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Edorium J Disabil Rehabil 2016;2:70–77.
www.edoriumjournals.com/ej/dr

ORIGINAL ARTICLE PEER REVIEWED | OPEN ACCESS

Characterizing disability and perception of rehabilitation in the health District of Dschang, Cameroon

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ABSTRACT

Aims: Disability and Rehabilitation Medicine are lagging behind in resource-limited settings (RLS). Baseline data from these settings should set goals for implementation. Following legislation (N°83/013/1983) on the protection of persons with disabilities in Cameroon, we sought to assess the types and potential determinants of physical disability, in order to set-up pitfalls towards better protection and promotion of human rights among disable Cameroonians. Methods: A cross-sectional study was conducted in June 2013 among physical disable individuals living in the Health District of Dschang, a locality of the western region of Cameroon with people from diverse origins. A standard questionnaire identifying disabilities and related socio-economic and health determinants was administered to each identified disabled. Results: Out of 159 physically disabled (55.9% female and mean age 36 years [sd±17.26], 33.8% with primary educational-level), orthopedic (mainly due to fracture [45.8%] and infectious diseases [29.1%]) and neurological disabilities (mainly hemiplegia [33.3%], hemiparesis [23.8%], and monoplegia [23.8%]) were leading types of disabilities. Main causes of disability were traffic accidents (17.8%) and inappropriate medical interventions (14.5%). Disability onset decreased significantly with age (from 41.4% for 0–10 years to 0.6% for 70–80 years old, p=0.00508), and 50% experienced social discrimination/stigmatization. The disabled had low-income (XAF 50,000–200,000) to pay for rehabilitative care (XAF 10,000–100,000), and up to 83% appealed for an improved quality of rehabilitation medicine. Conclusion: Wider range of disabilities calls for safer transportation, medical interventions and disease prevention, implementing standard approaches towards rehabilitation and social reintegration of the disabled living in typical RLS.

Keywords: Physical disability, Rehabilitation, Cameroon, Community healthcare, developing countries

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Received: 14 December 2015
Accepted: 31 March 2016
Published: 06 July 2016

How to cite this article

Foti C, Azeufack YN, Sobze MS, Albensi C, Guetiya RW, Mindjomo R, Sipewo M, Djouana I, Mba A, Metomo E, Nkone I, Ndongo M, Awawou M, Tuiedjo C, Onohiol JF, Dongho BD, Nkamedjie PP, Colizzi V. Characterizing disability and perception of rehabilitation in the health District of Dschang, Cameroon. Edorium J Disabil Rehabil 2016;2:70–77.

Article ID: 100013D05CF2016

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doi:10.5348/D05-2016-13-OA-9

INTRODUCTION

According to a joint report of the World Health Organization (WHO) and the World Bank Group in 2011, the global burden of disability is 15%, implying over one billion people with disability, including 200 million experiencing considerable functional difficulties [1]. The majority of disabled are children living in resource-limited settings (RLS), with little hope of recovery [2]. Many of these disabilities could effectively be handled with basic prevention and rehabilitation interventions [3–6], but such initiatives are hampered by inadequate infrastructure and lack of trained professionals in the health system of RLS [6–10]. Disability is an emerging health problem in sub-Saharan Africa (SSA) where disabled children are socially considered misfortune and perceived by family members as a burden/humiliation (i.e., a divine or ancestral punishment), leading to inattention and poor care/treatment [7–13]. Thus, educational needs are of less priority to such children, because considered as a deplorable investment both at societal and family levels [14].

The declaration of the rights of persons with disabilities since 1975 invited the United Nations Member States to promote, wherever possible, the socio-economic integration of people with disabilities [5, 15], in the frame of moral duty to remove the barriers to participation, and to invest sufficient funds and expertise to unlock the vast potential of disabled people [5]. Thus far the disabled had access to health, rehabilitation, support, education and employment [5, 15].

In Ghana for instance, 55.1% of disabled population were female (~2.4 million people), experiencing mainly physical and emotional abuse (less likely to marry but more likely to divorce) [7]. Interestingly, girls with disabilities receive fewer years of schooling than male counterparts, and poor admission to healthcare, as well as inaccessibility to education/training and socio-economical activities [7].

Due to socio-economical and anthropological similarities, the aforementioned observations could also be extended to other SSA countries (Malawi, Namibia and Zambia). Thus, in the process of development and decentralization, integrating disabled people, shifting from traditional beliefs and practices might enhance the involvement of disabled people in the community life [8–10].

The city of Dschang is located in the west region of Cameroon, with a geographical area 225 km², based at 5°27' North, 10°04' east, and at 1500 m altitude. It is bordered to the South by the Santchou and Bandja Health District (HD), to the East by Penka-Michel, to the Northeast by Batcham, to the West and Northwest by the Southwest region. The population is about 268.091 inhabitants, with a density of 451 inhabitants per km². The average weather is about 16–21°C, with a maximum of 31°C during the dry season in April. The Bamileke represent the majority ethnic group, followed by the Hausa, the Bamoun and the Mbo ethnic groups. The economy is predominantly driving by agriculture/farming, breeding and small scale-traders. Men represent 50.5% against 49.5% for women. Two main religions are Christianity and Muslim. The university constitutes an essential daily component of the city of Dschang, with more than 20,000 students registered in five different faculties. The most relevant is the initiative of the Master in Physiotherapy that has been activated in 2013 with the active support of the PRM Chair, Tor Vergata University and equipped with the support of the UNESCO Chair. The health district of Dschang is made up of 22 Health areas with 56 Health Facilities: it has one District Hospital, three private hospitals, one medical and social welfare center (at the University of Dschang), three health centers, two medical cabinets, 28 integrated health centers, 18 private health centers, three outpatient health facilities and, since February 2015, the Pavilion Pasteur, the new department of Physical and Rehabilitation Medicine in the Hospital of Dschang.

In Cameroon typically, Article 3, Law N°83/013 of 21 July 1983, promotes the prevention and detection of disabilities, care, education, training, vocational guidance, employment, access to specialized sports, as well as minor or disabled adult leisure are mandatory nationwide, with on-going creation of healthcare centres for persons with disabilities (Doyang, Far-North region; Etoug-Ebe, centre region; Dschang and Bafang, West Region) aiming at providing social support to families of disabled people [16]. With a health system divided mainly into the public and private sectors (not neglecting traditional medicine), over 5% of the Cameroonian populations are suffering from at least one disability (3.5% sensory, followed by 1.6% physical), with higher prevalence in rural areas (6%)

than in urban areas (4%) settings, and the main causes of these disabilities been attributed to diseases (rather than traumatism) [11, 12, 16].

In a country with legislations towards the protection of disabled people and the promotion of rehabilitation [16], generating baseline knowledge on disability and rehabilitation could serve as footprint for pragmatic evidence-based interventions. Such surveys could help in identifying most common types of disability, as well as societal and anthropological determinants of disability, considerations of health professionals in the field of rehabilitation, local needs in terms of rehabilitation training and related activities. We, therefore, sought to evaluate the burden of types of disability in a Cameroonian community, awareness on disability, and the practice and need in rehabilitation within the health system and the local community. Specifically, we assess frequency of people with disability; attitudes and practice towards the disabled; determine local factors potentially linked to disabled conditions; and identify the local needs in terms of academic, professional and community-level trainings in line with an optimal consideration of disability and the effective implementation of rehabilitation.

MATERIALS AND METHODS

Study Design and Population

A cross sectional and descriptive study was conducted throughout the month of June 2013 in a target population of 268.091 individuals living in the Health District of Dschang, a locality of the Western region of Cameroon, in order to identify all existing cases of physical disability, the types and potentially-related determinants in the study community, as well as barriers to adequate healthcare management in such RLS.

Sampling method and data collection

The sampling strategy was a door-to-door survey conducted, following an empirical enrolment of every identified case of physical disability in every household as study participant. The investigative team, trained and pre-tested on the identification of physical disability, was composed of nine groups, further subdivided into four subgroups, each subgroup covering three-four districts, following respondent-driven sampling in households.

Individuals were considered eligible as study participants: (a) if they were living in the Health District of Dschang; (b) if identified with a physical disability according to the WHO definition: Loss of function at the level of the whole person that includes the inability to perform mobility, activities of daily living, necessary vocational or vocational activities, thus requiring assistance; (c) if provided informed consent; and (d) completed a administered study questionnaire (see supplemental digital content 1 [SDC 1]).

Sample size was calculated based on the burden of disability in Cameroon (5.4%, [12]); using 95% interval confidence and 5% standard error rate, a minimal sample size to achieve the statistical power for the study was n = 79. Thus, to increase our statistical power, we doubled the required sample size to total of 159 participants in the present study. Cartography of households of people living with a disability in Dschang was designed for field investigation. Investigative groups by pair visited in the different households within the Health District areas. Following a convenient sampling method, participants were consecutively enrolled upon eligibility, until the required sample size was achieved. An information notice on the study goals was provided to each potential participant. Participants then provided an informed consent and were enrolled in the study. Consenting participants were subjected to a questionnaire using a participative face-to-face interactive approach. Sample size formula was as follows:

$$N = \frac{Z^2 \times PQ}{d^2}$$

With N = minimal sample size (79); Z = 1.96 at 95% confidence interval; P = disability burden at 5.4% (i.e. 0.54); Q = 1- P (i.e., 0.946); and d = 5% error rate (0.05).

Data collection, validation, and analysis

Data were collected using a standard questionnaire that include information of socio-economic and demographic characteristics of study participants, types of physical disability, cause or origin of the physical disability, health, social, economical and professional factors related to the physical disability.

Selection of field investigators was based on qualification (level 2 Master in Epidemiology and Public Health) and successful completion of a two-days training workshop. Field supervisor in each subgroup ensured data consistency threshold (≥80%) and pre-validation. Filled questionnaires were then transmitted to the data manager for final validation, data entry and analysis. Data were then entered into EPI INFO, version 3.5.3 and statistical analysis performed. The *p*-values <0.05 were considered statistically significant in the entire dataset.

Ethical considerations

The present survey was conducted within an international partnership agreement between the University of Dschang in Cameroon and Tor Vergata University, Rome, Italy. Following approval under the responsible department (Biomedical Sciences) at the University of Dschang, informed consent was obtained from all participants, and data confidentiality protected.

RESULTS

Characteristics of the study population

A total of 159 people identified with physical disabilities in the study population were enrolled in the study. The majority were female (55.9%) and the mean age was 36 years (SD±17.26). according to educational level, 33.8% (50/148) had a primary level, 45.9% (68/148) a secondary level, 17.5% (26/148) higher and 2.7% (4/148) without any academic attendance.

According to occupational activities, the most encountered features were: 22.9% (33/144) were students, 20.8% (30/144) small medium scale traders, (24/144) 16.6% housewives, 6.2% (9/144) state employees, 4.2% (6/144) farmers, 21.5% (31/144) diverse occupations, and 7.7% (11/144) were unemployed.

Physical disabilities identified

Most common physical disabilities encountered were orthopedic traumatisms (n=48), among which 45.8% (22/48) fracture (leading often to amputation-related disability), 29.1% (14/48) infectious diseases, 12.5% (6/48), 10.4% (5/48) crushes and 2% (1/48) malformation.

Orthopaedics-related disabilities were followed by neurological disabilities (n=42), among which hemiparesis in 23.8% (10/42), hemiplegia in 33.3% (14/42), monoplegia in 23.8% (10/42), paraplegia in 7.1% (3/42) and 11.9% (5/42) tetraplegia.

Causes of disability

Most common reported causes of identified physical disability were: 22.5% (34/151) pathologies, 17.8% (27/151) traffic accidents, 14.5% (22/151) inappropriate medical interventions and 10.5% (16/151) brain damage, as well as other diverse causes summed up to 34.4% (52/151). In the Figure 1, the authors present in detail the various causes of motor impairment.

Age at onset of physical disability

The age of onset of disability ranged from birth to 80 years old. Of note, according to the most common age-range at onset of physical disability, 41.4% (65/157) was between 0–10 years old (with up to 18.4% of these occurring at birth), 16.5% (26/157) between 11–20 years old, 10.8% (17/157) 21–30 years old, 3.1% (5/157) between 31–40 years old, 3.1% (5/157) between 41–50 years old, 3.1% (5/157) between 51–60 years old, 2.5% (4/157) 61–70 years old, and 0.6% (1/157) between 71–80 years old (Figure 2). Overall, there was a significant decreasing trend in the onset of disability with older age (p=0.00508), with the highest case occurring at birth/delivery (18.4%) and the lowest case occurring at older age (80 years).

Various causes of physical disability were reported by age: The range 0–10 years old had 26.1% (17/65), 23% (15/65) inappropriate medical interventions, 12.3% (8/65) traffic accidents and 4.6% (3/65) brain damage, and 33.8% 22/65 other diverse causes. In contrast, in the ranges 11–20 years and 21–30 years old, traffic accidents were instead the most reported cause of disability in 30.7% (8/26) and 47% (8/17), respectively. Over 30 years old, the most frequent cause was of disability was disease-related and subsequently brain damage (Figure 3). Of note, poliomyelitis was the most commonly reported disease-related physical disability.

Healthcare and socio-economic potentials of study participants

In terms of disability-related economic aspects, the costs spent locally by study participants for rehabilitative care ranged XAF 5,000–100,000 in Cameroon (€1 = XAF 655.957), for monthly income (those employed) of XAF 50,000–200,000. Of note, costs for rehabilitation in a healthcare facility varied from XAF 10,000–100,000. Moreover, 82.7% were in favor of an initiative towards improved daily income activities.

In terms of disability-related social aspects (n=158), 50% reported being victims of social discrimination and stigmatization. In terms of healthcare (n–108), 48.7%

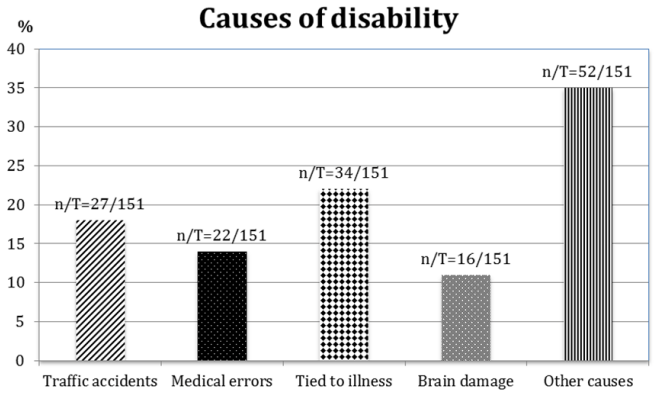

Figure 1: Different causes of disability.

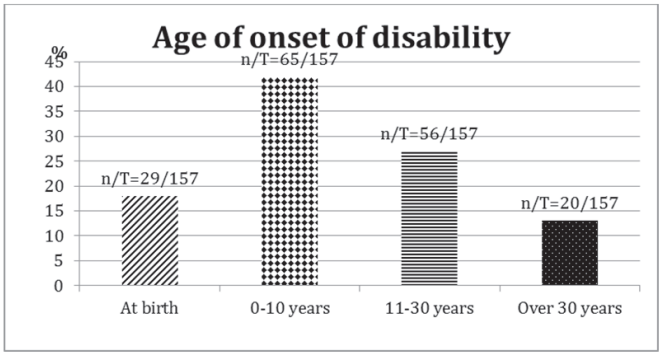

Figure 2: Age of onset of disability.

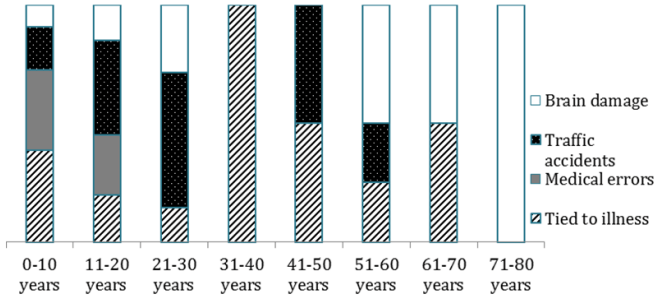

Figure 3: Causes of disability by age.

acknowledged to have received care to their disability: 59.2% by physiotherapy in a centre, 27.7% by traditional rubs, 7.4% by physiotherapy at home, 3.7% by ambulatory and 1.8% other methods. Though 70.4% reported to be satisfied/relieved with the rehabilitative care they received, up to 83% requested for an improved quality of rehabilitation.

DISCUSSION

Disability and needs of rehabilitation are a growing concern. However, data for evidence-based policies are lacking from RLS. Thus, generating baseline data for countries like Cameroon would set-up needs in disability-related socio-economic considerations, healthcare disparities as well as training requirements for rehabilitation [1–3].

In the present study, disability appears to affects both male and female, as previously reported in the WHO survey [1], and the trends in disability onset decrease with older age, suggesting that children, and especially newborns stand high risk of being physically disabled [2, 17]. This would be mainly due to poor delivery condition that leads to orthopedic impairments, suggesting that reducing risks of disability at very early age requires an improved healthcare service during labor in RLS [1, 6]. This observation is justified by the fact that orthopedic-related disability was the most common in our findings, followed by neurological impairments that is known to be increasing with age in RLS [7–10, 13], due often to cardiovascular diseases which are at a growing rate in these settings [1, 11]. In terms of disease-related disability, poliomyelitis being the most encountered cause, thereby implying the need to continuously strengthen the national health system strategy on such vaccine-preventable diseases, in order to significantly alleviate its impact on the onset of physical disability among Cameroonians [12].

Traffic accidents constitute a major cause of physical disability in Cameroon as well as in other SSA countries, thus suggesting the need to strengthen preventive campaigns as well as sensitizing the population on safe measures transportation system, as being practiced in the western world to reduce events of such accident-related disabilities [1, 2, 18].

Our data also reveal lower levels of school attendance among the disabled, suggesting poorer social and family considerations of those affected or suffering of disability. Similar observations were reported in the WHO Survey (i.e. lower rates of primary school completion and fewer mean years of education among disabled individuals), and with only 41.7% of females and 50.6% of males with disability completing primary schools [14]. Thus, social impairments of disability affect both the make and female in the community with limited resources.

Regarding the educational level, there is need to also design adapted counseling for the disabled to support their active participation to best practices toward rehabilitation, social re-integration, professional empowerment, and contribution to development [13–16]. In this line, as our participants expressed the necessity to participate in societal development, allocating assistance or funds to the disabled for implementing income-generating activities might promote autonomy of these groups of individuals appearing disfavored in their living milieu [18–20].

Although some participants affirmed that they received rehabilitation care, the quality of care was diverse and with several unreliable practitioners (i.e. interventions by traditional healers). This discipline may also need more regulations and standardization in practices, both for standard operational procedures and services-related costs [1, 21, 22]. This underscores the crucial to train health professionals in this field in order to respond actively and efficiently to this burning need in RLS countries with a similar profile to Cameroon. Furthermore, cost to rehabilitative care appears consistent irrespective of the poor incomes of the disabled, suggesting the implementation of integrative physical facilities offering medical, social and psychological assistance to disabled individuals in RLS [20–22]. Of note, as rehabilitation is aimed at enabling persons with disabilities to attain and maintain maximum independence, full physical, mental, social, and vocational ability, and full inclusion and participation in all aspects of life [1], awareness and best practices of this discipline would be of great asset to both the disabled and the non-disabled in RLS [20–23]. In contrast to RLS, rehabilitation practices in the North American and European-union countries adhere primarily to the medical and scientific models. Inspired by such models, an integrative interventional program of both the ministries of health and social affairs would prompt the training of relevant health professional (physiotherapists) and empower disabled individuals, respectively, alongside actions by non-governmental organizations [19–20].

The current study characterizes disability in a resource-limited setting, a context where scarcity of such data does not enable health policy related to disability and rehabilitation medicine. Thus, the key innovation

of our study relies on the fact that the present findings serve as baseline to design effective evidence-based recommendations for countries like Cameroon, with possible endorsement by health bodies. This will also serve as footprint for the implementation of further operational research on the topic. Our findings will, therefore, raise awareness of consideration of such unmeet medical and public health needs locally. This study is the first step to improve knowledge and treatment of disability in Dschang and to create social and medical supports in order to ameliorate the quality of life of disable people in Cameroon.

LIMITATIONS

Some few variables not provided by the participants were not considered during the statistical analysis. With the increased sample size of the study, this did not reduce our statistical power. There were some cases of non-response, at the discretion of the responding participant, which we anticipated by doubling the minimal sample size. This approach ensures maintaining the statistical power and representativeness. We believe the other issues were adequately addressed. The future goal will be to adopt the WHO Disability Assessment Schedule (WHODAS) as instrument to measure and characterize disability in developing countries.

During the ISPRM Congress in Berlin (2015) one of the topics was on the WHO Action plan "Better health for all people with disabilities 2014–2021" [24]. Following this line, our attempt was to study Disability in the Health District of Dschang, Cameroon.

CONCLUSION

The diverse type of disability and the wide age range affected prompts needs in prevention from safe delivery practices, safe transportation measures, disease prevention. Implementing rehabilitation warrants a holistic approach for adequate healthcare and social reintegration of the disabled living in RLS.

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Acknowledgements
We thank the field investigators who contributed in the data collection within the community during the study period; We are very appreciative to study participants for their collaboration during the study; Dr Joseph Fokam is acknowledged for contributing in proof reading and formatting of this manuscript.

Author Contributions
Calogero Foti – Substantial contributions to conception and design, Interpretation of data, Drafting the article, Critical revision of the article, Final approval of the version to be published
Yannick N. Azeufack – Analysis and interpretation of data, Drafting the article, Final approval of the version to be published
Martin S. Sobze – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published
Caterina Albensi – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published
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Charleine Tuiedjo – Acquisition of data, Revising it critically for important intellectual content, Final approval of the version to be published
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Vittorio Colizzi – Substantial contributions to conception and design, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor
The corresponding author is the guarantor of submission.

Conflict of Interest
Authors declare no conflict of interest.

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