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(RESEARCH ARTICLE)

Road Traffic Crash-Related Musculoskeletal Injuries in Bafoussam, Cameroon: Exploring the Gaps in Physiotherapy Access and Utilization: A pilot study

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Abstract

Background: Road traffic crashes worldwide result in significant morbidity and mortality, with musculoskeletal injuries often neglected in primary management. This study aims to investigate the prevalence and management of Road Traffic Crash-Related Musculoskeletal Injuries (RTCMI) in Bafoussam, Cameroon.

Methods: We conducted a prospective cross-sectional study in Bafoussam's hospital emergency units from January to June 2024. Using an exhaustive sampling, we enrolled 120 road traffic traumatic victims who provided informed consent to participate in the study. We excluded patients unable to communicate due to trauma status. Data analysis employed Excel 2016 with a 95% confidence interval.

Results: Our study revealed a RTCMI prevalence of 73%, with fractures being the most common injury (80%). Notably, physiotherapy was not prescribed in primary management, and only 11% received Physiotherapy prescriptions in secondary care. A mere 17% of respondents requested physiotherapy, citing prescription failure (100%), lack of knowledge (83.6%), preference for traditional treatment (21.9%), and high costs (2.7%) as barriers.

Conclusion: This study highlights the need for further research into RTCMI management and physiotherapy integration in Cameroon. Our findings suggest significant gaps in prescription, awareness, and accessibility, emphasizing the importance of scaling up this study to inform healthcare policy and practice.

Keywords: Musculoskeletal injuries; Rehabilitation; Physiotherapy; Barriers; Bafoussam-Cameroon

1. Introduction

The rapid modernization of road traffic and economic sectors has led to an alarming surge in road accidents, resulting in unprecedented human suffering and socio-economic consequences (1,2). Road traffic injuries (RTIs) are a significant contributor to death and disability globally. The health burden caused by road traffic injuries is increasingly significant, with RTIs being ranked within the top ten causes of disability adjusted life years (DALYs), with the Global Burden of Disease study estimating RTIs caused 73 million DALYs globally in 2019 (3). The World Health Organization (WHO) reports a staggering 1.2 million annual fatalities and 140,000 injuries, with 15,000 individuals left with lifelong disabilities (2). These accidents cause physical after-effects and a deterioration in living conditions (4). This crisis disproportionately affects young people, wiping out a considerable human heritage and imposing severe social and economic burdens (5,6). Road traffic crashes are therefore a major public health issue worldwide (2). This burden falls

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most heavily on low- and middle-income countries (LMICs), where 90% of deaths and disabilities resulting from road accidents occur (5).

In Africa, the devastating impact of road traffic crashes is exacerbated by the high rate of disability, with many victims experiencing permanent motor, sexual, and cognitive impairments (7-9). In developing countries, injuries caused by road traffic crashes claimed more lives annually than the leading transmittable and infectious diseases Malaria, HIV/AIDS and tuberculosis combined in the early 2000's (10). Musculoskeletal injuries (strains/sprains, contusions, dislocations, and fractures) are the most common injuries sustained in a road traffic crash. They can have a long-term impact upon the ability to engage in work. Persisting symptoms as well as poor physical and psychological recovery may reduce the ability to return to or remain at work necessitating the use of sick leave or alternate duties to enable a gradual return to full duties (11). Cameroon, a LMICs, is no exception, with road traffic crashes being a leading cause of permanent disability (12,13). Despite the critical role of physiotherapy in managing musculoskeletal injuries to prevent disability (14,15), a glaring knowledge gap exists regarding its application in road traffic crashes cases in Cameroon (12,16). This oversight is particularly concerning, given physiotherapy's proven effectiveness in reducing definitive disability rates and improving patient outcomes.

The absence of research on musculoskeletal injuries related to road traffic crashes and physiotherapy uptake in Cameroon necessitates this pilot study. By investigating the prevalence of these injuries and physiotherapy utilization in Bafoussam, we aim to address this knowledge gap and identify barriers to physiotherapy access. This study will inform strategies to reduce disability rates, improve patient outcomes, and ultimately mitigate the socio-economic consequences of road traffic crashes in Cameroon and similar African contexts.

2. Methods

2.1. Study design, period and setting

We conducted a cross-sectional study from January to June 2024 in 8 hospitals of the city of Bafoussam: District Hospital of Mifi, Noutcha Clinic of Bafoussam, Saint Paul Clinic of Bafoussam, Arrondissement Medical Center of Bafoussam, Arrondissement Medical Center of King place Bafoussam, La Bienveillance Polyclinic of Bafoussam, Charity Memorial Polyclinic, SOS Medico-surgical Center of Bafoussam. These hospitals were chosen because they are among the hospitals with the highest rates in receiving road traffic trauma patients in Bafoussam. These hospitals were selected on the basis of their technical facilities for receiving and treating road traffic trauma patients.

2.2. Study population

We carried out an exhaustive sampling, were included in this survey all patient's male and female who had been victim of a road traffic trauma during the data collection period, and which have been driven to one of our chosen hospitals. All patients who were unconscious or unable to communicate following their trauma were excluded from the study. Patients who denied their informed consent were not included in this survey.

2.3. Data collection

Data were collected in two stages. The first stage consisted of collecting information from the traumatic patients' files: sociodemographic data (age, sex, religion, level of education, profession); The occurrence of musculoskeletal injuries (which was diagnosed by the medical staff in charge of the patients and medical imaging examinations were carried out systematically when necessary to confirm the diagnosis) in the road traffic crash and the type of injuries, which were classified as: muscle injuries (including all types of muscle injuries); joint injuries (sprains, dislocations, other joint traumas); fractures and traumatic amputations. Then we recorded the first-line protocol performed on patients with musculoskeletal injuries sustained to traffic crash on arrival. Finally, we recorded the prescription of Physiotherapy as part of the subsequent treatment of those patients. The second stage consisted of an interview with the patient having musculoskeletal injuries sustained to traffic crash. The interview guide was recording the following information's: the intend of patients to follow a rehabilitation program. And if not, the barriers to patients' non-use of physiotherapy were assessed by asking them the reason(s) why they did not intend to follow a physiotherapy program.

2.4. Data analysis

After collection, our data were processed and analyzed using Excel 2016. Quantitative data were presented as means, frequencies and percentages.

3. Results

3.1. General characteristics of participants

This study involved 165 patients admitted to hospitals in the town of Bafoussam. However, we excluded 45 participants who, after their accident, were either in a coma or unable to talk to us during the entire study period. We therefore included 120 participants in this study.

As described in Table 1, the average age was 40.2 years (±3.9). The male gender was the most represented in our population, with 83 male participants (69.2%) versus 37 female participants (30.8%). With regard to religious denomination, most of the participants were Christians (84 out of 120, i.e. 70%), while only 10 were animists (8.3%). The least represented profession was that of mechanic (4 out of 120, or 3.3%). In terms of educational level, 2 participants had no schooling (1.7%), while the majority (54.2%) had secondary education.

3.2. Prevalence of Road Traffic Crash-Related Musculoskeletal Injuries

On the 120 participants victims of road traffic trauma, 88 were diagnosed having musculoskeletal injuries, for a prevalence of RTCMI of 73.3%. The most common musculoskeletal injuries were fractures (70 on 88 cases of RTCMI, i.e 79.5%). On the other hand, the least represented RTCMI were traumatic amputation, with only 7 cases of amputation out of a total of 88 cases of RTCMI (2.3%) (cf table 1).

Table 1 General characteristics of participants and prevalence of musculoskeletal injuries

Sex	**Effective**	**Frequency (%)**
Male	83	69.2%
Female	37	30.8%
Religion		
Christian	84	70%
Muslim	26	21.7%
Animist	10	8.3%
Profession		
Farmer	8	6.7%
Trader	9	7.5%
Housewife	14	11.7%
Student	23	19.2%
Mechanic	4	3.3%
Drivers	16	13.3%
Other profession	46	38.3%
Educational level		
No schooling	2	1.7%
Primary	30	25%
Secondary	65	54.2%
Higher	23	19.1%
Diagnostic of RTCMI		
Yes	88	73.3%
No	32	26.7%

Total	120	100.00%
Type of RTCMI		
Muscle injuries	9	10.2%
Fractures	70	79.5%
Articular injuries	7	7.9%
Amputation	2	2.3%
Total	88	100.0%

3.3. Protocol for managing Road Traffic Crash-Related Musculoskeletal Injuries patients on admission

In most cases of RTCMI (59 on 88, i.e 67%), the protocol applied was exclusively drug therapy combined with surgery. Rest was prescribed in 1.2% of cases. Physiotherapy was not prescribed in any of the management protocols for RTCMI patients on admission (table 2).

3.4. Prescription of rehabilitation/physiotherapy after initial treatment

After the initial treatment, in the continuity of the follow-up, rehabilitation was prescribed for only 10 of the 88 patients with RTCMI (11.4%) (Table 2).

3.5. Patient solicitation for Physiotherapy

Of the 88 patients with RTCMI, 15 requested rehabilitation (17%). Among the 15 patients who requested rehabilitation, only 3 patients did it under medical prescription (20%). Of those 15 patients who sought rehabilitation, 9 (60%) had a higher level of education (Table 2).

Table 2 Protocols for managing Road Traffic Crash-Related Musculoskeletal injuries, prescription and solicitation of physiotherapy

Protocols prescribed	**Effective**	**Frequency (%)**
Drugs	16	18.2%
Drugs and surgery	59	67%
Casts	12	13.6%
Rest	1	1.2%
Physiotherapy	00	00
Prescription of Physiotherapy/Rehabilitation after initial treatment		
Yes	10	11.4%
No	78	88.6%
Solicitation of physiotherapy by patients		
Yes	15	17%
No	73	83%
Total	88	100%
Solicitation under prescription		
Yes	3	20%
No	12	80%
Solicitation by Educational level		
Primary	1	6.7%

Secondary	5	33.3%
Higher	9	60%
Total	15	100%

3.6. Reasons for not requesting rehabilitation

As described in Table 3, on the 73 participants who did not request Rehabilitation the following reasons were enumerated: The first reason listed by all was non-prescription (100%); then the second reason for 61 participants was lack of knowledge of Physiotherapy (83.6%); 16 (21.6%) participants preferred traditional treatment and finally just 2(2.7%) participants listed the high cost of Physiotherapy.

Table 3 Reasons for not requesting rehabilitation

Reasons	**Effective**	**100%**
Lack of knowledge	61	83.6%
High cost	2	2.7%
Traditional treatment preference	16	21.9%
Prescription failure	73	100%
Total	73	100%

4. Discussion

The aim of this study was to determine the epidemiology of RTCMI in the city of Bafoussam, and the factors influencing the solicitation of physiotherapy treatment.

The prevalence of RTCMI in the town of Bafoussam was 73%, which corroborates the results of several studies (17-19). This predominance of RTCMI could be explained by the poor condition of the roads, the failure to apply road safety rules, poverty and all its corollaries (18). However, this prevalence is higher than that obtained by Moussa Kalli, where the frequency of musculoskeletal trauma was 44.6%. This difference could be explained by the difference in study populations, as in this study, they studied trauma only in elders (20). The nature of the musculoskeletal injuries encountered was 79.5% fractures, 10.2% muscle injuries, 7.9% joint injuries and 2.3% traumatic amputation. These results are in line with those found by Peter M. et al, where fractures were more frequent (21). This similarity could be explained by the similarity of the study populations. They are similar to those found by Ibrahima F et al, where the percentage of fractures also represented more than half of the injuries encountered (67.8%) (18), but also to those reported by HOEKMAN in Niamey, Niger (22), with a net predominance of fractures (65.4%). This could be explained by the violent impact of crashes caused by excessive speed on our roads. These findings show us the burden of musculoskeletal injuries related to road traffic crashes. Measures should therefore be taken to improve intercity road traffic in the city of Bafoussam and its surroundings in order to reduce the burden of these potentially disabling injuries.

The most common first-line protocol used in treatment for RTCMI was medication combined with surgery (67%). This is similar to the Bouhelo PAM et al. results (23) where surgical treatment was the most frequently encountered. We can explain these results by the predominance of fractures in both studies. However, physiotherapy treatment was not prescribed in the first-line follow up treatment protocol of these patients. In our study, the frequency of prescription of physiotherapy was only 11% in all the different cases of musculoskeletal injuries encountered, which is totally contrary to what is recommended in the literature, because physiotherapy should be used as early as possible to reduce the risk of disability and facilitate the return to active life (24-26). The integration of rehabilitation into health systems is limited across LMICs. Governance and financing for rehabilitation are mostly established within health ministries but weakly so, while health information systems are characterized by no available data or data that is insufficient or not routinely generated. (27). To date, no study has examined the prescription of rehabilitation in cases of RTCMI in Cameroon. Moreover, to date there is no consensus on the prescription of physiotherapy in Cameroon. According to a systematic review by Tess Bright et al, in LMICs, rehabilitation has received little attention from governments, which has contributed to poor service availability and lack of co-ordination between services (28). Then this low rate of physiotherapy prescribing in Bafoussam, Cameroon could be explained by Cameroonian clinicians poor understanding of referral processes (29). The lack of knowledge of medical staff about the fields of application of physiotherapy as well

as intervention times could be another factor explaining this lack of physiotherapy prescription. Also, the lack of physiotherapists could be one of the causes of this non-prescription. According to the Cameroonian Society of Physiotherapy, the number of physiotherapists in Cameroon is insignificant (30). According to WHO recommendations, the prescription of physiotherapy must be effective in RTCMI management in other to reduce the burden of disability (31). Cameroonian healthcare system has many challenges: physiotherapists mostly practicing at secondary and tertiary levels of care; the omission of physiotherapy in health policies. This lack of consideration for physiotherapy in care protocols is very common in LMICs (32), and strategies need to be put in place to facilitate the integration of physiotherapy into care protocols. This would further reduce the use of drugs and the risks associated with their overuse. However, interprofessional collaboration is very important and should be prioritized for better patient recovery (33). Based on this preliminary study, a wider-ranging nationwide study should be carried out into the level of prescription and use of post-trauma rehabilitation with the aim of having a clearer picture of the situation, and to be better able to add strategies to prevent disability caused by road traffic trauma in Cameroon and other low-income countries.

Despite these 11% of prescriptions of Rehabilitation, 17% of patients with RTCMI had sought physiotherapy, which is still insignificant as the majority of patients with musculoskeletal injuries (73%) chose not to undergo physiotherapy program. Among the barriers to seeking physiotherapy mentioned by respondents in this study, non-medical prescription (100%), lack of knowledge accounted for 83.6%. The preference for traditional treatment (21.9%) and the cost of sessions (2.7%). Physiotherapists contribute to healthcare and improve individuals' health status across their lifespan. Lack of knowledge about physiotherapy among the population is a major problem in the integration of rehabilitation into patient care programs in sub-Saharan Africa (27,34). Patients, however, are not helped by the precariousness of the health system, and do not receive appropriate care because they are not informed (34), Cameroon as a LMICs is not spared, although to date this study is the very first to assess the barriers to physiotherapy use in RTCMI in Cameroon. The population's lack of knowledge about physiotherapy is a public health issue that must be addressed. This underlines the need to educate the Cameroonian population about physiotherapy and its fields of action. As a result, this situation should prompt rehabilitation professionals to launch extensive awareness and education campaigns on the importance of rehabilitation in preventing disability. With this in mind, we call on private and public, national and local rehabilitation associations and structures to mobilize actively to change the rehabilitation paradigm in our country.

As a limitation of our study, the sample size was small, the type of study being cross-sectional and yet it would be interesting to really know why medical staff in the town of Bafoussam do not prescribe physiotherapy in cases of trauma. However, this preliminary study highlights the non-prescription of physiotherapy in RTCMI by medical staff and the lack of knowledge of physiotherapy among the population.

List of abbreviations

- DALYs: disability adjusted life years,
- LMICs: Low-Middle Income Countries,
- RTCMI: Road Traffic Crash-Related Musculoskeletal Injuries,
- RTIs: Road Traffic Injuries,
- WHO: World Health Organization

5. Conclusion and implications

In conclusion, our study highlights the alarming prevalence of Road Traffic Crash-Related Musculoskeletal Injuries at 73% and the stark underutilization of physiotherapy at 11% in Bafoussam, Cameroon. The identified barriers, including lack of prescription and patient knowledge, underscore the urgent need for further research to inform evidence-based policies. There is a critical necessity for interprofessional communication and collaboration to prioritize rehabilitation in care protocols. Policymakers and healthcare stakeholders must act swiftly to address these gaps, ensuring that patients receive comprehensive care. Further studies are essential to explore effective strategies for integrating physiotherapy into trauma management, ultimately reducing the burden of RTCMI and improving patient outcomes in Cameroon and similar LMICs.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Statement of ethical approval

This study was approved by the West Cameroon Regional Ethics and Research Committee (No: 635/26/06/2024/CE/CRERSH-OU/VP). And the study was conducted in respect of ethics in human research norms.

Statement of informed consent

Informed consent was systematically obtained from all respondents after the study objectives had been explained to them.

Authors contribution

HTG: study design, study supervision, writing the original manuscript, editing, revising; EATN: data analysis, data collection, editing. All authors read and approved the final manuscript.

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Availability of data

The dataset used in this study is not publicly available in other to protect participants data and avoid any misused. However, the datasets are available from corresponding author on reasonable request by the editorial team.

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