund Act 10 of 2007). While some wealthier drivers also carry private insurance, most drivers in Namibia now rely wholly on the MVAF.

Table 1: MVAF registration process

- According to the legislation, in the event of a road crash, ideally, the MVAF call centre has to be notified, following which they will dispatch an ambulance.
- Crash survivors are triaged at the scene of crash and individuals with moderate or serious injuries are admitted to either state or private healthcare facilities, with those with minor injuries treated and discharged.
- The injured person is issued with an MVAF reference number, and an MVAF case manager undertakes hospital visits and issues a claim form for submission by the injured individual.
- Once the injured person submits the claim form, the MVAF assesses the claim based on the individual's injuries and processes payment of an injury grant if this has been deemed applicable.
- When complete information has been provided, claims are supposed to be processed within 30 days.
- Again, according to MVAF rules, following an injury should follow up rehabilitation or additional care be needed a case manager is assigned the case, and he/she drafts and implements rehabilitation plans in consultation with the injured individual.
- The case manager obtains progress reports from specialists/doctors managing the individual to assess whether they need further rehabilitation.
- Based on this assessment, the claim is either closed or further rehabilitation is provided.

Source MVAF (2018)

Table 2: Benefits provided by the MVAF

Benefit type	
Medical Benefits	An individual injured in a road crash is eligible for up to N$1,500,000 (US$ 98,464) (which provides for medical treatment, injury management, and rehabilitation.
Injury Grant	The Fund provides an injury grant to the value of up to N$100 000 (US$ 6.564). This is a cash grant that serves as compensation for injury for any injured person, with certain limitations and exclusions.
Funeral Grant	The Fund provides a funeral benefit to the value of N$7 000 (US$ 460) for any person who dies in a road crash in Namibia.
Loss of Income	Loss of income may be claimed by a survivor of a road crash up to N$ 100 000 (US$ 6.564), with certain limitations and exclusions.
Loss of Support	Loss of support may be claimed by a dependent of a deceased up to N$ 100 000 (US$ 6.564), with certain limitations and exclusions.

-The amount allocated to each individual is dependent on the medical assessment outcome and is ultimately based on the severity of injury. We were not able to obtain details of how each individual allocation is specifically calculated and whether there is a specific formula.

-For those who have been deemed after assessment to have serious injuries such as paraplegia or quadriplegia, home modifications are also made if they or their parents own the property they want to be adapted. They are also provided with a monthly caregiver allowance.

The public is made aware of the Fund via television, radio and print media, however in years past there was concern that people in rural areas were less aware of the Fund (Smith, 2017). In order to address, this, the Fund has been decentralised over the last several years, expanding from having one office in the capital city (Windhoek) to now also having offices in Rundu, Keetmanshoop, Otjiwarongo, Walvis Bay, Katima Mulilo and Ongwediva. The Fund has also started conducting outreach programs through public engagement in rural areas to improve public awareness (Smith, 2017).

This scheme is particularly important because of the high rates of RTIs in Namibia. RTI rates are increasing rapidly as Namibia is becoming a higher middle income country with increased use of

motor vehicles and increased urbanisation (NSA, 2015). As in all countries in SSA, the poor in Namibia are at increased risk because of inadequate and unsafe public transportation systems and the absence of footpaths, sidewalks and safe crossings, as well as poor maintenance of those pedestrian ways that do exist, and the lack of speed control, and street lighting (Amend, 2016; WHO, 2015).

2.0 Methods

2.1 Data collection

This study began with an in-depth review of the current MVAF policy and its evolution over time. Following this, two sets of interviews were carried out. The first set involved interviews with Namibian RTI victims, while the second set involved interviews with healthcare workers (HCWs) and disability advocates in Namibia. Both sets of interviews were conducted via semi-structured questionnaires, which included both closed questions to elicit information such as "did you receive any rehabilitation? with "yes" or "no" responses, and open-ended questions, where more detailed responses were elicited. An example is: "Can you tell more about your health status since the injury?" All the interviewees preferred to be interviewed in Namibia's official language, English, although arrangements were made to use translators for interviewees who preferred to be interviewed in Afrikaans or Oshiwambo, the most widely spoken native (For copy of full Survey tool, see Chatukuta: 2019, UCL depository).

2.2 Study site and setting

In all, 34 interviews were completed. Eighteen of these interviews were carried out in Windhoek, the capital city, and the rest were conducted in other parts of the country, including Outjo, Otjiwarongo, Rehoboth, Rundu and Swakopmund. The research was conducted over a period of five weeks. The recruitment processes are described below.

2.3 Sampling methods used

The exploratory nature of this study and access to the population under study required the use of purposive sampling. The first group of road injury victims were accessed by establishing contacts with the National Federation of People with Disabilities in Namibia (NFPDN) and the Namibian Association of People with Physical Disabilities (NAPPD). Both organisations acknowledged the need for this study and initially identified four possible participants. The four individuals were approached and three agreed to participate whilst one declined. Through snowball sampling, 11 additional

participants were recruited. In total, the sample consisted of 14 individuals with long-term road traffic injury-related disabilities. Of the 11 individuals recruited through snowball sampling, nine were not aligned to the NFPDN nor to the NAPPD.

Recruitment of HCWs was begun through an internet search of specific service units by the first author (MC), seeking to identify individuals involved in the care of RTI victims or those who had insight or influence on this process. An initial eight were approached directly through an introductory e-mail followed by a phone call and invited to participate in the study. From these eight, a further 12 individuals who were suitable for the study were recruited via snowball sampling.

2.4 Interview procedures and Analysis

All interviews were performed individually and occurred at a time and place most convenient for the informant. Participation in the study was entirely voluntary and there were no monetary benefits or gifts. All interviews were carried out by the first author (MC). All interviews were recorded and on average lasted 40 minutes. Interviews continued until data saturation was achieved (14 for the interviews with RTI survivors and 20 for HCWs).

In terms of the demographic characteristics of the injury victims, 57.1% (n=8), were male, 42.9% (n=6) were female, 78.6% were aged below 40, with the average age of 34.6 years. In terms of the HCWs, 55.0% (n=11), were male, and 45% (n=9) were female. They had an average of 9.6 years work experience. The HCWs interviewed included nursing, medical, and rehabilitation professionals, working in different regions, and were from both the public and private sectors.

A semi-structured, open-ended questionnaire was developed for both injury victims and HCWs based on existing RTI questions and adapted for factors pertinent to MVAF issues in Namibia ((For copy of full Survey tool, see Chatukuta: 2019, UCL depository). Some of these factors included type of injury, emergency and hospital care, rehabilitation and costs associated with health care following the injury. The questionnaires also collected demographic and socio-economic information such as level of education, age, and gender. Income is a sensitive subject in Namibia thus for both injury victims and HCWs we focused on level of education for the socio-economic demography.

2.5 Analysis

Analysis began with careful review of tapes followed by full transcription of audio recordings. All transcriptions were performed by the lead author (MC) within seven days of the original interview.

Data from both sets of interviews were analysed using thematic analysis following the six-step framework analysis of Braun and Clarke (2006). This framework is reported to be the most widely used approach in thematic analysis as it provides a clear and usable framework for conducting analysis (Maguire and Delahunt, 2017). An important advantage of thematic analyses is that it not only allows for data interpretation, but is also beneficial for producing qualitative analyses suited to informing policy development (Braun and Clark (2006). The data was coded manually because of the relatively small sample size. An inductive approach was used with no pre-defined themes to guide the coding process. Thus the codes formulated were data-driven.

2.6 Ethical considerations

Ethical approval was obtained from both the UCL Ethics Committee (No: 7417/001) and the Ministry of Health and Social Services in Namibia (No. 17/3/3). Participation in interviews was entirely voluntary. A plan was in place so that if any road injury victims appeared to become distressed during interviews, or were in need of further support or information, they would be referred to local disabled people's organisations (DPOs) which had been contacted prior to the interview process. This was however not necessary as none of the participants needed such support. Participants were given information sheets and were informed that confidentiality would be maintained throughout the study. Following this, participants were requested to sign a consent form to ensure they understood the information provided and to give them a chance to ask questions. The form also ensured that they were aware of their right to withdraw at any time.

3.0 Findings

As noted above, our findings are part of a larger study on the long-term impact of RTIs in Namibia. Topics related to implementation and effectiveness of the MVAF included the following:

3.1 Being provided for by the MVAF

A major and consistent finding in the interviews with RTI individuals was that the MVAF is making a significant contribution in providing care for road injury survivors. The majority, but not all, respondents interviewed were injured after the MVAF Act had come into place in 2007. All injured after 2007 reported taking comfort in the fact that they had not needed to worry about paying for any of the hospital costs or immediate medical care after sustaining their injury as this was covered by the MVAF.

Funding for individuals injured before 2007 is not available from the MVAF, as the fund is not retroactive – and the difference in what is available to those injured in RTIs before and after the legislation is striking. Two informants injured before the Fund was established reported facing great hardships in meeting hospital and health costs. For example, L13, a middle-aged man in Erongo, had been involved in a road injury as a passenger in a government car, travelling on an official visit. He had sustained a skull fracture and had been left blind, as well as having significant lower limb fractures. As a government employee, he initially qualified for some short-term workman's compensation but the government only settled all the immediate medical bills, with no further funding for ongoing medical or personal expenses, despite continuing health problems, the expenses for which he pays for himself.

The second such respondent, (L3), a young woman injured before 2007, had initially been treated in a private hospital in Windhoek, followed by six weeks of rehabilitation in a residential unit in Cape Town, South Africa. All this treatment and rehabilitation had been paid through her boyfriend's medical insurance as she herself had no medical insurance and her family did not have resources to pay for treatment.

In contrast, every individual injured after the MVAF was established reported that all their medical costs had been provided by the MVAF. They reported that the MVAF had facilitated their transfer to the nearest trauma facilities, including private ones, via ambulance services following the RTI. Once admitted, they noted that they were able to access the services which were needed, including surgery and rehabilitation if required, and without significant delays and without any co-payments required. When there were some complications with accessing care, they reported their individual case managers as having helped to overcome these. Some also compared previous hospital experiences and were eager to highlight that they felt the MVAF involvement had facilitated improved access to quality care compared with their previous experiences.

3.2 Provision of assistive devices, caregiver allowance and home modifications

All those injured after the MVAF came into effect and needing mobility aids such as wheelchairs or crutches reported they had not had difficulty in acquiring these. Again, they reported that the MVAF sourced and paid for all the necessary mobility aids. For example, L10, a middle-aged male in Khomas, reported that after injury, he needed crutches and these were supplied through the MVAF at no cost to himself.

The Fund also paid for the maintenance of the aids, including wheelchairs, and replaced these when necessary. For example, at the time of the interviews, one of the respondents reported that his

wheelchair had problems with the brakes and the MVAF was buying him a new one, although as discussed below, the wait time for such replacements was problematic.

In addition to settlement of the medical and rehabilitation bills, many of the injury survivors were keen to point out other ways in which the MVAF had benefitted them. Among those permanently disabled almost half interviewed indicated that the MVAF had been involved in arranging for health-related follow-ups. Several mentioned the MVAF case managers as points of contact when they needed any assistance related to their medical care. Meanwhile, some respondents reported that the MVAF was paying transportation costs for travel to follow-up medical visits which had been arranged by the Fund.

Several also mentioned that the MVAF was providing them with a caregiver's allowance which could be used to pay for someone to help with activities of daily living. This could be either be a family member or non-family. Each of the respondents who reported receiving a caregiver allowance had severe injuries, such as having a complete spinal cord injury. All were wheelchair users.

Those with severe permanent injuries also received lump sum "one-off" payments from the MVAF in addition to the caregiver's allowances. For example, L1, a young woman in Khomas, had used her money to buy a car whilst L4, a young man in Erongo, had used his to build a shack to live in on his aunt's land.

A few of the respondents also reported the MVAF had done home modifications to improve accessibility following a disabling injury. For example, L12, a young woman also in Khomas, recounted:

Yeah, we got the ramps, and then they made the shower accessible, as well as the counters, like the kitchen counters, and the ramp……The MVAF did that from the fund they allocate for patients after the accident.

The reports given by victims were in accord with accounts given by HCWs, who similarly highlighted a number of ways in which the MVAF was helping those injured in RTIs. This included not only basic medical and surgical care but also that if one needed a specific type of treatment not available in Namibia, the MVAF would pay for this to be done in other countries. Assistive devices that were being provided by the Fund were also noted.

Some HCWs also highlighted the caregiver allowance and one-off lump sum payments provided by the MVAF to those with severe permanent injuries. Some of them also mentioned the MVAF case managers as good contact points for health workers involved in the care of victims and how they were involved in facilitating follow-up care. One interviewee (P5), a 25 year old female, praised the MVAF for maintaining good records and establishing a good referral system. As another respondent stated:

Basically, I think it's a system that works. It's like a medical insurance. So if you get involved in a car accident you get treated for free.

P11, 31 year old male

3.3 Access to the system

None of the respondents reported having had difficulties being registered with the MVAF system after the road injury, nor with getting the medical coverage they needed. Several described the process as having been relatively easy and straight forward. For example, one respondent stated:
It was good, up to now I don't have a problem

L3

While another noted:
It's not a long thing, they already start paying for your hospital bills whilst you're in the hospital.

Similar to the reports from injury victims themselves, most of the HCWs reported that the majority of road injury victims were able to access the Fund. Additionally, a few of the HCWs noted the benefits of increased access from the additional offices in some regional towns. According to the current MVAF website there are now seven regional offices in Windhoek, Keetmanshoop, Walvis Bay, Otjiwarongo, Rundu, Katima Mulilo and Ongwediva (MVAF, 2018).
However, contrary to the experiences reported by injury victims who were all satisfied with the accessibility of the MVAF system, some HCWs noted that there were still road injury victims who were failing to access the Fund. P3, a young female occupational therapist, explained that in her experience, most people living in rural areas were still unaware of the existence of the MVAF:
Most people do know about it, but there are some people who do not. I have heard of a few that people that never claimed through the MVAF. And then now it's too late because it happened a few years ago… I think it's because of general lack of knowledge. And it's also people that live outside the urban areas….in the rural areas. So maybe there is no access to that information.

3.4 Problems with the MVAF

While there were many positive things reported about the MVAF, it is also clear that the system is not perfect. Several informants noted that if a road crash was unreported and no police report was

submitted, there would be no coverage by the MVAF. There is also a set period of 30 days within which to claim coverage. This is particularly, although not exclusively, a problem in rural areas as crashes occurring on smaller roads especially in rural areas are often not reported in the way the MVAF requires, due to a lack of police. Smaller rural roads simply have less police coverage than do major urban roads. This is a barrier to care, as injured victims sometimes cannot then access the MVAF and the associated benefits.

Another issue, raised by one HCW (P10), is that many patients with minor injuries are not being captured in the MVAF system owing to their lack of knowledge that less severe injuries are also covered; their assumption that the reporting process is too lengthy; or that because by the time the claim had been processed, their injuries have healed:

So, you have a lot of patients who suffer minor injuries and they are not captured by the MVAF system and end up getting, or accessing healthcare at state facilities without the aid of the MVAF . . . I think part of the problem is that people are not aware because quite often you have to advise these patients to get registered with the MVAF, or they feel their injuries are not severe enough, or the process of being captured onto that MVAF system is probably a bit longer. By the time they are eventually registered with the MVAF, they've recovered.

Similar to this report by P10, P7, a physiotherapist in Otjozondupa, explained that some road injury victims were discharged from hospital without having had any assistance from the MVAF due to a registration process that took too long, especially for those who might be treated and quickly released from the hospital with more minor injuries. Meanwhile, P17 who ran a private occupational therapy practice, reported that most professionals and those from higher socio-economic groups tended to use their medical insurance first instead of the MVAF to fund their treatment and rehabilitation after road injury. She reported that they did this because they found the process of registering with the MVAF too lengthy and complicated.

Interestingly, several of the HCW incorrectly believed that there would be no MVAF coverage for individuals found guilty of causing the crash or driving without a license despite the fact that the law has been revised to include all RTIs, no matter who was at fault, in 2007. P18, who was employed directly by the MVAF, was well versed with the policy and explained that the MVAF covered the immediate costs for all patients in the acute phase regardless of fault and that it would only be the continuing care which would not be covered for someone found to be guilty in the road crash. The information given by P18 tallied with the information on the MVAF website, but it is noteworthy that a number of HCWs were themselves incorrect about the specifics of who would be entitled to care.

Another area of concern for many of those interviewed was the issue of the financial lifetime 'cap.' The range of MVAF listed in Appendix 2 includes a financial benefit available to a lifetime maximum of N$1,500,000 (US$ 98,464) for each injured individual. While initially appearing generous, for those with severe permanent injuries these funds can eventually run out and once the allocation had been depleted, that person has to pay for their own treatment and care or seek treatment through far less generously endowed state-sponsored health programs. This was viewed both by RTI victims and by the HCWs as a negative aspect of the system, particularly with regards to people with serious road injuries with long-term healthcare requirements, which can far exceed the maximum of N$1,500,000 over the course of a lifetime.

The financial cap is a factor for many RTI victims in deciding when and where they get care. Once RTI victims found their lifetime allowance depleted or they began to fear they would use up the allowance that they would need as they grew older, many reported they stopped going to rehabilitation and associated services. Because of this, some were not receiving the rehabilitation and support services they needed to reach their full functional potential and a number of interviewees reported developing complications because of inadequate care. For example, one HCW (P11) reported:

I have a client who had a head injury. After a period of getting the aid from the MVAF, they then said, no we have done enough. So, right now it's his parents that are taking care of the bills. They are actually asking for donations. It is a really bad situation. The guy has been like that for a long time.

Another HCW (P10) reported that he has observed that patients who find their funds are being depleted are sometimes so stressed that there is a decline in their mental health.

None of the RTI victims interviewed who were covered by the MVAF reported their funds had yet been fully depleted. However, some who had access to individual or family medical insurance plans mentioned that they routinely used these to cover some of their health costs including general appointments, to avoid depletion. For example, L12 said:

Yeah, I go for regular check-ups to the GP, and then once a year I need to see the urologist. But otherwise, I do get regular medical treatment …, I just use whichever one (MVAF or medical insurance) I feel like. If I don't want to use my MVAF then I will use my medical insurance. Then certain procedures, I would use my MVAF. So I just mix and match, to not use up the MVAF allocation.

Another RTI survivor (LI) reported:

It's not a continuous thing, because it comes from your benefits anyway...it exhausts your benefits...So when I used to go for the bio-kinetics, I used to use my mum's medical insurance, because I didn't want to exhaust my benefits.

As will be discussed in the following section, Namibia does have a state supported health system, although the care provided is very limited and considered to be of poorer quality than the MVAF. However, if MVAF coverage is fully depleted, the RTI victim often has no other option than to seek care as a state patient.

3.5 Additional Problems with the Fund

There are other problems reported by RTI victims. Not all respondents found the MVAF completely helpful: several stated that a flaw in the system is that it focuses primarily on medical aspect of road injury survivors' but not on other personal needs such as housing, transportation, social participation and return to school or work. Most of those with severe injuries who received the caregiver allowance reported that the money was not enough to cover all expenses, and competing financial demands often meant having to use the care allowance to pay for other immediate needs, such as rent and family-related costs like school fees. As one respondent (L4) explained

Being a quadriplegic is a life changing injury. Namibia is a country that is not so good at reintegrating people that have serious injuries in the community and at workplaces. The MVAF policy of only focusing on the medical side has left big holes in our lives because they only helping with medical issues. They don't help you with other personal things.

Several of the respondents also reported having to wait long periods for spare parts for wheelchairs and other orthotic devices through the MVAF. For example, L9, a young male in Erongo, reported that he had been waiting for 5 months for his wheelchair brakes to be replaced.

Currently, no repairs have been done on it. There are some brakes that were broken and I'm still waiting for the spare, but they are taking long to bring them. It's due to where the MVAF are ordering the parts… it's overseas. The process is too slow and there are delays.

Meanwhile, several of the wheelchair users reported the wheelchairs they had received were not appropriate for the specific environment in which they lived. For example, L2 lives in a rural, rocky area where the wheels of his wheelchair have quickly worn out:

It's hard my friend, it's hard. There are stones, rocks, and rivers around the place where I'm staying and it's challenging . . . As you can see, the wheelchair is now finished. (L2)

These observations tallied with those of the HCWs interviewed. Most wheelchairs and orthotic devices provided through the MVAF are imported, with no manufactured in Namibia. Most imports are from South Africa and Sweden, as Namibia has reciprocal agreements for the supply of devices from these countries. These wheelchairs are designed for urban rather than rougher rural terrains and because of this, there were often problems with their maintenance and servicing. Finally, as noted above, acquiring these spare parts takes long periods of time, with users' mobility often restricted whilst waiting for parts to be imported.

P16, a community rehabilitation specialist, suggested that Namibia should have its own manufacturing plant for assistive devises, as products would be not only more quickly available, but also designed to be better suited to local conditions:

Most of the wheelchairs are meant for pavements and are not meant for the terrain in Namibia. The terrain in Namibia is rocky, it's also sandy and most of the wheelchairs that are being distributed are not suitable for the sandy and rocky areas. Unfortunately, Namibia does not have a warehouse whereby they manufacture their own wheelchairs. Maybe if we would have this, we could be able to manufacture the right type of wheelchairs that can be used in these sandy and rocky areas.

Another informant, P19, who was the regional lead for therapy services in Omaheke, also noted the lack of proper wheelchair assessment for body measurements, leaving the wheelchair users vulnerable to developing spinal problems like scoliosis/kyphosis. However, P19 added that the situation was improving with the MVAF now incorporating occupational therapists in the procurement of aids and wheelchairs.

3.6 MVAF patients access to services versus those injured/disabled in non-RTI related events

The success of providing health care and support for RTI victims through the MVAF highlights a gap in the broader Namibian health care system. Only 15% of Namibians buy medical insurance and the majority of these seek treatment in the private health system. The other 85%, those without medical

insurance, are dependent on the public national health system (de Beer, 2009; Gustaffson-Wright et al, 2011). Coverage under this system is far less comprehensive and most people, especially poorer people, are less well served, especially if they are unable to fund additional out-of-pocket health care costs.

Significantly, the majority of HCWs made a distinction between patients funded by the MVAF and 'state patients' - those with disabilities or medical or rehabilitation needs resulting from an injury or illness not related to RTI, and hence not covered by the MVAF. The number of such patients is larger than the patients served by the MVAF. There were a number of striking differences in terms of access to services, aids and support between these two groups - even when they had identical injuries. HCWs noted that, regardless of severity, those with injuries which do not result from RTIs, such as stabbings, falls and gunshot wounds, receive far less comprehensive care than those covered by the MVAF.

Being a state patient was viewed by both RTI victims and HCWs negatively. Non-RTI injury victims, unless they were among the small group covered by private health insurance, were under government care and had to pay out of pocket for services. Although access to health care services was subsidised, services are extremely limited and there are associated co-payments which are not always affordable meaning some people despite serious or permanently debilitating injuries, opt out of care completely.

The long-term implications can be severe, as noted by P11, a physiotherapist in Caprivi:

Especially for those who are not funded by the MVAF or whose funds are depleted, rehab services are very expensive compared to the general income. That's why they can end up not reaching their full physical capability because of inability to fund rehab services fully due to lack of funds.

The HCWs consistently reported that state patients were hugely disadvantaged compared with road injury victims who were funded by the MVAF. The latter group could be seen in private hospitals where facilities were more advanced, with more favourable staff-patient ratio. Respondents also reported there was a lot of pressure on public health services with long waiting lists for services such as rehabilitation and a shortage of health staff in public institutions. All these factors make continuity of care more difficult for non-RTI victims. P4 was the head physiotherapist of a hospital in Khomas and explained the difficulty in following-up on state patients:

For example, us physios, we don't even do any home visits. We are too short-staffed, we don't even follow-up on patients. So even if I tell somebody to come back and they don't come, unfortunately, I don't look for them.

In comparison to this, P18 highlighted the fact that MVAF patients are assigned their own case managers responsible for ensuring follow-up:

Home visits and follow-up are not to the extent that they should be and as a result, the majority will be left out. But for those who are eligible for benefits from the MVAF, they can actually get help because each person is assigned a case manager who actually monitors what's going on.

Most of the respondents felt that MVAF patients were more likely to have better outcomes compared with non-MVAF state patients. Several respondents also noted that state patients were further disadvantaged in terms of access to aids and assistive devices. P5, a female occupational therapist, reflected on how this could affect the quality of life:

For the state patients we do not have the correct assistive devices. We have limited stock and we only have the basic assistive devices for them. And obviously assistive devices can make them more independent.

Similarly, P18 compared the availability of aids for state patients with MVAF patients, noting that MVAF patients constitute only a fraction of those with injuries and that the rest are considerably disadvantaged in terms of access:

The majority of the patients actually depend on the state services and you will find that for people that are in need of wheelchairs, there are huge waiting lists for those. The same applies for prosthetic and orthotic devices. In terms of injuries related to RTIs, because of the MVAF benefit, those patients are actually covered. Whatever assistive device they need, they actually get. Even if it's not available in Namibia, it can be imported.

Several of the respondents also noted that home modifications are not available for state patients no matter what the severity of their impairment. Reflecting on this, P14, a medical officer in the spinal rehabilitation unit described a huge discrepancy between access to services in favour of MVAF.

About home modifications, that is not there because the government doesn't have such a program. So, if a patient is not covered by the MVAF, let's say they are paralysed through a stab wound or a fall, then they are not covered by the MVAF, which means the home modification is not done. It depends how much money the family has, as they have to do their own home modifications.

4.0 Discussion

Following a road injury, many people in LMICs face hardships with regards to how they will pay for treatment and rehabilitation (Perez-Nunez et al, 2012). Lack of insurance or universal health care schemes, limits treatment options for long-term disability and has profound socio-economic ramifications. A major finding in this study is that the MVAF is doing significant work in Namibia in meeting these costs. Both injured victims and HCWs interviewed praised the MVAF for covering the health-related costs of injury victims. For many, the MVAF was reported to have paid for all costs of medical care and rehabilitation, including in private facilities, as well as provided for assistive aids and maintenance, (including importing the aids from overseas if they were not available locally). The MVAF case managers also arrange for continuing care of injury victims, which many found very helpful. In addition, those with serious injuries, including spinal injuries and traumatic brain injuries, received a lump sum payment and a monthly caregiver allowance.

Although some concerns were raised about exhausting their allocation from the Fund, none of the injured reported any out-of-pocket expenditures or resorting to catastrophic measures such as borrowing money or selling possessions or land. It must be noted however that the caregiver allowance, while important, did not always fully cover the needs of RTI people, especially those who had need of full-time caregivers – and that this sometimes meant that they either go without or depend upon family to provide un-reimbursed care.

Our literature review could not find any publication related to how effective the other fuel levy funded schemes were viewed by users of the funds in the other four SSA countries mentioned earlier. However, there is also an example from a high-income country. The Australian state of Victoria operates a similar scheme, called the Transport Accident Commission (TAC), funded through a state-wide levy on vehicle registrations (Gabbe et al, 2014). Gabbe et al (2014) reported that TAC was viewed favourably, with many road injury survivors reporting their treatment costs were being covered by TAC, with minimal out-of-pocket payments. This matches the findings from our study, showing that this type of system enhances access to services following road injury. Similar to MVAF, TAC used a single point of contact with TAC through case managers (Braaf et al, 2019; Gabbe et al, 2014).

In a study of needs of TAC injury survivors following discharge from hospital, Christie et al (2017) reported that problems with care-coordination and follow-up improved by the use of case managers for care pathways. Additionally, a case manager dedicated to supporting injury survivors reduced the complexity of utilizing the health system for the TAC injured survivors by mitigating health literacy barriers to improve understandings about hospital and rehabilitation care. It also helped facilitate

communication between health professionals, acting as a single point of contact, providing consistent and up to date information, and coordinating service provision (Braaf et al, 2018). Care coordination by TAC case managers also promoted timely access and engagement with appropriate services based on individual needs, improved quality of care and the flow of information between service providers, as well as enabling cost savings (Braaf et al, 2019). Additionally, case managers promoted independence and autonomy for those with severe injuries (Braaf et al, 2019). Furthermore, Braaf et al (2019) found that when no key person coordinated care, people with severe RTIs and their families reported restricted options for service access, follow-up, quality and collaboration. Given the long-term nature of RTI recovery, more effective care coordination can reduce individual, family and societal burden and enhance optimal care and recovery outcomes. These findings are consistent with what RTI victims and HCWs in our study reported in Namibia.

In comparison, studies conducted in SSA and other LMICs countries which do not have a dedicated fuel-related insurance schemes show that severe injury or permanent disability following an RTI can have profound economic consequences. For example, in Sudan, Tayeb et al (2015) found coping strategies following road injuries such as borrowing money and selling belongings with severe long-term, and often multi-generational economic consequences for individuals and households from lower socio-economic strata. Similarly, in Nigeria, Juillaird et al (2010) reported that the injured had to pay for their own care; RTIs caused frequent and repeated visits to both formal and informal healthcare providers; and the choice of providers was partly determined by costs. In that Nigerian study, the mean direct cost of treatment was US$ 25 per person, which was a major burden on household expenditures (Juillaird et al, 2010). Another Nigerian study showed that on average, each road crash victim stayed in hospital for 25 days and spent about US$ 444 (Ipingbemi 2008).

Additionally, among RTI victims in Juillard's study not utilizing modern health facilities, one of the major reasons for not doing so (24% of those interviewed) was the cost of treatment. According to Perez-Nunez et al (2012) in their Mexican study, the high financial costs associated with RTIs are felt immediately when the costs of medical care have to be met, especially for low income families. In this Mexican study, many low-income families were found to be deeply concerned immediately after the crash because they did not have money to cover medical expenses and were forced in the days following the crash to ask for financial assistance from extended family and social networks. Similarly, Bhalla et al (2019) reported that care at for-profit hospitals in India, following road injury, is often not initiated until it is guaranteed that somebody will pay for RTI victims who may be poor, unaccompanied and/or disoriented. Consequently transporters to hospital have to consider taking them to public hospitals which may be located very far away (Bhalla et al, 2019). Undoubtedly, this

leaves them at greater risk of worse outcomes like brain hypoxia from excessive bleeding, and death.

These studies show that costs associated with road injuries can be a hindrance in seeking care and lead to people being unable to access treatment, or to limit treatment. They also report that the cost of road injuries lead people to seek cheaper alternative traditional care or home care, despite their need and desire for established modern care (Juillaird et al, 2010; Kohler et al, 2017). Furthermore, these studies find that lack of money results in those injured in RTIs limiting treatment to obvious injuries and foregoing examinations such as X-rays and MRI scans to identify less immediately obvious injuries such as fractures or internal bleeding. As a result, many people receive inadequate care and risk further, potentially avoidable complications, permanent disability, and even death (O'Hara et al, 2016). It is also unlikely that people who already have limited personal and household funds for immediate care after a crash will go on to have rehabilitation, even when it means the likelihood of permanent disability.

Comparison between Namibia's MVAF system and other SSA countries without comparable insurance schemes is also reflected in terms of loss of long-term productivity. For example, in Uganda O'Hara et al (2016) found that due to financial limitations of all patients admitted for surgical treatment following a RTI, only 58% were able to have the recommended surgery. This was true despite the fact that although patients having surgical treatment assumed more debt, it proved to be the right decision for their long-term health outcomes and also from a cost-benefit point of view, as surgery had a substantial, positive effect on earnings at 12-months post-injury (O'Hara et al, 2016). Similarly, in Malawi, Kohler et al (2017) reported that some of the RTI patients with lower limb fractures were being managed with conservative means (non-surgical) because surgery was too expensive, however surgery helped people recover more fully and more quickly as they were able to ambulate much sooner and were pain free compared with those receiving conservative management. Nor is this an issue solely in LMICs. The inability to access healthcare following RTIs due to lack of health insurance has also been noted in the US, a country without a nationalized health system. Lao et al (2012) found that injured uninsured individuals were more likely to report not being fully recovered although no longer having treatment for recommended medical care and had a longer recovery time to full health while individuals with insurance were more likely to visit a clinician.

According to the HCWs interviewed, those injured in road injuries in Namibia are in a unique position compared with those who are injured from other causes as they are receiving support from the MVAF whilst the latter group are not. Through the MVAF, all their medical and rehabilitation

needs met and paid for, with follow-up treatment being organised for them, and required mobility aids provided at no cost, although there is sometimes a delay. Those interviewed with severe injuries or permanent disabilities due to RTI reported that they were being provided with caregiver allowances which they used to pay for help managing activities of daily living. In comparison, those injured from other causes such as stabbings or falls, whom HCWs referred to as “state patients”, were reported to be very disadvantaged and often lacked access to the most basic aids and rehabilitation services.

Furthermore, many of those injured or disabled through other non-RTI causes, were reported to have had poor care and lacked continuity of care because of the existing problems with healthcare in Namibia. HCWs consistently reported that “state patients” were more likely to have poorer outcomes than the MVAF funded patients. This is confirmed by reports from VSO (2016), who indicated that access to rehabilitation services is still very low in Namibia due to a lack of rehabilitation staff within the Ministry of Health and Social Services (MOHSS). Among those with long-term health concerns due to causes other than RTIs, only 26% of people needing rehabilitation are able to access this and although 67% of these people expressed a need for assistive devices, only 17% were able to afford them (VSO, 2016).

Additionally, considering that only 15% of the population have medical insurance, a majority of “state patients” have to fund their own treatment or a significant part of their own treatment. A Namibian study to look at the “state patients” and their choice of treatment options following injury is likely to show similar findings to the studies in other SSA (Juillaird et al, 2010; Kohler et al, 2017; O’Hara et al (2016)) where injured individuals are limited in accessing front line health services due to costs and if they do, catastrophic expenditures are frequent. This striking difference between “MVAF patients” and “state patients” highlights how beneficial the MVAF has been, but also underscores the need for comparable support mechanisms for those injured or disabled due to other causes

In most countries in SSA, motor third-party liability (MTPL) insurance is used to pay for the healthcare costs of those injured in crashes, (World Bank, 2009). Although we could not find any published studies, in these countries where MTPL is used, various problems with the system have been highlighted. In Zimbabwe, Kawadza (2016) reported that most people were not aware of MTPL and did not make any claims following road crashes, instead paying out-of-pocket for their own medical and rehabilitation expenses. Similarly, research done in Uganda by Kitunzi et al (2016) found that eight out of 10 motorists in Kampala did not understand MTPL, with 95% having no knowledge

of their rights as policy holders and 88% having no knowledge of their obligations when involved in an accident.

Additionally, the majority of motorists involved in crashes were reported to not have made claims to their insurers for compensation (Kitunzi et al (2016)). Another disadvantage of MTPL reported by Kawadza (2016) is in the case of hit and runs, injured pedestrians do not have the details of the car driver nor any ability to make claims against them. Lacking personal injury insurance, they have to pay for the costs of treatment themselves (Kawadza, 2016). Consequently, it has been reported that MTPL has been failing to meet the financial costs of the medical care and rehabilitation of those injured in road crashes.

There appears to be differences between how Namibia is operating its motor fuel insurance scheme and how other SSA countries are doing do. Highlighting this, one HCW (P2) noted:

I used to work in Zimbabwe and coming here to Namibia, the difference between the two countries is that in Namibia they have this Fund for people who are involved in road accidents …. It's due to that Fund that most patients access clinical services after the accident. I'd say, it's a positive or a plus for this country compared to Zimbabwe, where people fund from their pockets if they are involved in an accident.

Additionally, in Zambia, the Permanent Secretary in the Ministry of Transport, Works, Supply and Communication was quoted as saying that the current MTPL scheme did not effectively address the post-crash needs that arose from road accidents: most motorists saw it as a form of tax that they would try to avoid rather than a protection for their ability to afford care and thus deliberately avoided paying into the system (Lusaka Times, 2013). In Zimbabwe, it was similarly reported that motorists were reluctant to pay for MTPL as they saw it as a form of tax (Kawadza, 2016).

A report on MTPL by the World Bank (2009), in Uganda, Zambia and Zimbabwe on MTPL reported comparable findings, reflecting a common narrative in LMICs, reporting that MTPL has only been introduced in the early 2000s and is still poorly understood with motorists viewing it as a form of tax that they are at liberty to evade. As an illustration, Kawadza (2016) reported that 65% of vehicles in Zimbabwe did not have MTPL, and as a result if involved in accidents, injured people including passengers and pedestrians were unable to claim any compensation to pay for their health costs.

By contrast, Namibia appears to have done a better job in informing its citizens and implementing a coordinated programme that, while not perfect, does appear to improve the lives of many RTI victims. The strength of the Namibian MVAF is how, at a national level, Namibia has organized and

administered this insurance scheme over time. The strengths shown in this system warrant further study. It is a model that deserves careful review and serious consideration.

5.0 Limitations

A limitation to this research is that this study specifically focused on identifying individuals with significant or life-changing injuries, but future studies should also include those with less severe RTI-related injures who have also benefited through the Fund and their counterparts who have not been able to access the Fund or who have had difficulties accessing it. Another limitation is the relatively small sample size. Although the experiences shared by the participants were an invaluable source of information and evidence, their experiences cannot be generalised to the entire population of those injured in RTIs in Namibia.

Note also, this study was not a comparison of outcomes of those injured before the Fund was set up and those injured in the years after the Fund had been set up. That is a separate area of research that warrants attention.

6.0 Conclusion

The overall consensus of recipients of care and support through the MVAF as well as HCWs who provide that care, was that the MVAF is an efficient system which has improved the lives of those injured in RTI, although both injured victims and HCWs also identified some negative aspects such as the financial caps, insufficient funding for attendant care and the need for more timely access to replacement of assistive devices. Based on these overall findings, we conclude that the MVAF serves as an important model that can be replicated in other countries in SSA as well as in other LMIC settings. It is a system that has been shown to be effective in terms of making medical and rehabilitation treatment accessible for road injury victims despite financial status, thus increasing their likelihood of returning to normal life or enhancing their quality of life post-accident. Considering the difficulties faced by uninsured injured road victims (who are likely to be the majority of drivers as well as pedestrians in SSA and other LMICs), the MVAF model may provide a viable solution. It not only pays for health-related costs but also provides lump sum payments and monthly caregiver payments to those who sustain serious injuries. A small surcharge on all gasoline sold generates a significant and continuous income stream. When well managed through good organization and administration at the national level as in Namibia, this fund can make a real difference in the lives of RTI victims. The stark difference between the resources available to those

injured or disabled through RTIs and those injured or disability due to other non-RTI causes also underscores the need for a broader medical insurance and universal health schemes for all in LMICs.

List of Abbreviations

DPO: Disable People's Organisation

HCWs: Health care workers

LMICs: Lower and Middle Income Countries

MVAF: Motor Vehicle Accident Fund of Namibia

MTPL: Motor vehicle third-party liability insurance

NAPPD: Namibian Association of People with Physical Disabilities

NFPDN: National Federation of People with Disabilities in Namibia

RTI: Road Traffic Injury

SSA: Sub-Saharan Africa

TAC: Transport Accident Commission

Declarations

Ethics

This study was performed in line with the principles of the Declaration of Helsinki. Ethical approval was obtained from both the University College London Ethics Committee (No: 7417/001) and the Ministry of Health and Social Services in Namibia (No. 17/3/3).

Consent to participate

Informed consent was obtained from all individual participants included in the study.

Availability of data and materials

The datasets generated and/or analysed during the current study are available in the (Chatukuta: 2019, UCL depository).

Competing interests

"The authors declare that they have no competing interests"

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Authors' contributions

MC conducted and analysed the qualitative data and was the main author in writing the manuscript. NG, JSM and MK all contributed to writing up and editing the manuscript. All authors read and approved the final manuscript."

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