

WHEELCHAIR TECHNOLOGY AS A PROFESSION

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Abstract

Non-industrialised countries need to develop appropriate wheelchair service models. Rural populations, insufficient professional training and poor infrastructure mean that industrialised country models are not effective in the developing world.

The lack of wheelchair professionals within health services means that governments do not consider the need for wheelchairs. Rehabilitation budgets do not adequately provide for wheelchair users' needs. Wheelchairs are therefore generally purchased directly from small workshops which do not have the capacity to develop a comprehensive wheelchair service including assessment, prescription, fitting, education and follow-up. The wheelchairs are usually copies of donated foreign wheelchairs which are unsuitable for the local environment and wheelchair users' needs. Inappropriate wheelchairs often lead to potentially fatal secondary complications such as scoliosis or pressure sores.

To respond to the need for professional training to address the skills required to run a comprehensive wheelchair service, TATCOT and Motivation collaborated to set up a one year multidisciplinary certificate course, the Wheelchair Technologists Training Course (WTTC). The WTTC has been accredited by the International Society for Prosthetics and Orthotics (ISPO), giving it international recognition and helping to promote and address the need for professional wheelchair provision models.

The course is now in its sixth year of operation with 29 graduates serving the needs of their local communities in eight African countries. The course is in great demand, with applications from 20 African countries and requests to replicate the course from six countries. Motivation plans to develop a two year course in Central America.

Wheelchair users themselves must pioneer the professionalisation of wheelchair services, and demand full integration into rehabilitation services. Without specialised wheelchair professionals and comprehensive wheelchair services in non-industrialised countries, wheelchair users will continue to be marginalised within mobility service provision.

1 Introduction

Whilst the past thirty years have seen the development and recognition of the professions of Prosthetist and Orthotist in non-industrial countries, the related field of wheelchairs has not kept pace and lacks professional direction.

The current wheelchair service models that exist in industrialised countries, comprising a team of allied health professionals linked with commercial wheelchair manufacturers, are difficult and inappropriate to replicate in non-industrial countries.

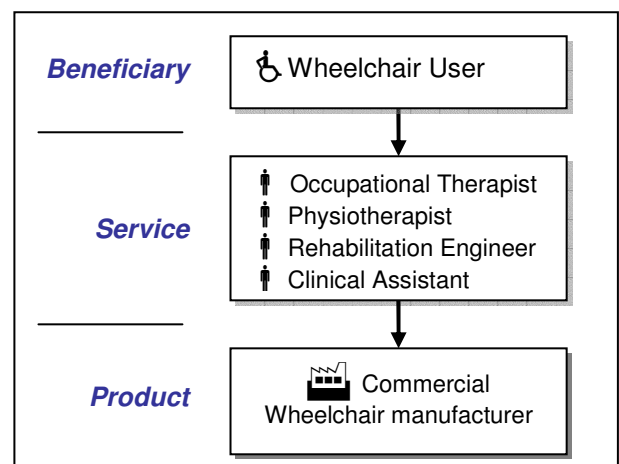


Figure 1: Wheelchair provision in industrialised countries

These countries generally lack the infrastructure to develop such systems, and have large populations living in rural areas that are not adequately served by institutional health services. Alternative models need to be considered.

The consequences of unstructured wheelchair provision are far reaching. Many wheelchair users in non industrial countries, especially those with a disability not caused by a traumatic injury, do not access official health systems; purchasing wheelchairs directly from wheelchair production workshops.

These wheelchair workshops are generally small scale and do not recognise the need for, or possess the skills necessary to develop a comprehensive wheelchair service that includes assessment, prescription, fitting and education. The wheelchairs are usually copies of donated foreign wheelchairs, unsuitable for the local environment or needs of wheelchair users.

Most of these workshops are led by Disabled People's Organisations, aiming to address their members' primary need for wheelchairs, but lacking access to channels to advocate for comprehensive services for wheelchair users. WHO and PAHO estimate that only 1-3% of people with disabilities in the South who require rehabilitation services have access to them. [1,2]

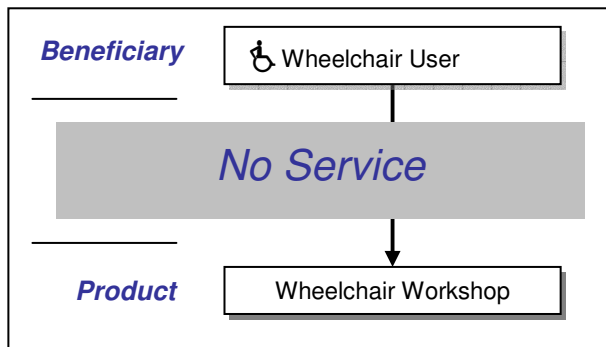


Figure 2: Wheelchair provision in low income countries

In addition to this limited local production, in low-income countries there has been a huge reliance on donated or imported wheelchairs designed for a developed country environment. These are frequently distributed in response to the needs of the donor rather than the wheelchair user - the 'charity model' of disability. Historically, most wheelchair provision has also only focused on the product in isolation to the individual user. The individual's specific impairment, size, lifestyle and environment are rarely considered. Most of these wheelchairs do not therefore meet the user's needs or provide them with maximum independence and quickly collapse in the harsh unpaved environments in which they are used.

The lack of comprehensive services results in wheelchair users being provided with inappropriate and ill fitting wheelchairs. Without assessment or prescription, wheelchair users often develop secondary complications such as scoliosis or pressure sores. WHO estimate that the average life expectancy of a paraplegic in a developing country is between 2-3 years due to the prevalence of secondary complications among those with spinal cord injuries. [3] In the West life expectancy for a paraplegic is normal.

At a higher level, the lack of representation of wheelchair professionals within health services means that governments are not alerted to the need for wheelchairs and often do not include wheelchair provision within rehabilitation budgets.

In most low income countries the development, production and distribution of wheelchairs is not considered as an integral part of the health care system, their provision falls to charities and those wheelchairs that are available do not adequately take into account the needs of the users, their living conditions or environments. Below 1% of the need for wheelchairs in Africa is being met through local production. [4]

2 Impact of appropriate wheelchair provision

Having the right wheelchair can literally change the life of a poor or disadvantaged person with a disability by giving them greater independence, confidence and dignity. It can often provide them with their first access to earn their livelihood or be educated. Yet an estimated 20 million people worldwide who need a wheelchair don't have one, [5] leaving them isolated and powerless to achieve a good of quality of life. Millions more have wheelchairs totally unsuitable for them.

In Africa, UNESCO estimate that less than 2% of people who need a wheelchair have one.

The scarcity of appropriate assistive devices such as wheelchairs significantly decreases disabled people's ability for participation and inclusion. Without such equipment disabled people are invariably unable to achieve independence or sustainable livelihoods. This contributes to their increased poverty and they are often a burden on their families and communities - not as a result of their impairment, but as a result of society not accommodating their impairment and enabling their inclusion.

Disabled children's mobility, and therefore their development, is curtailed by the lack of appropriate wheelchairs. Women with disabilities are more likely to be poor or destitute, to receive less food, to be illiterate, to be without family or community support. The stigma of disability, its myths and fears, increases their social isolation. With limited rehabilitation facilities available, they often become immobile and housebound. [6]

In order for an assistive device service to be effective, it needs to be comprehensive: it must support the delivery of appropriately designed products alongside professional assessment and prescription services that are participatory in nature. This ensures that a user accesses a device that is functional, easily maintained and will provide maximum independence. In the case of a wheelchair, an inappropriate model can contribute to continued exclusion and to the development of life-threatening secondary complications. An appropriate and affordable wheelchair is a tool which has a direct effect on health and functional mobility for men, women and children; enhances inclusion; increases access to basic human rights; enables access to opportunities to learn, to generate income and to demonstrate potential; increases participation in community and family life; increases inclusion in local and national decision making processes and provides opportunities for disabled people to influence positive attitudinal change and inclusion. An affordable and appropriate wheelchair can, therefore, contribute significantly to improved quality of life.

When actively involved in developing wheelchair provision, wheelchair users become advocates for consultative design and service delivery and participate in the promotion of rights and social equity for disabled people at community level. When Government Ministries, private sector and INGOs, key actors in wheelchair provision systems, engage directly with wheelchair users, they develop a greater understanding of the situation of disabled people and become effective advocates.

3 Method

The Tanzania Training Centre for Orthopaedic Technologists (TATCOT) was established in June 1981 and it represents one of the first supra-regional training centres in the area of Orthopaedic Technology in Africa and is a WHO collaboration centre. The different courses offered at TATCOT are accredited and recognised by both the International Society of Prosthetics and Orthotics (ISPO), and the World Health Organisation (WHO).

Motivation is a UK charity founded in 1991 whose mission statement is: “to enhance the quality of life of people with mobility disabilities”. Motivation forms partnerships with local organisations to introduce the key elements of rehabilitation for disabled people. Amongst other areas of commitment, it is involved in the creation of sustainable production and distribution of low-cost wheelchairs, education in disability healthcare and encouraging social independence and sustainable livelihoods.

Historically wheelchair training courses in developing countries have focused on technical training to produce a specific wheelchair design, with little or no attention paid to assessment, prescription, fitting and the delivery method. However the majority of these courses have been developed in isolation, are not part of a professional structure, and have not been professionally recognised.

In 2000 TATCOT, in collaboration with Motivation, launched the World’s first Wheelchair Technologists Training Course (WTTC); a one year multidisciplinary certificate course to address the need for professionals within this field. The course covers the skills required to run a comprehensive wheelchair service, to produce and assess and prescribe properly fitted wheelchairs that suit different disabilities and user needs. The school actively encourages disabled people to apply to the course.

The collaboration had a number of objectives; most specifically:

- To address the huge need for appropriate wheelchairs in Africa, one of the key prohibitors to wheelchair users accessing their rights.
- To take a regional approach to ensure impact on a high number of countries.

- To develop wheelchair service models specifically appropriate to the African context.
- To professionalise wheelchair services to encourage governments to address wheelchair needs as an integral part of rehabilitation
- To promote and support disabled people’s involvement in design and delivery of wheelchair services

The WTTC teaches students the skills of wheelchair design and production, assessment and prescription and management of a wheelchair service. The wheelchair designs taught on the course have been developed to cope with the rural environments and unpaved roads of Africa and include a folding four-wheel design, a three-wheel design for rural environments and a child’s wheelchair. The designs can be adapted and modified to cater for different workshop and environmental situations.

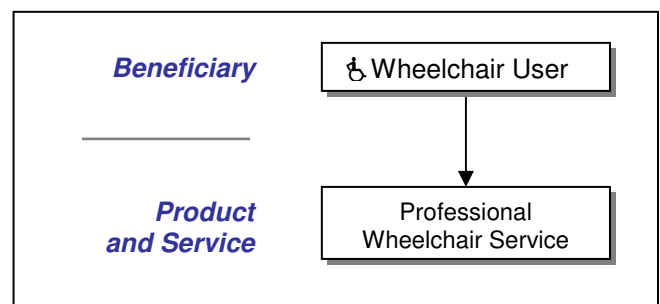


Figure 3: Comprehensive wheelchair provision in low income countries

The WTTC students graduate as Wheelchair Technologists, a new profession being developed and discussed within Allied Health Services by ISPO, WHO and Non Governmental Organisations (NGOs) involved in wheelchair provision in low income countries. The Government of Tanzania has already recognised and employed Wheelchair Technologists.

The role of a Wheelchair Technologist has been defined as follows:

1. To produce and assemble wheelchairs to meet the requirements of the local community
2. To design wheelchair components to meet local requirements and select materials suitable for local production of wheelchairs

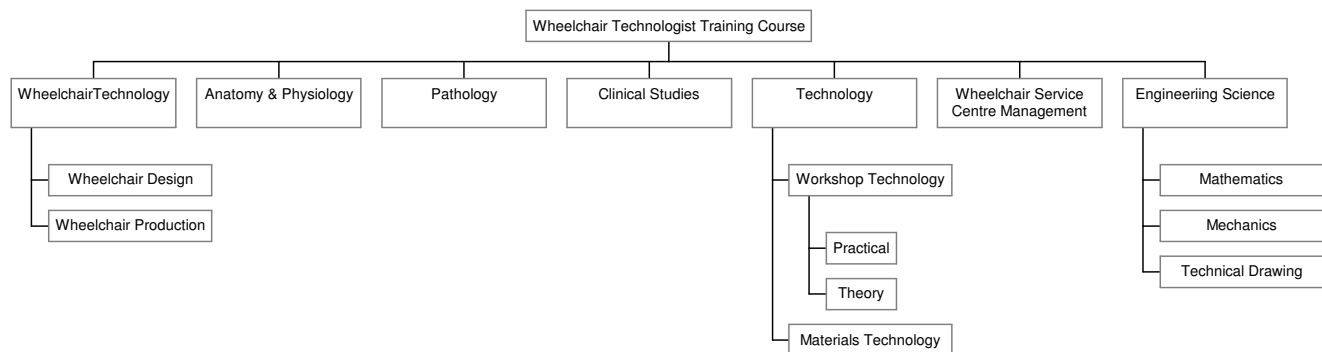


Figure 4: Wheelchair Technologists Training Course structure

3. To assess and prescribe appropriate wheelchairs and appropriate pressure relieving cushions to people with different types of physical disabilities
4. To serve as a member of the rehabilitation clinical team.

4 Results

The WTTC is the first course of its kind in the world, and as such a pilot course. The course has been successful, but ongoing development of the WTTC is needed to enrich the quality of the training, benefiting students of the course and their beneficiaries who receive wheelchairs. The one-year course is now run completely independently by TATCOT, and is an integral part of their school activities.

Since 2000 five intakes of students have graduated to eight African countries: Ethiopia, Kenya, Namibia, Nigeria, Tanzania, Uganda, Zambia, and Zimbabwe and one to Sri Lanka. The current 2005/6 intake includes three students from Sierra Leone, expanding the network of professional wheelchair services with trained wheelchair technologists to nine African countries.

Since its inception the course has become recognised as a valuable tool in the work towards the professionalisation of wheelchair services and has recently been accredited by ISPO, giving it international recognition and status and promoting the need for professionals trained in this discipline.

- 29 Graduates from the course are currently setting up wheelchair production in 9 African countries
- Applications for the course have been received from 20 African countries.
- Requests to replicate the course have been received from six countries.
- The government of Tanzania is the first in the world to recognise the profession of Wheelchair Technology and to employ qualified Wheelchair Technologists.

Since the development of the WTTC a networking organisation, the Pan African Wheelchair Builders Association (PAWBA) has been founded to support and link wheelchair professionals across Africa.

Motivation and TATCOT are working with PAWBA on a programme to support individual graduates activities and the development of professional wheelchair services across Africa.

5 Future Development of the Profession of Wheelchair Technology

There is now demand to develop training for wheelchair professionals at other orthopaedic training schools around the world. Centres of excellence in Central America and Asia have requested that TATCOT and Motivation assist them to introduce this profession. Planning is now underway for the replication of the WTTC in Central America and for the further development of the profession.

Following meetings held with ISPO in 2005 it is proposed that the WTTC is eventually extended to a two year course in a modular format with a variety of entry and exit points. The first year would cover the technical aspects of wheelchair production; those choosing to leave at the end of the first year would qualify as wheelchair technicians. The second year would concentrate on the clinical side of a wheelchair service and be available to qualified allied health professionals as well as being available as a module to prosthetic and orthotic degree students. This will incorporate training in supportive seating to cater for wheelchair users with more complex seating needs. Those studying the second year in isolation would qualify as wheelchair clinicians. Those studying both years would become wheelchair technologists.

There is a need to develop a hierarchy of training which will also include short courses in wheelchair assessment, wheelchair repair, modifications and tricycle production. Figure 6 shows the proposed structure for the profession of wheelchair technology with three levels of wheelchair service; community level, regional level and national level. Wheelchair technologists are expected to practice at regional and national level.

WHO, ISPO and the United States Agency for International Development (USAID) are currently leading a collaboration with International NGOs involved in wheelchair provision to develop and publish guidelines for wheelchair provision in

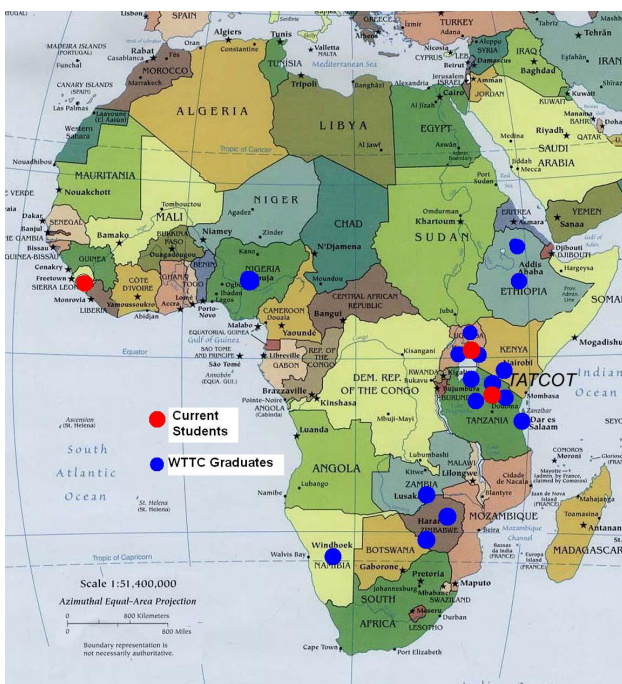


Figure 5: Graduates of the WTTC

The achievements of the WTTC can be summarised as follows:

- Five intakes of students to WTTC since 2000.
- The WTTC is now in its sixth year of operation.

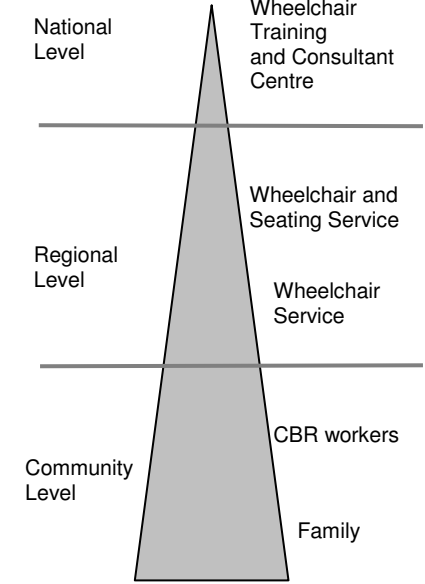
	Health Service Structure	Personnel	Qualification Requirements	
Level 1	National Level 	Wheelchair Technologist Wheelchair Clinician Wheelchair User	Category I degree level 3-4 years both technical and clinical	Professional Institution based training with international accreditation with ISPO
Level 2	Regional Level	Wheelchair Technologist Wheelchair Technician	a) Category II diploma level, 2-3 years for both technical and clinical. b) Category II certificate level 1 year for auxiliary technicians both clinical and technical	
Level 3	Community Level	CBR workers	Community focused training with WHO recognition through Guidelines of minimum service provision. 3-4 weeks training programme for both clinical and technical.	Vocational Focused Training

Figure 6: Proposed structure for wheelchair provision in low income countries

low income countries focusing on products, services and training.

The world's first Wheelchair Consensus Conference will be held in November 2006 and will include discussions about the development of the profession of wheelchair technology.

6 Conclusions

Comprehensive service delivery is crucial to ensure that the provision of mobility equipment results in greater independence and improved quality of life for disabled people.

International recognition of the profession of Wheelchair Technology and a coordinating body is now enabling the development of Wheelchair Technology as a multifaceted profession able to keep pace with the developments in computer technology, materials science and rehabilitation medicine.

The many issues shared by Prosthetics, Orthotics and Wheelchair Services in developing countries highlight an opportunity to advocate for integration of these services to ensure that assistive technology in non-industrialised countries is developed as a comprehensive strategy.

Ultimately the lack of specialised wheelchair professionals and comprehensive wheelchair services in non industrial countries impacts on wheelchair users, and leads to marginalisation of wheelchair users within mobility service provision. Wheelchair services need to be developed as an integral component of mobility services. Wheelchair users themselves should be involved in pioneering of this profession.

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