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SPECIAL REPORT

REHABILITATION IN MADAGASCAR: CHALLENGES IN IMPLEMENTING THE WORLD HEALTH ORGANIZATION DISABILITY ACTION PLAN

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Objective: **To provide an update on rehabilitation in Madagascar by using local knowledge to outline the potential barriers and facilitators for implementation of the World Health Organization (WHO) Disability Action Plan (DAP).**

Methods: **A 14-day extensive workshop programme (September–October 2014) was held at the University Hospital Antananarivo and Antsirabe, with the Department of Health Madagascar, by rehabilitation staff from Royal Melbourne Hospital, Australia. Attendees were rehabilitation professionals (*n*=29) from 3 main rehabilitation facilities in Madagascar, who identified various challenges faced in service provision, education and attitudes/approaches to people with disabilities. Their responses and suggested barriers/facilitators were recorded following consensus agreement, using objectives listed in the DAP.**

Results: **The barriers and facilitators outlined by participants in implementing the DAP objectives include: engagement of health professionals and institutions using a multisectoral approach, new partnerships, strategic collaboration, provision of technical assistance, future policy directions, and research and development. Other challenges for many basic policies included: access to rehabilitation services, geographical coverage, shortage of skilled work-force, limited info-technology systems; lack of care-models and facility/staff accreditation standards; limited health services infrastructure and "disconnect" between acute and community-based rehabilitation.**

Conclusion: **The DAP summary actions were useful planning tools to improve access, strengthen rehabilitation services and community-based rehabilitation, and collate data for outcome research.**

Key words: disability; rehabilitation; Madagascar; World Health Organization.

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INTRODUCTION

There are an estimated 1 billion people with disabilities (PwD) worldwide, of whom 110–190 million have significant difficulties and 80% reside in low-income countries (1, 2). The United Nations (UN) Convention on the Rights of Persons with Disabilities (CRPD), through international standards and a normative framework for disability, provides for a paradigm shift in attitudes and approaches to PwD, viewing them as active contributing members of society with equal rights (3). Although a number of UN member countries signed the convention, there remain significant gaps in service provision for PwD in terms of implementation of rehabilitation policies and legislation, funding and access to services (4), especially in the developing world. The World Health Organization (WHO) estimates that in 2011 only 3% of individuals worldwide received adequate rehabilitation requirements (1) and, in developing countries alone, 0.5% of the population was unable to obtain the prostheses or orthotics they needed (5, 6).

Madagascar, the fourth largest island in the world (area 587,041 km^2), situated in the Indian Ocean has more than 22.2 million inhabitants (4, 5). The WHO ranks it in the low-income group, with gross national income per capita (2012) of US$930 (6), placing it 155th on the World Bank Human Development Index (7). Only 33% of Malagasy people live in urban areas, and an estimated 92% of the total population live on less than $2 per day. The median age of the population is 18.3 years, with a life expectancy of only 52 years (6). The literacy rate among adults aged 15 years and above is 64% (1). Overall spending on healthcare by the Malagasy Government is significantly lower than that of the average African region. In 2012, total expenditure on health per capita was US$40, which equates to 4.1% of total expenditure (6). The majority of PwD in Madagascar, as in many developing countries (8, 9), are economically deprived and experience difficulties in accessing basic health services, including rehabilitation services. Furthermore, similar to other sub-Saharan African countries, much effort has gone into improving the acute care sector. The post-acute care system, including rehabilitation, is undeveloped at many levels (10–14).

Table I compares the data on common disabilities, disability legislation, non-governmental agencies (NGOs), community-based rehabilitation programmes (CBR) and support services of Madagascar with that of 4 sub-Saharan African countries (14).

The objective of this paper is to provide an update on rehabilitation efforts and plans in Madagascar based on implementation of the WHO's Disability Action Plan (DAP) of 2014–2021 and endorsed by the world's health ministers to improve health for all people with disability. The authors utilized interactive feedback from rehabilitation professionals from Madagascar attending an organized workshop programme and recorded both the realistic challenges and strengths the attendees found in meeting the established objectives listed in the DAP.

METHODS

The authors (FK, MG) were invited as independent experts (September–October 2014) by the Madagascar Department of Health (Antananarivo) in association with the UK-based charity Overseas Partnering and Training Initiative (OPT IN) and the University of Leeds, to assist in improving education and training of rehabilitation staff in the newly formed Malagasy Rehabilitation Society. The focus was on taking the DAP guidelines and building capacity in the workforce, developing standards and key performance indicators; and up-skilling in specific areas, such as rehabilitation services operational set-up, infrastructure for horizontal health systems, development from acute through to community, referral management, consumer involvement, research methodology, including data collection, and setting up a rehabilitation registry based on the Australian experience. This exercise was approved by the Malagasy Health Department and the Royal Melbourne Hospital.

Non-communicable diseases (NCDs) and rehabilitation have recently been prioritized by the Malagasy Health Department. There are 6 regions in Madagascar with 3 established rehabilitation centres in Antananarivo, Antsirabe, and the Mahajanga region. In addition, there are 4 smaller regional facilities that provide supportive rehabilitation including CBR programmes. As yet, there are no operational National CBR Programs in Madagascar and existing programmes are run mainly by NGOs (14). Over a 14-day period, the authors also assumed a facilitator role in conducting extensive teaching programmes, including workshops and consensus meetings based on the DAP in the Department of Rehabilitation, University Hospital Antananarivo and in the Antsirabe Hospital. In addition, participants from the more remote Mahajanga Rehabilitation Hospital also attended additional workshops held at the University Hospital Antananarivo. A total of 29 healthcare professionals attended these workshops and meetings, which included approximately 9 rehabilitation physicians (including a representative from the Department of Health), 2 surgeons, 4 nurses, 3 prosthetists, 3 occupational therapists, 7 physiotherapists and 1 speech pathologist from various rehabilitation centres. The authors also met with a number

Table I. *Summary of current health systems/resources for disability in some Sub-Saharan African countries*

Country	Madagascar	Mozambique	Senegal	Ethiopia	Congo-Brazzaville
Demographics Population	22.9 mil*; PwD:7–8% (2000)	25.8 mil*; PwD: 5.9% (2000)	14.1 mil*; PwD: 10% (1998)	91.7 mil*; PwD: 1.8% (1998)	4.4 mil*; PwD: no data
Cause of disabilities (mobility, self-care, vision)	Stroke; cerebral palsy; infectious diseases (polio, leprosy); drug and alcohol use	Infectious diseases (polio, malaria, meningitis); war; landmines	Diabetes; infectious diseases (polio, onchocerciasis); road accidents and landmines	Infectious diseases (polio, leprosy); road accidents; malnutrition	Infectious diseases (polio, leprosy, malaria)
Legislation of disability for PwD	1998: Law for equal rights, 2007: CRPD ratified; 2003: National Decade of Disabled persons; Action Plan: 2007–2012	1990: Constitution to support PwDs; 1999: Disability-specific policy	National policy, but no explicit laws, for disability; 1984: education for disabled children	1994: Employment rights of the disabled 1996: Social welfare policy	1992: Law on protection and education of PWDs National Health Plan not implemented for disability
Human resources (healthcare)	Physicians: 0.16/1000 people; (in 2007); 3,150 doctors, 5,661 nurses, 385 community health workers	Physicians: 0.03/1000 people (2008); no data on rehabilitation personnel	Physicians: 0.06/1000 people (2008); no data on rehabilitation personnel	Physicians: 0.03/1,000 people (2008); no data on rehabilitation personnel	Physicians: 0.2/1,000 people (2006); no data on rehabilitation personnel
NGOs and DPOs	Many (religious, cultural, sporting associations); Handicap International; Union des Associations d'Handicapés de Madagascar	11 organizations provide government with technical support, none independent	8 NGOs, all in advisory roles in policy and technical support	11 NGOs; most focus their services in urban areas with limited coverage	No information available
National CBR programmes	None, most funded by NGOs	1993: CBR by Ministry of Social Welfare for 2000 PwDs	None, 1 CBR in 1988 by the Red Cross – now suspended due to financial constraints	1983: CBR initiated in 2 provinces by NGOs with the government but only in urban areas	National programme in 1999–2001 covering 11 regions of the country
Research and evaluation	Some research on clubfoot; member of ISPRM	None; no inter-country collaboration	None; member African Rehabilitation Institute	None; member African Rehabilitation Institute and affiliate Rehabilitation International	None

(Main sources: WHO Country Profile; Regional Office for Africa WHO; WHO Health Statistics 2011; WHO Disability and rehabilitation status 2004 (14)).
*Population in millions in 2013.
CBR: community-based rehabilitation; DPO: disabled people's organizations, ISPRM: International Society of Physical and Rehabilitation Medicine; NGO: non-governmental organization; PwD: persons with disability.

of independent NGOs working in Anatanarivo, including OTs involved in CBR programmes and those involved in assisting the University of Antananarivo in developing training courses in Occupational and Physical Therapy programmes. However, because there are various levels of trained allied health staff, visiting NGOs, medical and other volunteers in Madagascar the exact number of fully accredited rehabilitation professionals is unclear. Participants in these workshops were invited by the Department of Health along with the University of Antananarivo and comprised approximately 60% of the academic and rehabilitation leadership teams across the country.

Prior to the detailed workshops, the host hospital's lead medical and allied health team provided presentations on their health services, including specific challenges faced by their rehabilitation staff under the DAP. All this volunteered information was supplemented with more specific and recorded data during the workshop settings. The teaching programme and workshops included basic principles of rehabilitation, disability care planning, linking information technology (IT), data and health record systems with acute hospital referrers and those in the community; CBR and capacity building; and leadership skills development, etc. Based on earlier presentations by lead local rehabilitation staff about issues they faced in service delivery, the participants were then asked to work out and discuss their views and perspectives of the various problems that were highlighted relating to service provision, attitudes/approaches to PwD, gaps in service provision, education, related challenges and potential barriers and solutions designed to tackle these issues. At all times the 2014–2021 DAP was used as a blueprint for discussion and allowed the authors to educate the audience, many of whom were not familiar with the document's specifics. In addition, a simplified overview of the DAP worded for the French-speaking audience was used, using an interpreter provided by the Malagasy Department of Health. This was followed by a formal iterative decision-making and consensus process tabulating potential challenges and facilitators in the implementation of the DAP. Throughout the workshops, the author-facilitators recorded all information provided by the participants in writing, as there was limited access to computers or internet. In addition, they conducted a desktop literature search of academic and grey literature using available internet search engines and websites for relevant publications (including academic articles, reports, related website contents, etc.) and discussed relevant information with the participants. Known experts in this field were also contacted for further information on disability-related policies and legislations. A formal presentation of all results from this exercise was made by the authors to both the Malagasy Department of Health and all workshop attendees on 7 October 2014.

RESULTS

Based on the above-stated multi-pronged avenues to obtain data, an overview of current rehabilitation status and associated challenges in implementation of the WHO's DAP was summarized in 3 major sections: (*i*) burden of disability, (*ii*) current developments, and (*iii*) WHO Global Disability Action Plan, as follows.

Burden of disability

In Madagascar there is no epidemiological data on disability, and limited data on disability-related burden. Based on the worldwide disability prevalence rate-estimation of 15% (or 1 in 7 people) from the World Report on Disability (1), there are an estimated 2.8 million PwD in Madagascar. NCDs are a noteworthy cause of overall burden of disease in Madagascar, contributing an estimated 29% of overall disability-adjusted life years (DALYs) in 2004, followed by injuries (8% DALYs) (1). Amongst NCDs, DALYs attributed to cancer are estimated at 12.1, for neuropsychiatric conditions 2.3, and for cardiovascular diseases (CVDs) 2% (15). Communicable diseases are still the main cause of mortality; however, NCDs contribute to 39% of overall mortality, with 18% due to CVDs alone. The age-standardized death rate due to cerebrovascular diseases (such as stroke) is 134.9 per 100,000 (4). Consistent with other countries in Africa (13), the prevalence of disability in Madagascar is escalating due to an ageing population, a rise in chronic conditions, political instability and economic down-turn. Despite the lack of conclusive data on the economic and social costs of disability for Madagascar, these costs are significant for PwD (their families), the community and the nation (1).

Disability policies and legislation. In 1997, the Malagasy Government initiated the Law on Disability (Act No. 97-044), to promote equal social rights and freedoms for PwD, as for other citizens (16). The law advocates rights of PwD for access to medical and rehabilitation services, education, employment and social participation (4). In 2002, Madagascar ratified the National Decade of Disabled Persons 2003–2013 in accordance with the Continental Plan of Action of the African Decade of Disabled Persons, and with the UN CRPD in 2007 (15). Madagascar has an operational multi-sectoral national policy, strategy or action plan that integrates several NCDs and shared-risk factors, and has some evidence-based national guidelines/protocols for the management of major NCDs, using a primary care approach. The collaboration between acute and rehabilitation facilities and various NGOs, who provide social care for PwD, has improved in the last few years. More work, however, is needed to implement these policies; and surveillance and/or monitoring systems to enable reporting of healthcare data are yet to be established. Compliance with the UN standards, such as disabled access to buildings, parking, transportation, etc., can be improved. The PwD have limited access to advocacy, provision of assistive devices, aids, counselling and community integration assistance. In general, the public are unaware of the economic and social implications for PwD. However, there is some progress, as Madagascar subscribed to the International Health Partnership and related initiatives (IHP+) in 2008, which aligns development partners with a single national strategy, a monitoring and evaluation framework and a joint review process to improve harmonization and accountability for achieving the health-related Millennium Development Goals (17). In the same year the Ministry of Health also signed up to the guiding principles of a sector-wide approach along with the 22 development partners to address the challenges facing the health sector; however, it is unknown if this contains rehabilitation medicine (17).

Human resources. Overall, there are an estimated 3,150 doctors, 5,661 nurses and 385 community health workers currently registered in Madagascar (15). However, there is a shortage of trained and available healthcare professionals, and inequitable distribution of staff across rural areas (particularly in the rehabilitation sector). There are an estimated 1.6 physicians per 10,000 population in Madagascar, which is significantly lower than the regional average of 2.6 (14, 15). The Department of

Health, in conjunction with a UK-based charity (OPT IN), commenced a mid-level diploma programme at the University of Antananarivo approximately 4 years ago. This capacity-building initiative is now being supported by the Royal Melbourne Hospital, Australia. There are 10 rehabilitation specialists in the country, including 8 new graduates. There is less than one physiotherapist and nurse per 10,000 people (18), and no accurate data are available regarding other rehabilitation personnel, such as occupational therapists or speech pathologists, social workers or psychologists. Importantly, the Malagasy Society of Rehabilitation Medicine and allied health staff in rehabilitation settings are focussing on building multidisciplinary teamwork, communication and decision-making processes to operate as a cohesive team. However, the lack of IT systems limits participation in web-based international teaching initiatives.

Service delivery. The Malagasy health system has been struggling for some years, due to poverty, political uncertainty and a decrease in international aid. Rehabilitation services are still minimal for the general population, especially for PwD and those living in rural areas. The few existing rehabilitation services are not integrated with acute health services, and are based in urban areas, mainly in the capital. There are, on average, 3 hospital beds per 10,000 population and 6 improved rehabilitation services (4). The hospital infrastructure lacks computers/fax and other administrative equipment. There are no healthcare models or systems in place (e.g. patient referrals from acute to rehabilitation services, follow-up after discharge from acute care, timely access to medical records, etc.), which results in fragmented care. There are no hydrotherapy facilities or well-equipped gymnasiums for patients in hospitals or in the community. Existing equipment is often in disrepair. The most common physical therapy treatment provided in rehabilitation facilities is massage, in line with the cultural expectation of receiving treatment. There are limited occupational therapy and no speech pathology or psychology services at tertiary rehabilitation facilities. Although the focus is on developing CBR; access to qualified staff, lack of infrastructure and funding are the main barriers for provision of customized programmes, patient education and provision of appropriate equipment. At the community level, care of PwD (including CBR) is predominantly funded by NGOs and charitable organizations, such as the National Collective of Organizations Working for Disabled Persons, Handicap International, Christian Blind Mission, International Red Crescent, etc. There are, however, operational NCD Departments within the Ministry of Health and Population.

Current developments

Like most sub-Saharan countries, current disability management and supports in Madagascar are inequitable, underfunded, fragmented, inefficient and often inaccessible (11). Despite these barriers, overall health services show a trend towards improvement over the past 2 decades (19), mainly in the control and prevention of communicable diseases. In the last 5 years, there has been some development in the rehabilitation field. For example, Madagascar is one of few sub-Saharan African countries with an established rehabilitation network. The Society of Physical and Rehabilitation Medicine was established in 2013, and since 2014 has been a member of the International Society of Physical and Rehabilitation Medicine (20). It has an active website to communicate with its members and recently hosted its first National Congress on Cerebral Palsy (in March 2014). The Malagasy Rehabilitation Society is currently outlining its standards and key performance indicators and setting up data collection procedures to form a national rehabilitation data-set.

More recently, there has been much interest amongst physicians in postgraduate training in rehabilitation at the University of Antananarivo. Rehabilitation for specific conditions requiring multidisciplinary input, such as spinal cord injury, will commence in one tertiary facility in the capital in 2015. There are measures to improve communication between health professionals in rehabilitation services and the acute care sector for improved patient referral procedures. While there is some coordination between the government and NGOs (and charitable organizations) for funded conferences/ workshops, education and training opportunities must be expanded and sustained.

WHO Global Disability Action Plan

The DAP provides encouragement for all national and international partners to enhance the quality of life of people around the world (21). The WHO specifies all Member States to promote this development and adapt it as a key national priority. The main goals of the DAP are:

- to remove barriers and improve access to health services and programmes,
- to strengthen and extend rehabilitation, assistive technology and support services, and community-based rehabilitation,
- to strengthen disability data collection for international comparability, and to support research.

As stated above, similar to other developing countries, Madagascar faces various challenges and barriers for implementation of the core objectives of the DAP. Healthcare priority is still primarily focused on acute care (19); sub-acute care and rehabilitation services get less attention. The PwD are amongst the most marginalized in Madagascar and are unaware of their rights and benefit entitlements. There are limited data on the needs and unmet needs of PwD, impeding planning for service delivery in rehabilitation. In general, there is lack of awareness amongst citizens with regard to disability, which is perceived as a curse and/or a contagious disease in many parts of the country. This results in stigma and discrimination against PwD, limiting their societal participation. Furthermore, medical rehabilitation, including PwD, is not recognized by citizens and their families and many prefer traditional or native healers, especially in rural areas.

Based on participant feedback, consensus agreement and using a bottom-up approach in developing recommendations for the future, some of the potential facilitators and challenges in implementation of the proposed standard actions in the DAP for rehabilitation are summarized in Table II.

Table II. *Potential challenges and facilitators in implementation of the World Health Organization (WHO) Disability Action Plan 2014–21 in Madagascar* (n=*29*)

Actions	Current state	Potential challenges/barriers	Potential facilitators/enablers in the next 5–6 years
Objective 1: Remove barriers and improve access to health services and programmes			
1.1 Develop and/or reform health and disability laws, policies, strategies and plans	Law on Disability (Act No. 97-044) 1997; CRPD ratified: 2007; National Decade of Disabled Persons (2003), The Madagascar Action Plan 2007–12; International Health Partnership and related initiatives 2008	• Health priority more driven towards acute sector and communicable disease • Unstable political and economic situation • Poor past political commitment • Existing policies underfunded • Lack of coordination/collaboration among different government sectors and ministries • Lag in implementation of existing policies • Lack of consensus on who is responsible for enforcing and/or funding new legislations/policies	• Health Ministry to develop health policies from coordination to implementation; sectoral approach for alignment in disability care • Strengthen management capacity through legislation and regulation • Implement health financing strategies for equity and social protection • International cooperation and WHO support • Knowledge management capacity-building initiatives • Strengthen National Health Information systems • Guidelines for public-private partnerships in healthcare • Review pharmaceutical policy documentation and surveillance systems • Establish a secondary level body for implementation and evaluation at the community level • Involve PwD and community organization in policy development • Linkage with regional organizations, e.g. South Africa, Mauritius
1.2 Develop leadership and governance for disability-inclusive health	National coordination/funding: Ministry of Health and Population	• No central body for developing governance • Lack of coordination/ collaboration among different government sectors, hospitals and CBRs • No disability-rehabilitation standards or key performance indicators • No specific accreditation standards or criteria for rehabilitation facilities and for staff • Limited workforce leadership development programmes	• Ministry of Health – central capacity building body for health professionals and management for operational effectiveness of regional health departments and quality of services • Capacity-building for educators for health work-force • Implement plan for quality control and health inputs • Coordinate and link various government and NGOs with hospitals • More active role of National Association of Rehabilitation Medicine in facilitating leadership skills and governance • Improve web-based access to evidence-based guidelines/protocols and outcome measures for disability • Provide Key Performance Indicators and Standards of Care • Development of accreditation criteria for staff and rehabilitation facilities
1.3 Remove barriers to financing and affordability for PwD	Per capita health expenditure $40 (2012); Health expenditure as % of GDP 4.1 (2012); Government health spending 15.3% (2012); 70% of total spending on health- 30% contributed international donors and private sources	• Budget deficit • Decreased international aid • Out-of-pocket payment for services • Lack of government/private insurance • Lack of legislation or national policy for employment/ education/health	• Increased health budget expenditure in line with the African neighbours • More international financial assistance • Training and educational programme for PwD – build workforce • Improvement of social welfare, livelihood and benefits • Development of national social/governmental insurance coverage for PwD
1.4 Remove barriers to service delivery	Approximately 3 hospital beds per 10,000 people	• Lack of infrastructure • Non-disability friendly public places and transport • Geographical location – isolation • Lack of rehabilitation for specific conditions such as stroke, spinal cord injuries, etc. • Lack of adequate referral system • Lack of multidisciplinary team approach and systems/ models of care • Lack of integration with acute hospitals	• Development of infrastructure and awareness of existing services • Structured standard referral systems: acute to sub-acute • Promotion of community-based rehabilitation • Development of Mobile Units to deliver care in remote areas • Telerehabilitation and local technology • Provision of disability friendly public facilities and transportation • Public awareness and educational programmes • Public-private sector partnership for service provision
1.5 Overcome specific challenges to the quality of healthcare experienced by PwD	Total death: NCDs: 39%; cerebrovascular diseases: female 6.4% (age standardized death rate: 134.9/100,000 population)	• Poverty • High illiteracy • Discrimination and stigma • Poor awareness of health services • Misconception and cultural belief about disability • Belief in traditional or native healers • Limited access to disability services	• Ministry of Health-central body to implement national health promotion policy • Minimization of cultural stigma through public campaigns • Skill training and educational programmes for healthcare staff • Development of consumer organizations for advocacy (including PwD at national and local level) • Identify needs to develop initiatives for unmet needs of PwD • Development of strategies for engagement of staff and patients

Table II. *Contd.*

1.6 Meet the specific needs of PwD in health emergency risk management	No information	• Lack of emergency assistance programmes for PwD • Lack of ambulance availability and transportation • Minimal collaboration and/or referrals between emergency staff and rehabilitation personnel in tertiary facilities	• Rapid assessment and evaluation to identify needs to mobilize resources • Coordination of interventions • Build local capacity • Improve communication systems and collaboration between acute and rehabilitation staff; International cooperation in humanitarian crises
Objective 2: To strengthen and extend rehabilitation, habilitation, assistive technology, assistance and support services, and community-based rehabilitation			
2.1 Provide leadership for developing policies, strategies and plans	Same as 1.1 above	Same as 1.1 above	• Same as 1.1 • More active role of Malagasy National Association of Rehabilitation Medicine
2.2 Provide adequate financial resources	No data available for welfare or support for PwD and their families	Same as 1.2	• Same as 1.2 • Improvement of social welfare and livelihood
2.3 Develop and maintain a sustainable workforce	PRM: 10 Physicians or 1.6/10,000 people; (in 2010); total of 3150 doctors, 5661 nurses, 385 community health workers PT:<1/10,0000 people Department of Health commenced mid-level Diploma course at University of Antananarivo	• Interdisciplinary workforce – limited skill base • No educational standards or key performance indicators (KPIs) for rehabilitation or continuous medical education evaluation • No staff development or appraisal systems in hospitals or community settings • Limited access to education or IT-based learning • Limited opportunity to train in new equipment for therapy delivery or hydrotherapy • Inadequate distribution of healthcare professionals – mostly urban setting • Limited infrastructures and professional courses/training programmes in academic institution • Poor awareness amongst healthcare professionals about workforce development • Demoralized workforce	• Ministry of Health – develop a strategic workforce development plan • Establishment of national observatory for human resources • More funding and opportunity to develop a skilled workforce • More courses on disability in academic institutions and hospitals • Development of strategies for empowerment and staff engagement • Develop teaching models, using interactive problem-based learning • Increase clinical capacity through organized educational activities, e.g. journal clubs, grand rounds, etc. • Motivation of clinical staff • Promotion of interdisciplinary teaching and interaction • Commence OT training using international links within region • Establish workforce management and retention programmes • Collaboration with international partners for staff training overseas
2.4 Expand and strengthen rehabilitation services ensuring integration, across the continuum of care	Improve rehabilitation services	• No accreditation standards or key performance indicators for rehabilitation • Rehabilitation services included with other general hospital services not well integrated nor identified for attention • Lack of structured standard referral systems from acute to sub-acute care to community • Lack of healthcare delivery models for Rehabilitation services • Minimal integration of community based programmes with acute services • Poor follow-up after discharge from acute facility and rehabilitation hospitals	• Ministry of Health to establish clear accreditation standards for rehabilitation facilities and key performance indicators • Develop rehabilitation services within the existing health infrastructure • Improved profile of rehabilitation services in acute hospitals • More community-based rehabilitation services linked with main hospital networks • Incentives and mechanisms for retaining healthcare personnel especially in rural and remote areas • Use of IT systems, telemedicine and web-based services for improving awareness and access • Provision of equipment and technology for therapy in rehabilitation
2.5 Make available appropriate assistive technologies	No information	• Lack of government services and health insurance • Private insurance does not include cover for rehabilitation mobility aids (wheelchairs, cane, and walker), or those for activities of daily living, orthotics, or prosthetic devices.	• Advocacy for assistive technology funding – Government and NGOs • Inclusion of PwD and consumer organizations to raise awareness about technology • Expansion of assistive technologies to rural areas • Development of Mobile Units
2.6 Promote access to a range of assistance and support services	No information	• Minimal information available to public about access to rehabilitation services • Lack of insurance/ government support for accessing rehabilitation services	• Health Department to develop web-based campaign for support involving consumer organizations and NGOs – promote awareness • Develop Mobile Units to deliver care in remote areas • Expansion of community-based rehabilitation through capacity-building

Table II. *Contd.*

2.7 Engage, support and build capacity of PwD and caregivers	No information	• No inclusion of caregivers of PwD in rehabilitation • Poverty • High illiteracy • Misconception and cultural belief about disability • Belief in traditional or native healers • Pursuit of social support by PwD – rather than being independent and productive	• Involvement and education of caregivers in rehabilitation settings • Improve awareness of existing services/benefits for PwD/carers • Development of consumer support organizations for PwD at national and local level • Skill training for carers • Expansion of community-based rehabilitation through inclusion of carers in decision-making processes.
Objective 3: To strengthen collection of relevant and internationally comparable data on disability and support research on disability and related services			
3.1 Improve disability data collection (survey)	Limited national data; Based on WHO Report on Disability, estimated PwD 2.8 mil (15% of total population)	• Lack of reporting and information-gathering systems • Unreliable timely access to patient medical records • Rehabilitation workforce minimally trained in research methodology including data collection	• Promotion of operational research in disability and health systems • Set a minimal data-set for rehabilitation • Improve processes relating to clinical documentation • Commence medical staff training in research methodologies using audit tools • Establish hospital-based IT systems for data entry • Disability-specific registries in the future
3.2 Reform national data collection systems based on the ICF	No national data collection system; concept of ICF not well understood	• Lack of standard data collection systems • Minimal awareness and no incentive for hospitals or staff to participate	• Implementation and training in ICF model • Develop standard data collection systems • Mandatory data collection across all sectors – acute and community
3.3 Strengthen research on priority issues in disability	Limited research in disability/rehabilitation	• Limited staff training and support for ICF usage • Research not identified as a priority for rehabilitation • Limited support and IT available for research • Limited staff capacity and training for research • Lack of available research professionals • Little funding for research	• Linkage of performance indicators to health outcomes • Involve government and academic institutions to conduct research on disability issues • Train research professionals • Improve access to IT and web-based programmes • Build research capacity in rehabilitation • Cooperation with international partners in research and development

(Sources: WHO Country Cooperation Strategy at a Glance: Madagascar May 2014; WHO Country Profile; Regional Office for Africa WHO; WHO Health Statistics 2011; WHO Global Infobase; WHO Bulletin; UN Human Development Report 2014). CRPD: Convention on the Rights of Persons with Disabilities; GDP: Gross Domestic Product; ICF: International Classification of Functioning, Disability and Health; IT: information technology; NGO: non-governmental organization; PwD: persons with disability; WHO: World Health Organization.

DISCUSSION

Similar to other low-resource countries (13, 22, 23), Madagascar faces many challenges in improving its healthcare systems. The Malagasy people have concentrated on improving the acute-care sector given the high prevalence of communicable diseases. The focus on disability and provision of rehabilitative services, however, is well below that of its African neighbours. The concept of longer-term rehabilitation service delivery or lifetime care is not well established. Data for disability are not disaggregated from general health data, so the need for developing rehabilitation services, outcome assessments and minimal key performance indicators for the sector is unknown. Despite political commitment to improving care and support for PwD, the implementation of many basic policies remains limited in terms of access to rehabilitation services, geographical coverage, skilled work-force shortages, limited IT systems and infrastructure; and lack of care-models, and facility and staff accreditation standards for rehabilitation. Although the profile of rehabilitation medicine in the Madagascar health system has improved in recent years, it remains poorly integrated with acute healthcare systems. Rehabilitation participants report low morale and a poor sense of achievement. The patient referral mechanisms are unclear between acute health services, rehabilitation and longer-term community services. The lack of a central coordination body and limited health services infrastructure compounds the problem of comprehensive management of PwD, as most healthcare services are based in urban areas. Undesirable cultural stigma and poor awareness about disability and rehabilitation amongst general citizens, impedes access and service delivery.

The DAP provides comprehensive summary actions for disability and offers the Malagasy Government, policymakers, and other relevant stakeholders a blueprint for implementing the recommendations of the World Disability Report and CRPD. The Malagasy people now have an opportunity and imperative to improve and build on existing care programmes for comprehensive care for PwD. Based on feedback and consensus from participants in this report, there is need for strong leadership for providing standards for rehabilitative care and key performance indicators for rehabilitation facilities and staff involved. It is important to engage and up-skill staff, provide infrastructure and IT support, and assist in the integration of all relevant sectors including NGOs and consumer groups (24). The existing rehabilitation facilities require a skilled work-force and access to equipment for therapy provision. They need to be supplemented by local CBR centres, especially in rural areas, with establishment of regional hubs for improved access and broader-based services. Given that the existing CBR staff (funded mainly by NGOs), often have well-developed programmes, there

is opportunity for professionals in physical and rehabilitation medicine and CBR to come together for improved clinical practice and service delivery; as well as training and education. A collaborative, coordinated and pro-active lobbying effort by the Malagasy Society of Rehabilitation Medicine, consumer organizations and NGOs will prioritize challenges that need to be addressed for implementation of the DAP. The responses and suggestions about specific items in the DAP framework for action are listed in Table II.

This study has some potential limitations. Firstly, this is a cross-sectional study and bulk of data were derived from the interactive feedback from the healthcare professionals attending an organized workshop programme, rather than from a detailed examination of certain hypotheses or through systematic analysis. This study was intended as a preliminary descriptive study, with the aim of updating knowledge about rehabilitation efforts and plans in Madagascar based on implementation of the DAP and identifying realistic challenges and strengths from the participants' perspective. Secondly, the study cohort is made up of health professionals selected by the Malagasy Health Department, which may limit the generalizability and validity of these findings. The authors were not involved in any participant selection process, and this was also beyond their remit. The study cohort, however, covers rehabilitation professionals from a wide geographical population in Madagascar, and represents the wider sample currently operational in the community. The authors believe the findings reflect the current issues/problems faced in the country at large. They are unaware of any similar study conducted in Madagascar or any sub-Saharan country that addresses this issue.

In summary, there was consensus amongst all Malagasy participants in the workshops that further steps required to develop rehabilitation medical services in Madagascar should include the following:

- develop and tailor DAP recommendations to suit the local environment, for accessibility to mainstream services, policymakers and administrators
- improve infrastructure for disabled access to transport and buildings; as well as benefits and social support systems
- establish and sustain leadership from the Ministry of Health for setting rehabilitation standards for accreditation and key performance indicators
- establish collaborative integrated models of care and service delivery supported by infrastructure, IT and evidence-based rehabilitative care
- up-skill, educate and develop the rehabilitation workforce using technology and web-based systems
- engage the workforce, consumers (their caregivers) and NGOs for lobbying and improved awareness of disability services and the social and economic impact of disability
- develop systematic data-collection methods to inform rehabilitation outcomes and research capacity in rehabilitation.

In conclusion, the DAP summary actions were useful planning tools to improve access and strengthen rehabilitation services and CBR, and collate data for outcome research and benchmarking. The process was culturally sensitive and appreciated by all participants including the Ministry of Health. This is the first narrative report of participants contributing local knowledge to the actions recommended by the DAP to achieve various objectives in the real world using a bottom-up approach in the Malagasy setting. A similar follow-up conference designed around education and training, in which the DAP is constantly reviewed under improved data acquisition and analysis, is recommended.

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