Access to Rehabilitation Services for Road Traffic Injury Patients in Namibia

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Implications for Rehabilitation

- Road traffic injuries (RTIs) are a major global public health challenge with over 1.2 million people killed and a high burden of disability and Namibia is one of the worst affected countries globally.

- There is lack of knowledge on the availability to physical rehabilitation following road injury in Namibia

- Our study shows The Motor Vehicle Accident Fund (MVAF) model seems to enhance access to rehabilitation and is a model which could be replicated in Sub-Saharan Africa and other low and middle income countries.
Title Page

Title: Access to Rehabilitation Services for Road Traffic Injury Patients in Namibia

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Abstract

Purpose: Road traffic injuries (RTIs) are a major public health issue worldwide. The importance of physical rehabilitation following RTI is well documented. However globally there has been very little research on the accessibility of rehabilitation services following road injury. Namibia is one of five African countries with a fuel tax levy fund (MVAF), a system of case managers, medical care, and case management system for coordination of long-term care.

Materials and methods: We investigated the availability of physical rehabilitation services to RTI injured in Namibia, through interviews with RTI patients and health care workers.

Results: Unlike the few other studies done in Sub-Saharan Africa (SSA), most RTI injured individuals in Namibia report they are able to access some rehabilitation following injury. In large measure, this is due to the effective MVAF system which they felt ensures follow up care for many after having an RTI. However, we found that access to rehabilitation is skewed in favour of those living in Windhoek and other urban areas compared with those in non-urban areas.

Conclusion: The MVAF model seems to enhance access to rehabilitation and is a model which could be replicated in other SSA countries and other low and middle income countries.

Keywords: Road Traffic Injuries (RTIs); Disability; Rehabilitation; Health care workers (HCWs); Public health approach;
1.0 Introduction

With over 1.2 million people killed and between 20 and 50 million injured annually, road traffic injuries (RTIs) have dramatically increased and are now a major public health issue worldwide [1]. RTIs are also identified as a leading cause of injury in most countries [2] with injuries often resulting in chronic pain, and long-term disability such as paraplegia, quadriplegia, loss of eyesight, and brain damage as well as stigma (due to disfigurement) [3]. Sub-Saharan Africa (SSA) is the worst affected region globally, with people sustaining injuries that leave them with permanent impairment and disability [4].

The importance of physical rehabilitation is well documented following road injury. Physical rehabilitation is extremely important for injured people as it utilises techniques and strategies focused on restoring function to the fullest level possible and helps the body achieve normal daily functions [5]. The World Health Report on Disability called on governments to organise, strengthen, and expand comprehensive rehabilitation services and programmes to improve quality of life of injury survivors worldwide and address the burden of disability from RTIs [6]. However globally there has been very little research on the accessibility of rehabilitation services following road injury with the little research done mostly confined to HICs, and the total costs for rehabilitation of the RTI injured being considerably underestimated [6]. Research in access to rehabilitation following an RTI is particularly lacking in SSA [7]. This is of particular concern because existing studies for high Income countries (HICs) clearly and strongly support the benefits of such interventions. Yet, even in HICs, limited access to rehabilitation post road-injury continues to be a missed opportunity to increase health and recovery. For example [8] reported that, in the United Kingdom (UK), although many participants recognised rehabilitation as very important to their recovery, many reported being unable to access this. Additionally, many who did receive rehabilitation in the form of physiotherapy felt they had not received enough sessions and the rehabilitation had finished too early [8] Similarly, [9] reported also in the UK that both injury survivors and service providers reported problems with
accessing physiotherapy and limitations in the number of sessions due lack of funding. Similar findings have also been reported in Australia [10] and the United States [11].

From the little research done in SSA, it has been reported the lack of rehabilitation after road trauma is a serious and rising problem [12, 13]. For example, one of the few studies done in SSA was conducted in Ghana [7] and the results showed that the great majority of people admitted to the trauma service following road injury received no rehabilitation services, and the few that did, received inadequate services [7] SSA also has poorer rehabilitation systems and lower proportions of rehabilitation staff compared with other global regions [6, 13]. Therefore there is generally a poorer outcome for those involved in RTIs in SSA compared with other parts of the world: they have less access to rehabilitation, limiting them reaching their best possible functional outcome following a road injury.

Our research focused on this topic in Namibia, an SSA country having one of the highest global RTI injury and death rates [1]. Namibia is also of specific interest because it is one of five countries in SSA (the others are South Africa, Swaziland, Botswana and Lesotho) which have a system in which a fuel tax levy fund – the Motor Vehicle Accident Fund (MVAF). This was set up in Namibia to provide support for RTI survivors in terms of funding for all medical costs, aids and appliances required rehabilitation, and in the event of severe injury, a lump sum payment, and a caregiver allowance for those injured in RTI. The scheme is based on a surcharge at the pump on every gallon of gas purchased [12]. Tables 1 and 2 show the registration process and benefits available under the MVAF scheme. This paper, part of a broader study of the MVAF [12], provides a more nuanced understanding of the accessibility of rehabilitation services through the MVAF to people injured in RTIs in Namibia. In particularly, in this paper, we examine the current MVAF rehabilitation services and identify where there may be limitations for individuals in accessing rehabilitation and the specific hindrances.
2.0 Methods

2.1 Data collection
In this study we conducted two sets of interviews. The first set involved interviews with healthcare workers (HCWs) and disability advocates in Namibia, while the second set involved interviews with Namibian RTI victims. The two sets of interviews were conducted using semi-structured questionnaires. These 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 the question asked of HCWs, which was based on our observations: “Could you tell me more about the proportions of road-injury survivors needing rehabilitation who do receive this in Namibia?” Arrangements were made to use translators for interviewees who preferred to be interviewed in Afrikaans or Oshiwambo, the most widely spoken native languages, however all the interviewees preferred to be interviewed in Namibia’s official language, English. (A copy of the full Survey tool is available from the UCL depository).

2.2 Study site and setting
14 interviews were completed with RTI injured survivors whilst 20 interviews were completed with HCWs. Of these, 18 of these interviews carried out in the capital city, Windhoek, and 16 conducted in other parts of the country, including Walvis Bay, Rehoboth, and Swakopmund. The research was conducted over a five week period and the recruitment processes are described below. Figure 1 is a map of Namibia showing the different regions and cities.

*Figure 1.1: Map of Namibia*

2.3 Sampling methods used
The use of purposive sampling was required due to the exploratory nature of this study and access to the population under study. Road injury victims were accessed via establishing contacts with two organisations, the Namibian Association of People with Physical Disabilities (NAPPD) and the National Federation of People with Disabilities in Namibia (NFPDN) which are two organisations representing the interests of, and advocating for, people with physical disabilities in Namibia. Both of
these organisations were receptive to the need for this study and initially identified four possible
participants. Of the four individuals approached, three agreed to participate whilst one declined.
Eleven additional participants were recruited via snowballing. In sum, the sample was made up of 14
individuals with long-term road traffic injury-related disabilities. Nine of the 11 individuals recruited
through snowball sampling aligned neither to the NAPPD nor to the NFPDN.

The first author (MC) began recruitment of HCWs through an internet search of specific service units
which focused on identifying HCWs involved in the care of RTI victims or those who had
insight/influence on this process. Eight HCWs were initially approached directly through an
introductory e-mail followed by a phone call and invited to participate in the study. A further 12
individuals suitable for the study were recruited via snowball sampling from the initial eight; the
sample had a total of 20 participants.

2.4 Interview procedures and Analysis

No monetary benefits or gifts were given and participation in the study was entirely voluntary. All
interviews were conducted by the first author (MC) and performed individually at a time and place
most convenient for the participants. All interviews were recorded and lasted 40 minutes on average.
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 HCWs, 55% (n=11) were male, and 45% (n=9) were
female, with an average of 9.6 years work experience each. The HCWs interviewed included
rehabilitation, nursing and medical professionals, working in both the public and private sectors, in
different regions of the country. With regards to the injury victims, 57% (n=8), were male, 43%
(n=6) were female; 79% were aged below 40, with the average age of 34.6 years.

Semi-structured, open-ended questionnaires were developed for both HCWs and injury victims. These
were based on existing RTI questions and adapted for factors pertinent to access to physical
rehabilitation in Namibia. 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 for both injury victims and HCWs. Income is a sensitive subject in Namibia, thus we focused on level of education for socio-economic standing.

2.5 Analysis
Analysis started with careful review of tapes leading to full transcription of audio recordings. All transcriptions were done within seven days of the original interview by the lead author (MC).

In line with the six-step framework of [14], data from both sets of interviews were analysed using thematic analysis. This framework is reportedly the most widely used approach in thematic analysis because it gives a clear and usable framework for conducting analysis [15]. One important advantage of thematic analysis is that it not only allows for data interpretation, but is also beneficial for producing analyses suited for informing policy development [14]. We coded the data manually because of the relatively small sample size. In line with an inductive approach, codes formulated were data-driven, with no pre-defined themes to guide the coding process.

2.6 Ethical considerations
We obtained ethical approval from both the Ministry of Health and Social Services in Namibia (No. 17/3/3) and the UCL Ethics Committee (No: 7417/001). Participation in the study was entirely voluntary with no incentives given. Participants were given information sheets, with explanations provided with regards to confidentiality being maintained throughout the study. Following this, participants were requested to sign a consent form to ensure they understood the information given and also to provide an opportunity for them to ask questions. The form also made sure participants were aware of their right to withdraw at any time. There was a plan in place that if any road injury victims became distressed during interviews, or seemed in need of further support or information, they would be referred to local disabled people’s organisations (DPOs) which were contacted prior to the interview process. However, this was not required as none of the participants needed such support.
3.0 Findings

3.1 Availability of rehabilitation - road injury survivors

Findings from our interviews showed that the current system for RTI support under the MVAF provides medical care at the time of injury. As noted in section 1.0, rehabilitation is also crucial to restore those with injuries to their best functional levels and there is provision in the MVAF to provide such care. Although most road injury survivors reported that following the injury they had received rehabilitation, they also felt that the longer-term rehabilitation system does not function as smoothly as the medical care in the immediate aftermath of the injury. For example, several of those interviewed indicated that although they had received trauma care, they had not received any rehabilitation, despite the need for this following the road injury. For example, one of the participants reported having sustained a lower limb fracture and being given crutches but had not been able to get an appointment to see a physiotherapist to teach her how to use them and consequently had used them incorrectly, which complicated her injury as she was incorrectly putting excessive weight on the fractured limb.

Some participants reported they felt the rehabilitation they had received was neither sufficient nor comprehensive. One participant (L4), a young man who had a complete (cervical) spinal cord injury and was paralysed in all four limbs, had been an in-patient in a spinal rehabilitation unit. He expressed dissatisfaction because he had not been taught about bowel evacuation and reported that once discharged from the unit he needed to figure this out on his own.

The most significant finding, however, was that services seem to be available primarily in Windhoek but limited elsewhere. This was noted by a number of the injury survivors, who consistently highlighted a difference between access to rehabilitation in Windhoek compared with the rest of the country, especially the rural areas. An example was provided by one quadriplegic participant who reported that after treatment and rehabilitation in the capital Windhoek he was discharged to his home town in the region where he was to have follow-up treatment with an occupational therapist (OT). The regional OT did not know how to assist him and carry out further management. In order to be sent
back to see the OT in Windhoek, he had needed to contact the MVAF. Gender and age did not seem to have any influence on the responses given by participants. However, the majority of those reporting living outside Windhoek (and consequently reporting reduced access to rehabilitation services due to location) had lower levels of education compared to those in Windhoek, which is the most expensive location in Namibia.

Lack of comparable or available care had led some of the participants to move to Windhoek from their homes in rural areas after the injury specifically in order to access better healthcare services. For example, L14, a young woman paralysed in her lower limbs highlighted this when she said:

*I was staying in Rosh Pinah, it’s a small town in the south of Namibia. There is only one hospital. The treatment wasn’t up standards as to Windhoek’s. So, that’s why I had to move to Windhoek.*

Another participant however reported having actually moved from Windhoek to the rural area where her mother lived in order to have family support, thus having to decide between better rehabilitation services or family support. She highlighted she was unable to have any follow-up rehabilitation treatment following the move.

*No, I did not get any rehabilitation or anything because I had to move from Windhoek to the rural areas. My mother was in the rural areas and there, there are no rehabilitation facilities.*

[L5, 32 year old female]

### 3.2 Availability of rehabilitation - HCWs

All HCWs reported that a greater proportion of road injury survivors in Namibia were able to access rehabilitation treatment due to the involvement of the MVAF. Specifically they pointed out that access to rehabilitation for road injury survivors had greatly improved from the previous years. This was due both to the decentralisation of the organisation from the previous one central office in
Windhoek to the seven regional offices, which began in 2008, and to the introduction of MVAF case managers. They felt this had made the MVAF more accessible to people in rural and regional areas.

Despite these well-intentioned efforts to decentralize care, however, HCWs felt that equitable access to treatment nationwide still needed significant improvement. Most HCWs reported that a considerable proportion of injury survivors, despite the involvement of the MVAF and the improvements noted, were not able to access rehabilitation services and treatment. The major reason given for this was a lack of personnel, resulting in a general lack of access to rehabilitation in Namibia. Several of them noted that rehabilitation services in both the private and public sectors were already overwhelmed because of low staffing levels and long waiting lists. Thus, despite funds being available from the MVAF, road injury survivors needed to wait to be seen, which compromised their recovery to optimal functional levels.

One physiotherapist attributed this to the lack of training opportunities. He highlighted that at the time of interview there were no universities offering courses to train physiotherapists, occupational therapists, speech therapists, and orthotists/prothetists, with all staff in this line of work having trained mostly in South Africa, other neighbouring countries, or overseas.

HCWs interviewed went on to explain that most of the rehabilitation services, including those in the public system were concentrated in urban areas, especially in Windhoek. For example, P18, a Rehabilitation quality specialist at MVAF, reported:

Yeah, I think the biggest challenge is that rehabilitation services are concentrated in the urban areas. Not just the urban areas, but the main major urban areas. That’s where you find most of the physios, OTs, speech therapists. So if a person is coming from a rural place, for them to access these services, they need to travel to those particular centres where they can get such services.
Adding to this, P13, an orthoptist in Windhoek, reported that community outreach was the only other way those in non-urban areas could access rehabilitation services. However several HCWs criticised community outreach in Namibia as having been generally irregular and erratic. In addition, P13 reported his team had identified that some of the people needing to access their services in remote areas had no knowledge of the outreach programs and outreach dates, whilst for others, travelling distances had been a barrier.

Meanwhile, several of the HCWs also highlighted that even when services were available in regional centres and rural areas, there was a lack of specialised rehabilitation staff in those areas compared to the urban areas. For example P5, an occupational therapist in the Spinalis unit in Windhoek, reported that some of their road injury patients who had been discharged to the care of regional hospitals had developed potentially life threatening complications.

What we see in the northern regions is that, obviously there is a physio and an OT, but they are not trained specifically with spinal cord injuries. So, the patients get secondary complications and can die from them.

A senior occupational therapist in Windhoek, (P6) noted that most of the staff who worked outside the main cities lacked clinical experience and had less opportunities to pursue continuing professional development courses compared with those in Windhoek;

Here, you've got a higher chance of being sent to courses for CPD activities. There is not much happening out there. So the quality that you get at a regional hospital is different from the quality of service at a tertiary hospital.

HCWs explained that although there were national groups for physiotherapists and OTs such as the Namibian Society of Physiotherapy which organised continuing development courses, the majority of the courses were done in Windhoek, the capital city. They explained the courses had to be paid for by the individual and the additional expenses of travelling and staying in Windhoek were deterrents for
practitioners based outside the city. Adding to this, other HCWs reported that OTs and
physiotherapists in the regional centres had less time to do any clinical work as they also have a lot of
administrative duties. They noted that as a result, their rural colleagues were not as clinically exposed
and could only offer patients, including road injury survivors, limited treatment sessions. They added
that frustration at the short treatment times, added to the often long distances of travel to reach
rehabilitation services, had resulted in some road injury survivors not coming back for follow-up
treatment.

Meanwhile, P6, a senior occupational therapist in Oshana, noted that due to the extensive
administration responsibilities required by the rehabilitation professionals in the districts and rural
areas, auxiliary staff lacking any qualifications titled medical ‘rehabilitation workers’ would often
conduct the actual treatments of patients. P6 felt they were not adequately trained to manage the
treatment sessions of the injured and required extensive training.

Also discussing the quality of rehabilitation services outside the major centres and in rural areas,
several HCWs raised the point that due to the low staffing numbers of rehabilitation personnel and
poor community rehabilitation services in rural areas, family members were being trained to continue
with the rehabilitation of road injury survivors following discharge from hospital to their home areas.
They highlighted that because care givers were not suitably trained, road injury survivors generally
had poorer outcomes and developed more complications in these areas compared to those in
Windhoek and other major centres whose continuation of care was managed by professionals.

For all these reasons, HCWs felt that road injury survivors living outside Windhoek, especially in
rural and district areas, were disadvantaged in terms of access to rehabilitation services and treatment.
They also explained the high levels of inequality in Namibia and associated living in rural areas with
greater levels of poverty compared to urban dwellers. They reported that in the long-term they had
poorer outcomes as they were less likely to reach their full physical potential and more likely to have
residual disabilities following rehabilitation which would worsen the cycle of poverty. In fact, some
of the HCWs interviewed noted that some road injury survivors who had relatives living in Windhoek had moved there in order to access better rehabilitation services and to enhance their chances of reaching pre-injury physical potential. This also echoed the reports of some of the road injury survivors, noted earlier in this paper, who decided to move to Windhoek because the services in their local areas were not as comprehensive.

The MVAF was also criticised for limiting the number of rehabilitation sessions available to those with injuries. P17 reported the referral of injured survivors by the MVAF to rehabilitation services had become more complex, requiring a doctor to prescribe these services and authorisation. P17 reported difficulties with this process because of a general lack of knowledge on rehabilitation services. Sometimes, the MVAF case managers will just say that there is no need for therapy even if the doctor wrote the referral letter. And sometimes they give you the authorisation and they say the patient can have five sessions. Then you think, for severe head injuries, you can’t do five sessions and say that’s it! So, in the end the patient is the one who will suffer.

4.0 Discussion

The results in our study indicate that most survivors reported they had been able to access physical rehabilitation following injury due to the strengths of the MVAF. HCWs also reported that most road injury survivors were able to access rehabilitation. Both groups identified the involvement of the MVAF as instrumental to this because they were paying for the rehabilitation costs following injury. HCWs reported that the MVAF was also arranging for rehabilitation services to be accessed in private clinics, where services were deemed to be better and the injured could be seen more quickly, without any long waiting lists. In comparison, HCWs reported that access to rehabilitation services for non-RTI related injuries for the Namibian population requiring this was very low because of the absence of a scheme like MVAF meaning they have to pay the costs individually. Additionally, considering that only 15% of the population have medical insurance [16], HCWs reported that the costs of paying
for treatment outside the MVAF system can be a barrier to accessing care such that they end up not being to access services like rehabilitation, which are essential in regaining their full potential.

As noted in section 1.0, very little research on the accessibility of rehabilitation services following road injury has been done globally. On the African continent, one of the few comparable studies on rehabilitation following RTIs is from Ghana [7]. Their results showed that the great majority of people admitted to the trauma service following road injury in Ghana did not receive any rehabilitation services, and the few that did received inadequate services [7]. Comparing the findings in our study, which show that most of road injury survivors were able to access rehabilitation services, despite the low general levels of access to rehabilitation in Namibia, indicates the MVAF has been more successful in helping to facilitate rehabilitation services for injury survivors in Namibia than in Ghana, where private motor vehicle third-party liability (MTPL) insurance is in place. This makes for a strong argument for other countries in SSA that only have MTPL to adopt a system such as the MVAF, as it clearly seems to have augmented access to rehabilitation services for road injury survivors.

Such motor vehicle fund tax schemes are rare but not unique. The Australian state of Victoria has a scheme similar to MVAF called Transport Accident Commission (TAC). [17] reported that TAC was viewed favourably, with many road injury survivors reporting their treatment costs were being covered by TAC, and minimal out-of-pocket payments. This matches with the findings from our study about how this type of system enhanced access to services following road injury. Another important advantage with regards to the MVAF is the use of rehabilitation case managers, whose activities were reported positively by both HCWs and injury survivors. Similar to MVAF, TAC was viewed positively by road injury survivors because of a single point of contact with TAC, called early support coordinators (whose activities are similar to MVAF case managers) [17, 18]. In a study of needs of injury survivors following discharge from hospital, [19] reported that problems with care-coordination and follow-up could be improved by the use of case managers to improve care pathways. Additionally a case manager dedicated to supporting injury survivors could reduce the complexity of health system
for the injured survivors by acting as a single point of contact, providing consistent and up to date
information, and coordinating service provision [20]. Care coordination by case managers can also
promote timely access and engagement with appropriate services based on individual needs, improve
quality of care and the flow of information between service providers, as well as enable cost savings
[18]. Additionally, case managers can promote independence and autonomy for those with severe
injuries [20]. Significantly, [18] 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. “In the absence of an accountable key coordinator, long-term planning, information
sharing, and the alignment of needs with resources, did not consistently transpire” [18: pg 579).

Another important finding from both sets of interviews was that although most road injury survivors
were able to access them to a certain extent, rehabilitation services were generally lacking in Namibia
and were also were greatly skewed, with most services located in Windhoek and other regional urban
areas, and almost absent in peri-urban and rural areas. HCWs reported that despite the involvement of
the MVAF, including how they were paying for all the treatment/rehabilitation costs, a considerable
proportion of road injury survivors were not able to access rehabilitation services.

Several reasons were given by HCWs and the injured who were interviewed. The main reason given
for this was that they lived too far away from these services and accessing transport to travel the long
distances services (especially for those with lower limb problems) was difficult, with transport costs
being also being a limiting factor. The accounts given by HCWs matched those of the injury survivors
who had lived outside Windhoek. They reported that services were concentrated in Windhoek and
lacking in other regions or too far away to travel to - such that some of them had needed to move to
Windhoek from their homes in order to access rehabilitation and other health services.

HCWs also revealed that there was also a severe shortage of rehabilitation staff generally in Namibia,
which was compounded by the fact that Namibia did not have any training facilities for rehabilitation
personnel. This scenario has changed recently, with the University of Namibia offering the first
Physiotherapy and Occupational Therapy undergraduate places in the 2018 academic year [21, 22]. However, despite the advancement, places for the programmes were reported to be very limited at 15 per year and at least 10% of places being reserved for international students to allow the university to benchmark [21].

HCWs also reported that the staff in Windhoek were more specialised and likely to have more experience with RTIs. This matched some of the reports of injury survivors, who indicated the service they had received once discharged to the regional towns had not been as good and they had needed to go back to Windhoek to receive additional treatment. HCWs also revealed that rehabilitation staff outside Windhoek also had a lot of administrative duties and less time for clinical work such that they could only offer patients with road injuries, and others, limited treatment sessions. The main point HCWs were making, as they explained these regional disparities, was that road injury survivors living in the rural areas were likely to have poorer outcomes as their access to rehabilitation services was more limited, due to these various factors, and was also more likely to be of lesser quality. Their reflections also underscore the missed opportunity to provide solid, on-going, funded, professional training either in person or remotely to colleagues in rural areas.

The findings in our study match findings of other researchers in Namibia. Qualitative work by [5] found that accessing rehabilitation and other health care facilities in rural areas was a major problem for people living with disabilities. They reported that regardless of type of disability, people living with disabilities complained of lack of rehabilitation in almost all of the rural clinics [5]. Similarly, in the study by [23], participants noted that rehabilitation services for people living with disabilities were concentrated mainly in Windhoek, and those in other regions and in rural areas did not have the same opportunities for treatment and rehabilitation. Adding to this, [23] and [24] reported that skewness of rehabilitation services is partly because of severe shortages of staff such as physiotherapists and orthotists, which also matches our findings. Similarly, [5] concluded that transportation was one of the biggest problems people living with disabilities face in accessing rehabilitation and other health services, especially for those with lower limb, spinal and neurological disability. In their study, most
rural healthcare facilities were found not to have transport facilities and did not arrange transport 
unless somebody was very sick, which could take long periods [5]. The researchers also reported that 
the costs of transportation for people living with disabilities can be prohibitively high [5]. Other 
studies in SSA have shown similar findings. In Malawi, [25] also found that the cost of transportation 
was exorbitant with participants interviewed recalling long, painful trips walking to the hospital as the 
only option because of financial problems and sometimes leading to delayed care. Similarly, in Sierra 
Leone, the findings of [26] showed that patients could not afford transport to rehabilitation centres. 
Similar findings have even been also noted in HICs. In a study of the experiences of injured patients 
in Victoria, Australia, [10] found that participants reported opting not to attend rehabilitation because 
of the distance family members had to travel to visit them in inpatient rehabilitation facilities when 
outpatient rehabilitation was not available.

Considering that the majority of people in Namibia live in rural areas [27], the enhancement of 
services outside the main cities will be of benefit not only to road injury survivors, but also to many 
other people living with disabilities, older adults and the rest of the population. A big step towards this 
would be for the government to train more rehabilitation professionals. Another solution would be the 
training of adjunct multipurpose rehabilitation workers with basic training in a range of disciplines 
(occupational therapy, physical therapy, speech therapy, for example), or as profession-specific 
assistants that provide rehabilitation services under supervision.

This has been done successfully in several LMICs: countries such as India, Lebanon, Myanmar, 
Thailand, Viet Nam, and Zimbabwe, have all responded to the lack of professional resources by 
establishing mid-level training programmes [28]. The advantage of mid-level training is that it is less 
expensive, and although it may be insufficient by itself, it may be an option for extending services in 
the absence of full professional training [29]. The shortage of rehabilitation personnel in Namibia has 
also been attributed to brain drain but a positive side-effect of mid-level training is that trained 
professionals are limited in their ability to emigrate to HICs [29]. These workers could also fill the 
gap for professionals not wanting to work outside urban areas.
Another solution could be the use of modern technology. In Namibia, most people now own mobile phones. According to [30], the use of information and communication technologies (ICT) for rehabilitation is an emerging resource that can enhance the capacity and accessibility of rehabilitation measures by providing interventions remotely. The advantage and need for ICT is even more apparent this year (2020) due to the COVID19 outbreak and may be the way forward in future as the world becomes even more globalised. Tele-rehabilitation technologies include video and teleconferencing technologies in accessible formats, mobile phones, and remote data-collection equipment and tele-monitoring [6]. Technology may be used by people with disabilities, rehabilitation workers, peers, trainers, supervisors, and community workers and families. Tele-rehabilitation techniques have successfully enabled people in remote areas to receive expert treatment from specialists located elsewhere in vast areas including cardiac rehabilitation [31], speech and language therapy [32], and cognitive rehabilitation for people with traumatic brain injury [33] as well as training and support of health-care personnel computerized guidelines to help clinicians use appropriate interventions [6].

5.0 Limitations

Although we conducted the interviews until data saturation and such a sample size is not unusual for a qualitative study, one limitation to this study is the relatively small sample size. Thus, although the experiences shared by participants in this study were an important source of information and evidence, their experiences cannot be generalised to Namibia’s whole population of those injured in RTIs and the HCWs involved in their care.
6.0 Conclusion

The overall consensus of road injury victims and HCWs who provide that care, was that due to the MVAF, most of those injured in RTIs in Namibia have some level of access to physical rehabilitation following injury. The MVAF system has been shown to be effective in terms of making physical 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. However access to services has also been shown to be skewed, with most services and rehabilitation professionals being concentrated in Windhoek and other urban centres and almost deficient in rural areas such that injury victims in those areas have long distances to travel to access the services. Consequently, they have less access to rehabilitation and are more likely to have long-term complications and not reach full physical potential. Thus they are more likely to be deprived of the essential rehabilitation which is key to optimal recovery. This requires attention from the Namibian government to improve services across all areas of the country.

Words: 6,124
List of Abbreviations

DPO: Disable People’s Organisation

HCWs: Health Care Workers

HICs: High Income Countries

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

WHO: World Health Organisation
Declarations

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Declaration of interest

The authors report no conflicts of interest.

Data availability statement

The datasets generated and/or analysed during the current study are available in the (Chatukuta: 2019, UCL depository): https://discovery.ucl.ac.uk/id/eprint/10088775/
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(Accessed 19 October, 2020).


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

<table>
<thead>
<tr>
<th>Benefit type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Benefits</td>
<td>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.</td>
</tr>
<tr>
<td>Injury Grant</td>
<td>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.</td>
</tr>
<tr>
<td>Funeral Grant</td>
<td>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.</td>
</tr>
<tr>
<td>Loss of Income</td>
<td>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.</td>
</tr>
<tr>
<td>Loss of Support</td>
<td>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.</td>
</tr>
</tbody>
</table>

Source (MVAF, 2018)

The amount allocated to each individual is based on the severity of injury. 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 are also provided with a monthly caregiver allowance.
Figure legend

Figure 1.1: Map of Namibia
Figure 1.1: Map of Namibia

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