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Editorial

After the United Nations Convention on Rights of Persons with Disabilities came into existence, there have been more efforts to promote inclusion of persons with disabilities across different streams of development, through various international development agreements. Inclusion of disability-specific targets and indicators in the Sustainable Development Goals is a major step forward. The 2015 Sendai Framework for Disaster Risk Reduction includes persons with disabilities. The Addis Ababa Action Agenda of the same year looks at inclusion of persons with disabilities in the areas of social protection, employment, education, infrastructure, financial inclusion, technology and data. The 2016 World Humanitarian Summit had a Charter on Inclusion of Persons with Disabilities. In October of the same year, the New Urban Agenda of Habitat III recognised the need to address discrimination faced by persons with disabilities along with other vulnerable groups.

All of these are positive developments. However, progress on the ground has been patchy. The Disability and Development Report (2018) of the United Nations, the first of its kind, has reviewed data, policies and programmes; identified best practices; and outlined recommendations to promote the realization of the SDGs for persons with disabilities. According to the Executive Summary of this report, “despite the progress made in recent years, persons with disabilities continue to face numerous barriers to their full inclusion and participation in the life of their communities. It sheds light on their disproportionate levels of poverty; their lack of access to education, health services and employment; and their underrepresentation in decision-making and political participation. This is particularly the case for women and girls with disabilities. The main barriers to inclusion entail discrimination and stigma on the grounds of disability; lack of accessibility to physical and virtual environments; lack of access to assistive technology, essential services and rehabilitation; and lack of support for independent living that are critical for the full and equal participation of persons with disabilities as agents of change and beneficiaries of development. Data and statistics compiled and analysed in the present report indicate that persons with disabilities are not yet sufficiently included in the implementation, monitoring and evaluation of the SDGs”. (https://www.un.org/development/desa/disabilities/publication-disability-sdgs.html)
Of particular concern are the findings related to higher levels of poverty, lack of access to education, health services and employment, in relation to persons with disabilities. CBR/CBID practices across the world have been working to address these issues to achieve the goal of inclusive development for over two decades now, but obviously it has not been enough. As noted in the Seventy-fourth session of the UN General Assembly in November 2019 (Agenda item: Social development: Promoting social integration through social inclusion), “the three core themes of social development, namely, poverty eradication, full and productive employment and decent work for all and social integration, are interrelated and mutually reinforcing, and that an enabling environment therefore needs to be created so that all three objectives can be pursued simultaneously…”

At the same meeting, it was also noted “that social inclusion and equality are intrinsically linked and that focusing on and investing in the most disadvantaged and excluded populations, which may include, children, women, youth, persons with disabilities, older persons, migrants and indigenous peoples, is critically important for the effective implementation of the Sustainable Development Goals…” (https://undocs.org/A/C.3/74/L.17/REV.1)

As we look ahead at the new decade before us, we need to recognise the continuing challenges in promoting inclusive development for persons with disabilities and to direct more efforts towards reducing poverty and improving access to education, healthcare, employment and social protection. If not, the Sustainable Development Goals will remain out of reach for persons with disabilities.

Dr. Maya Thomas
Editor-in-Chief
Disability, CBR and Inclusive Development
Quality of Life of Persons with Disabilities in Southern Nations, Nationalities, and Peoples’ Region, Ethiopia

Judith Baart1*, Alice Schippers2, Mamush Meta3
1. Research and Documentation Specialist, Light for the World, Netherlands
2. Executive Director, Disability Studies in Nederland, Amsterdam UMC, Netherlands
3. Coordinator, Regional Disability Mainstreaming Programme, Ethiopian Centre for Disability and Development, Ethiopia

ABSTRACT

Purpose: There is very little demographic or prevalence data regarding persons with disabilities in Ethiopia, let alone data on more in-depth factors such as access to services or quality of life. This study aimed to find out about the current quality of life of persons with disabilities in Southern Nations, Nationalities, and Peoples’ Region (SNNPR), Ethiopia.

Method: The WHO CBR Indicator Survey was used to measure quality of life, and the Washington Group Short Set was included to allow disaggregation of the data by different types of functional limitations. Interviews were conducted with 966 persons with disabilities in 10 towns in SNNPR. The majority of data collectors were persons with disabilities themselves.

Results: People with disabilities who were surveyed generally regarded their health as good (65.9%). Very few had significant levels of education (16.5% were completing higher education). Only 6.7% were working for wages and 45.2% were reportedly working on their own account. Hardly any of them (2.9%) stated that their money was sufficient for their needs. Only a small group (38%) felt valued in their community. Just over half of the respondents (56.6%) were members of a Disabled Persons’ Organisation (DPO) or any other self-representing group.

Conclusion: Persons with disabilities scored relatively or extremely low in all areas of life measured with the CBR Indicator Survey (health, education, livelihood, social and empowerment). The survey will be repeated after a few
years in the same communities to measure changes over time, and persons without disabilities will be included in order to draw comparisons.

**Implications:** Public and private organisations in SNNPR need to become more accessible and inclusive of persons with disabilities so as to improve their quality of life.

**Key words:** Education, health, livelihood, Disabled Persons’ Organisations, access.

**INTRODUCTION**

The Southern Nations, Nationalities, and People’s Region (SNNPR) is one of the nine ethnically-based regional states of Ethiopia. Located in the Southern and South-Western parts of the country, it accounts for nearly 20% of the total population. This is one of the most populous regions of Ethiopia, with over 150 persons per square kilometre.

In 2017, the SNNPR regional government, in partnership with the Ethiopian Centre for Disability and Development (ECDD), started the Regional Disability Mainstreaming (RDM) Programme, funded by Light for the World and Irish Aid Ethiopia. The RDM Programme seeks to improve the lives of persons with disabilities by working with various government bureaus and non-government agencies and actors that are present in the region, ranging from schools and village savings and loan associations to businesses, development NGOs and government bureaus. The rationale is that if the service delivery and programmes of these agencies and organisations are more accessible and inclusive of persons with disabilities, then the quality of life of individual persons with disabilities will improve.

**Objective**

Conceptually, Quality of Life is “usually a number of variables across a variety of life areas working in an interrelated fashion” (Schippers et al, 2015). Quality of Life Measurement Instruments are generally characterised by using a changing number of indicators across a variety of life domains, as summarised in Schippers et al (2015). The Community Based Rehabilitation (CBR) Matrix (World Health Organisation, 2010) is no different: it illustrates five key life domains – health, education, livelihood, social and empowerment – which influence an individual’s life, depending on their access to and decision-making power over these components. These five domains are the focus of work for many disability, development and rehabilitation
organisations in developing countries such as Ethiopia, and are therefore logical life domains to use when assessing quality of life there.

However, data about persons with disabilities is hardly available in Ethiopia. There is no agreement on prevalence of disability (Dutch Coalition on Disability and Development, 2019), and existing household surveys such as the Demographic and Health Survey (Central Statistical Agency, 2017) do not measure or disaggregate data by disability. Going beyond prevalence, this means there is little or no information on access to services, financial independence, community participation or otherwise, for persons with disabilities. In most low- and middle-income countries, such as Ethiopia, there is hardly any up-to-date data on prevalence of persons with disabilities, let alone on their access to services and quality of life. Yet this data is important and necessary in order to understand where to focus advocacy efforts for change in policy and practice. In addition, an understanding of the current quality of life of persons and their access to services – disability-focussed or otherwise – can give organisations and government agencies working in SNNPR an indication of where to make a start to improve the lives of children, youth and adults with disabilities and their families.

Thus, this study aims to answer the question, “What is the current quality of life of persons with disabilities in Southern Nations, Nationalities, and Peoples’ Region, Ethiopia?”

**METHOD**

**Study Tool**

Given that the CBR Matrix had already been translated into a ready-to-use tool, the CBR Indicator Survey (WHO, 2015) was a logical choice to measure the quality of life of persons with disabilities in the Ethiopian region of SNNPR. This study used the WHO CBR Indicators survey, a multiple-choice question survey, adding a few questions to the existing list as well as removing several which did not fit the Ethiopian context. The Washington Group Short Set of questions was also added to the survey, to allow disaggregation of the data by different types of functional limitations. For example, “Do you have difficulty walking or climbing steps?” was one of the Washington Group questions. Each individual who responded ‘Some difficulty’, ‘A lot of difficulty’ or ‘Cannot do at all’, was counted as having a functional limitation for that category.
Data collection was done using the Kobo Collect app for Android. Data was collated and analysed quantitatively in Microsoft Excel.

**Data Collectors**
Twenty data collectors (1 male and 1 female for each of the 10 target towns) were recruited for this study. Most of them were persons with disabilities and were, at the minimum, secondary school graduates with some knowledge of English. Data collectors were provided with Samsung Android Tablets to record questionnaire responses and were given 1-day training in the use of the Tablet questionnaire, with follow-up field support by RDM staff.

The questionnaire was provided in English and Amharic, and in some cases data collectors verbally translated the questions to a local language for the respondents to understand better.

Each data collector identified and interviewed a minimum of 48 respondents, selected according to the criteria described below.

**Study Sample**
The survey was carried out in 10 towns of varying sizes in SNNPR: Hawassa, Leku, Chuko, Aleta Wondo, Wendo Genet, Yirgalem, Durame, Butajira, Wolayita Sodo and Arba Minch. A “purposeful” sample of persons with disabilities was recruited (Palinkas et al, 2015).

Data collectors were encouraged to identify and interview an equal number of male and female participants, as well as an equal number of individuals with different ‘types’ of disabilities, such as visual, hearing, mobility and intellectual impairments. There were no age restrictions. Respondents were identified through local Disabled Peoples’ Organisations or the local Agency of Labour and Social Affairs office, and all those identified as having a disability. A total of 966 individuals were interviewed – roughly 96 per town. Proxy interviews were carried out with 5 of the respondents, in the case of intellectual impairment or where respondents did not have sign language skills.

The authors chose not to interview persons without disabilities for comparison purposes due to budget constraints.

**Ethical Considerations**
The survey followed the Disability Studies in the Netherlands (2017) Code of
Practice for Researchers. The data collectors explained the purpose of the study and consequences of participation to each respondent, in a manner they could understand. Each respondent who agreed to participate signed a Consent Form, which included the statement that withdrawal from the study was possible at any time. Anonymity of responses was maintained. Research data was stored securely and access was limited to prevent disclosure of sensitive information. Officials of the Agency of Labour and Social Affairs (ALSA) at Regional level and in each town were informed about the survey in writing, and assistance in identifying potential respondents was requested.

RESULTS

Interviews of 966 persons – 579 men, 386 women and 1 unspecified individual – were conducted for the survey. Of these, 242 respondents (25%) were under 18 years of age and the remaining 724 (75%) were above 19 years.

Functional limitations and living situation of the respondents is presented first, followed by key indicators of the WHO CBR Indicator Survey for each of the five domains in the survey: health, education, livelihood, social and empowerment. The entire research results for all indicators can be found in ‘Quality of Life of Persons with Disabilities in SNNPR, Ethiopia’ (Ethiopian Centre for Disability and Development, 2018).

Socio-demographic Characteristics of the Study Population

Although all the interviewed respondents had self-identified as persons with disabilities, 2.1% indicated that they did not have any difficulty in functioning. Just over half of them (51.4%) had difficulty in one of the domains of functioning (i.e., difficulty seeing, hearing, walking, remembering, self-care or communication). The rest indicated that they had difficulty functioning in two or more domains, the results being respectively 26.2% for 2 domains, 12.4% for 3 domains, 5.9% for 4 domains, 1.8% for 5 domains, and 0.2% of respondents indicated that they had difficulty functioning in all domains of the Washington Group Short Set (Table 1).

With regard to ‘type’ of functional limitations as reported by the respondents, 26% indicated they had difficulty seeing, 24% reported difficulty hearing, 54% had difficulty walking, 26% had difficulty remembering, 25% had difficulty with self-care and 19% had difficulty communicating. This reflects the purposeful sampling method that was followed, whereby care was taken to involve persons with all types of disabilities, rather than reflecting the actual distribution of types of functional limitations throughout the population of SNNPR.
The majority of persons with disabilities (81%) reported that they lived with their families, while the rest stated that they lived with other family members (6%), with someone else (5.2%) or on their own (7.8%).

Table 1: Functional Limitations and Living Situation of the Study Population

<table>
<thead>
<tr>
<th>Categories</th>
<th>Count (n=966)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of respondents with each type of functional limitation</strong> ¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty seeing</td>
<td>251</td>
<td>26%</td>
</tr>
<tr>
<td>Difficulty hearing</td>
<td>234</td>
<td>24%</td>
</tr>
<tr>
<td>Difficulty walking</td>
<td>524</td>
<td>54%</td>
</tr>
<tr>
<td>Difficulty remembering</td>
<td>252</td>
<td>26%</td>
</tr>
<tr>
<td>Difficulty with self-care</td>
<td>245</td>
<td>25%</td>
</tr>
<tr>
<td>Difficulty communicating</td>
<td>182</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Number of different functional limitations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>20</td>
<td>2.1%</td>
</tr>
<tr>
<td>1</td>
<td>497</td>
<td>51.4%</td>
</tr>
<tr>
<td>2²</td>
<td>253</td>
<td>26.2%</td>
</tr>
<tr>
<td>3</td>
<td>120</td>
<td>12.4%</td>
</tr>
<tr>
<td>4</td>
<td>57</td>
<td>5.9%</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
<td>1.8%</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Living Situation (n=965)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with parents</td>
<td>782</td>
<td>81%</td>
</tr>
<tr>
<td>Living with other family members</td>
<td>58</td>
<td>6%</td>
</tr>
<tr>
<td>Living on one’s own</td>
<td>75</td>
<td>7.8%</td>
</tr>
<tr>
<td>Living with someone else</td>
<td>50</td>
<td>5.2%</td>
</tr>
</tbody>
</table>

1. A functional limitation is defined as having difficulty in carrying out a universal basic activity. Individuals could have functional limitations in more than one category.
2. Common functional limitations that were found together include difficulty hearing and difficulty communicating; difficulty remembering and difficulty with self-care; and difficulty remembering and difficulty communicating.
Health
Over half of the persons with disabilities (68.5% for men and 62% for women) considered their health to be good or very good. In addition, 66% of all respondents felt they were treated with respect when they had last visited a healthcare provider (Table 2).

Table 2: Health Indicators

<table>
<thead>
<tr>
<th>Health</th>
<th>Male (count / %)</th>
<th>Female (count / %)</th>
<th>Total (count / %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% who rate their health as good or very good</td>
<td>396 / 68.5%</td>
<td>239 / 62%</td>
<td>635 / 65.9%</td>
</tr>
<tr>
<td>% who rate experience of being treated with</td>
<td>370 / 66.5%</td>
<td>245 / 66%</td>
<td>615 / 66.4%</td>
</tr>
<tr>
<td>respect at last visit to healthcare provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>as good or very good</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Education
Only 37.5% of boys and 69.6% of girls with disabilities (7-12 years of age) are attending or have completed primary education. The figure is lower for the youth (13-18 years of age) who are attending or have completed secondary education (18.2% for males and 24.6% of females). In both cases the number of respondents in the age group was relatively low and therefore not statistically relevant (Table 3).

Given that it is a rarity for youngsters with disabilities to complete primary and secondary education, it is not surprising that among adults aged 19 years and above, only 16.8% of men and 16.2% of women are attending or have completed some form of higher education, including vocational training, skills training, or college. The majority (85.3% of males and 83.3% of females) have received education in a mainstream education facility.
Table 3: Education Indicators

<table>
<thead>
<tr>
<th>Education</th>
<th>Male (count / %)</th>
<th>Female (count / %)</th>
<th>Total (count / %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of children with disabilities attending or completing primary education</td>
<td>15 / 37.5%</td>
<td>24 / 68.6%</td>
<td>39 / 52%</td>
</tr>
<tr>
<td>% of youth with disabilities attending or completing secondary education</td>
<td>14 / 18.2%</td>
<td>17 / 24.6%</td>
<td>31 / 21.2%</td>
</tr>
<tr>
<td>% attending or completing higher education</td>
<td>75 / 16.8%</td>
<td>44 / 16.2%</td>
<td>119 / 16.5%</td>
</tr>
<tr>
<td>% who acquire education in mainstream education facilities</td>
<td>434 / 85.3%</td>
<td>274 / 83.3%</td>
<td>708 / 84.5%</td>
</tr>
</tbody>
</table>

3. Aged 7-12 years  
4. Aged 13-18 years  
5. Aged 19+ years  
6. Government or private school/institution

Livelihood

Slightly less than half of the respondents indicated that they were self-employed, were working in the family business, or were working in a group income-generating activity (Table 4). The figure was 46.4% for men and 40.3% for women. Only 8% of men and 4.6% of women reported working for wages with an employer. Hardly any of these activities seem to translate into significant income as only 3% of men and 2.7% of women indicated that they had enough money to meet their needs most or all of the time.
Table 4: Livelihood Indicators

<table>
<thead>
<tr>
<th>Livelihood</th>
<th>Male (count / %)</th>
<th>Female (count / %)</th>
<th>Total (count / %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% who are self-employed or own account workers</td>
<td>243 / 46.4%</td>
<td>130 / 40.3%</td>
<td>373 / 45.2%</td>
</tr>
<tr>
<td>% who are working for wages or salary with an employer</td>
<td>40 / 8%</td>
<td>15 / 4.6%</td>
<td>55 / 6.7%</td>
</tr>
<tr>
<td>% who have enough money to meet their needs</td>
<td>17 / 3%</td>
<td>10 / 2.7%</td>
<td>27 / 2.9%</td>
</tr>
</tbody>
</table>

Social
With regard to social indicators, only a small group (40.5% of men and 34.3% of women) indicated that they felt valued as individuals by members of their community (Table 5).

Table 5: Social Indicators

<table>
<thead>
<tr>
<th>Social</th>
<th>Male (count / %)</th>
<th>Female (count / %)</th>
<th>Total (count / %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% who feel valued as individuals by members of their community</td>
<td>233 / 40.5%</td>
<td>132 / 34.3%</td>
<td>365 / 38%</td>
</tr>
</tbody>
</table>

Empowerment
Disabled Persons’ Organisations (DPOs) or parents’ groups are organisations where persons with disabilities can convene and plan disability rights advocacy and other activities. For parents it is an opportunity to share experiences, so that others know that they are not alone. It was reported by 56.8% of men and 56.2% of women that they belonged to or participated in such a group or organisation (Table 6).

Table 6: Empowerment Indicators

<table>
<thead>
<tr>
<th>Empowerment</th>
<th>Male (count / %)</th>
<th>Female (count / %)</th>
<th>Total (count / %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% who belong to or participate in a local group or organisation of persons with disabilities (DPO) or parents’ group</td>
<td>329 / 56.8%</td>
<td>217 / 56.2%</td>
<td>546 / 56.6%</td>
</tr>
</tbody>
</table>
DISCUSSION
The goal of this study was to understand the current quality of life for persons with disabilities in SNNPR, Ethiopia. Therefore, persons with disabilities were asked how they score in different areas of life, namely health, education, livelihood, social and empowerment. Several key indicators in these five areas of life have been presented in the results, although many more were measured.

The following discussion reflects on several striking aspects of the results.

**Despite the fact that Ethiopia invests in the inclusion of children with disabilities in the primary education system, very few persons with disabilities have progressed beyond elementary level.**

Education is a major predictor for quality of life in general, and quality education even more so (UNESCO, 2004). The results show that very few persons with disabilities progress beyond elementary school education. The majority of those who pursue any form of education do so in a mainstream education facility. This reflects the fact that Ethiopia has been promoting inclusive education and investing in children with disabilities within the primary education system – government statistics stating that 14,225 primary schools in the country provide special needs education (Federal Democratic Republic of Ethiopia Ministry of Education, 2016). Despite this, and reflecting the study data which shows that few progress beyond elementary level, many children with disabilities do not enrol for primary education or progress higher in education as many schools are not accessible to, open to, and adapted, or welcome and support children with disabilities (Tefera et al, 2015).

**Although almost half of the persons with disabilities reported pursuing an occupation in the form of self-employment, this does not lead to reporting that they have a decent livelihood.**

The survey data may give the impression that many persons with disabilities have a decent livelihood, as almost half of them indicated they were currently self-employed or working on their own account. This conclusion may be inaccurate. Own account workers include those working at income-generating activities or in family businesses, and those identifying themselves as self-employed. However, research shows that the self-employed are mostly, and particularly in Sub-Saharan Africa, subsistence entrepreneurs, that is “those who are self-employed out of necessity and who often lack skills and entrepreneurial traits”
(Cho et al, 2016). Many of the self-employed are poor (Cho et al, 2016), report lower income and are less educated than those that work for an employer or even the rest of the general population (Ryan, 2014). Self-employment, or own account work, is thus often not a choice, but a necessity because employers often refuse to employ a person with a disability, or individuals cannot find other activities to generate an income (Ryan, 2014; Cho et al, 2016). This corresponds to the results of the current study. Despite the fact that more than half of the persons with disabilities engage in self-employment or other forms of own account work, only 2.9% of respondents indicated that they had enough money to meet their needs, and only 6.7% reported that they work for an employer. Persons with disabilities in SNNPR generally work at subsistence level, most likely out of necessity, as they are not able to find work that provides a decent income.

The participation of persons with disabilities and Disabled Persons’ Organisations in the data collection phase of the survey has greatly increased visibility of both persons with disabilities and their organisations.

The participation of 10 local DPOs in the target towns of the survey in identifying survey respondents, greatly increased their visibility to both government officials and members of the public. This contributed to greater government support for some of the DPOs, as well as inclusion of their representatives in local decision-making processes introduced by the RDM Programme. In addition, persons with disabilities were specifically included in the research in the role of data collectors. Inclusive research is that which “involves people who may otherwise be seen as subjects of the research, as instigators of ideas, research designers, interviewers, data analysts, authors, disseminators and users” (Nind, 2017). Employing researchers similar to respondents in field work, has been found to benefit research results because respondents feel they can be “more open and frank with researchers they feel can empathise with their situation” (National Disability Authority, 2002). In addition, including an equal number of female data collectors with disabilities facilitated interviews with female respondents.

A relatively high number of respondents (over 50%) reported that they belonged to a DPO. This is not surprising, as most of the respondents were identified via DPOs. However, it can be assumed that far fewer persons with disabilities in any particular town belong to a DPO.
Including only respondents with disabilities is a limitation in the analysis of results.

The choice was made to include only (self-identified) persons with a disability in the survey, in order to reach the largest number of persons with disability as possible, within the budget available. While this is a unique situation, as it was possible to reach a large sample of persons with disabilities in 10 different towns, it also became a limitation as it is not possible to compare the data to persons without disabilities, and therefore not possible to ascertain whether the results stem from disability or due to the general (low) quality of life in SNNPR. Should this survey be repeated, a balance will need to be found between maximising the sample of persons with disabilities to be able to provide strong results and including as many different types of functional limitations as possible to disaggregate data by disability; as also collecting data on persons without functional limitations to be able to analyse the extent to which results are due to disability.

CONCLUSION

Quality of Life is generally measured by scoring a number of variables across a variety of life areas, in the case of this survey, by using the CBR Indicator Survey to score respondents in five areas of life: health, education, livelihood, social inclusion and empowerment. The findings of the survey demonstrate, among others, that persons with disabilities have inadequate access to health services and opportunities for education, work and community participation. Given that persons with disabilities in the SNNPR Region of Ethiopia scored relatively or extremely low in all five areas of life, it can be concluded that they tend to have a low quality of life.

The RDM programme is working with public and private organisations in SNNPR, with the aim of making their service delivery and development programmes inclusive for persons with disabilities. The survey results are proving to be very useful to the RDM team in making the case for disability inclusion to government officials and non-governmental organisation personnel. The RDM team aims to repeat the survey after a few years in the same communities, to see whether the quality of life of persons with disabilities has improved as a result of increased access to, and inclusion in, mainstream services as well as community participation.
ACKNOWLEDGEMENT

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REFERENCES


National Disability Authority (2002). Guidelines for including people with disabilities in research.


Health-Related Quality of Life of Wheelchair Fencers, Sedentary People with Disability and Conventional Fencers in Brazil, Assessed by Short Form 36 (SF-36)

Mirna Clemente1*, Marilis Dallarmi Miguel1, Karina Bettega Felipe1, Ivan Marangon Schwantes2, Darlan França Ciesielski Junior2, Athos Marangon Schwantes2, Christian Burmeister Schonhofen2, Tabea Epp Kuster Alves1, Tiago Volpi Braz3, Luiz Claudio Fernandes1, Obdulio Gomes Miguel1

1. Federal University of Parana (UFPR), Brazil
2. Physical Disability Association of Parana (ADFP), Brazil
3. Methodist University of Piracicaba (UNIMEP), Brazil

ABSTRACT

Purpose: It is well established that physical exercise, in general, decreases anxiety and depression. Para sport or sport for people with disabilities is used as a rehabilitation strategy to improve their quality of life. This study aimed to investigate people with disabilities who practise wheelchair fencing, sedentary people with physical disability and conventional fencers, assessed by Short Form 36 (SF-36), by comparing the groups.

Method: Forty-two people from Physical Disability Association of Parana (ADFP) answered SF-36 and were divided into three groups: Conventional Fencers (CF), Wheelchair Fencers (WF), and Sedentary People with Physical Disability (SD).

Results: This study was the first to report the Health-Related Quality of Life (HRQOL) of conventional fencers, wheelchair fencers, and sedentary people with physical disability, using SF-36. The data demonstrated high scores in CF and WF, on seven SF-36 scales of the eight-scale profile, including functional and mental health, role physical, bodily pain, general health perception, vitality, social functioning, mental health. Moreover, the sedentary group had lower scores in most of the domains when they were compared to CF.

Conclusion: The results might provide supportive evidence that HRQOL of WF has demonstrated a positive effect on people with disability since para sport has been used as a rehabilitation programme.
Implication: The implementation of a public campaign is recommended, about sport as a health promoter for disability and rehabilitation. By involving healthcare providers from the area, people with disabilities can be encouraged to participate in para sport.

Key words: Wheelchair fencing, Heath-Related Quality of Life (HRQOL) Short Form 36(SF-36), rehabilitation programme, para sport.

INTRODUCTION

Physical disability refers to impairment of the locomotor system caused by a kind of disease or injury that strikes the nervous, muscular and osteoarticular systems, alone or together (Silveira et al., 2012). People with disabilities have demonstrated more days of pain and less vitality compared to individuals without disabilities (Groff et al, 2009).

After ending the formal physical rehabilitation period, people with a physical disability still require some form of rehabilitation, using para sport or adaptive sports to replace formal physiotherapy (Groff et al, 2009).

One of the goals of rehabilitation for people with physical disabilities is to reach the highest possible level of life satisfaction (Groff et al, 2009), and there is strong evidence that sport in general has been used as a rehabilitation strategy to improve their Health-Related Quality of Life (HRQOL) (Yazicioglu et al, 2012). The number of people with a physical disability participating in para sports (competitive or recreational) has been increasing over the years (Winnick et al, 2004; Mauerberg-deCastro et al, 2016). The body and mind benefit not only from competitive sports participation, but also from recreational activities that have a positive impact on health. Moreover, early encouragement of an active lifestyle can have a good effect on the health promotion of these people (Wilson et al., 2010).

Besides, it is well established that physical exercise, in general, produces mood benefits in many of the same domains assessed by HRQOL scales, including decrease of psychological distress, anxiety, depression, and fatigue (Shapiro et al., 2016). Paralympic sport has demonstrated beneficial effects on physical and mental functioning, promoting life satisfaction for people with disabilities (Yazicioglu et al., 2012). Moreover, from sport people can learn health habits, developing self-esteem, building social skills and friendship (Fiorilli et al., 2013).
Wheelchair fencing arose from the adaptation of conventional fencing, which was presented for the first time in 1960 at the Stoke Mandeville Games (Nazareth, 2009). Although wheelchair fencing is a consolidated sport in most of the countries of Europe, little is known about HRQOL in people who practise it.

This research used the Medical Outcomes Study 36-item Short Form Survey (SF-36) to measure the HRQOL of people with physical disabilities who practise wheelchair fencing, as well as among the conventional fencers and sedentary people with a physical disability. The measure evaluates health status across eight scales including physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional issues and mental health (Ciconellli, 1997).

Objective
This study aims to investigate the association between sport and the perceptions of wheelchair fencers as compared to sedentary people with a physical disability and fencers without disability, as assessed by the questionnaire SF-36. Moreover, encouraging people with disability to participate in para sports, may be a good strategy to improve their HRQOL. This research also intends to provide recommendations for future investigations relating to different kinds of para sports as health promoters.

METHOD

Study Design
This is a qualitative and a case-controlled study.

Study Sample
Forty-two individuals from the Physical Disability Association of Parana (ADFP) were invited to answer the 36-Item Short Form Health Survey (SF-36).

The inclusion criteria were:

- Males associated with the ADFP,
- 18 years of age and older,
- Practising fencing for more than two years, with physical disability and/or without disability, and
- People with a physical disability, with no participation in sport.
The 42 individuals were divided into three groups: 1) Conventional Fencers (CF), 2) Wheelchair Fencers (WF), and 3) Sedentary people with a physical disability (SD).

Group 1: Conventional Fencers, comprising 14 healthy men, were invited to be the control group. The average age was 30.43 years. Although they did not have any physical impairment, they were all volunteers of the ADFP since the training for both conventional and wheelchair fencing is carried out at the same place. All of them were competitive athletes in the National competition in Brazil.

Group 2: Wheelchair Fencers were 14 in number. The average age was 33.54 years. Among them, 4 were amputees and 10 had spinal cord injuries. All the participants were competitive para athletes (5 of them having participated in international competitions and 9 in national competitions).

People with disability who wish to participate in Wheelchair Fencing competitions, must be classified according to the classification of International Wheelchair Fencing Committee rules, which are described in Table 1.

Group 3: Sedentary people with a physical disability (SD), comprising 14 men, were invited to be part of this group. The average age was 32.42 years. All of them were associated with the ADFP. They did not participate in any para sport and were not physically active.

**Table 1: Criteria of the Functional Classification of International Wheelchair Fencing Committee Rules (adapted from The International Wheelchair Fencing Committee Rules & Regulations)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1A</td>
<td>Athletes with no sitting balance who have a disabled playing arm. No efficient elbow extension against gravity and no residual function of the hand which makes it necessary to fix the weapons used in fencing (foil, épée or sabre) with a bandage. Tetraplegics with spinal lesions level C5/C6.</td>
</tr>
<tr>
<td>Class 1B</td>
<td>Athletes without sitting balance and affected fencing arm. Functional elbow extension but no functional finger flexion. The weapon (foil, épée or sabre) has to be fixed with a bandage. Comparable to complete tetraplegics level C7/C8 or higher incomplete lesion.</td>
</tr>
</tbody>
</table>
Instrument

The SF-36 Health questionnaire or Medical Outcomes Study 36-item Short Form Survey (SF-36) is a questionnaire, which has been used extensively to quantify HRQOL, and has also been validated in Brazil (Ciconelli, 1997). The SF-36 questionnaire consists of 36 items, which are used to calculate eight scales or domains of different health dimensions: Physical Functioning (PF), Role Physical Limitation (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional Limitation (RE), and Mental Health (MH). The first four scores can be summed to create the Physical Composite Score (PCS), while the last four can be summed to create the Mental Composite Score (MCS), which provides a measure of the overall effect of physical and mental impairment. Scores for the SF-36 scales range between 0 and 100, with higher scores indicating better HRQOL. The SF-36 has been recognised as one of the most trusted measures of quality of life of people with spinal cord injury, workers with chronic pelvic pain and athletes with no physical impairment (Zhu et al., 2016).

Statistical Analysis

To investigate the HRQOL analyses for SF-36 in each domain and summary, and to compare the groups, statistical analysis was carried out using the one-way analysis of variance (ANOVA) with Tukey’s multiple comparison tests and/or Kruskal-Wallis test, followed by Dunn’s test if the requirements for performing a parametric test were not satisfied. Results are demonstrated as mean ± S.E.M. Statistical analysis was done using Graph Pad Prism Software (Graph Pad Software, Inc. La Jolla, CA, USA, version 7.0), significance was considered at p< 0.05.
Ethics Approval
The local ethics committee (Federal University of Paraná) and their recommendation with number 2.294.303 approved the study protocol. The protocol for carrying out the study was developed by following the guidelines SRQR (Standards for Reporting Qualitative Research) with 21 items (O’Brien et al., 2014) and CARE (Consensus-based Clinical Case Reporting) (Gagnier et al., 2013). Participants were asked to complete the informed Consent Form before answering the questionnaire.

RESULTS
Forty-two men who fulfilled the inclusion criteria were admitted to the study. The characteristics of the participants are described in Table 1 and the HRQOL, assessed by SF-36 questionnaire, were demonstrated by PF, RP, BP, GH, VT, SF, RE, MH, PCS, MCS, standard error of the mean (S.E.M). No significant differences were observed between the groups CF and WF, on the frequency of training, which was 3 to 4 times a week for both groups. However, the WF and the sedentary people with physical disability had lower level of education (graduation completed), 28.57% and 22.42 % respectively, compared to 71.42% of CF group.

On PF, RP, BP, SF, MH, PCS and MCS, there were statistically significant differences among the groups. No significant differences were found among the groups on the three scales: general health, vitality and role emotional limitation (Table 2).

Table 2: HRQOL from CF, WF, and SD assessed by SF-36

<table>
<thead>
<tr>
<th>SF-36 SCALES</th>
<th>CF</th>
<th>WF</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N= 14</td>
<td>N= 14</td>
<td>N= 14</td>
</tr>
<tr>
<td></td>
<td>MEAN</td>
<td>S.E.M</td>
<td>MEAN</td>
</tr>
<tr>
<td>Physical Functioning (PF)</td>
<td>96.43 ***</td>
<td>1.42</td>
<td>56.43 ***</td>
</tr>
<tr>
<td>Role Physical limitation (RP)</td>
<td>85.71 **</td>
<td>6.79</td>
<td>78.57</td>
</tr>
<tr>
<td>Bodily Pain (BP)</td>
<td>78.14 **</td>
<td>3.75</td>
<td>66.21</td>
</tr>
<tr>
<td>General Health Perception (GH)</td>
<td>73.07</td>
<td>4.22</td>
<td>65.21</td>
</tr>
</tbody>
</table>
Other variables collected for descriptive purposes included cause of injury (Figure 1) and diagnoses (Figure 2) from wheelchair fencers and sedentary people with physical disability.

**Figure 1: Cause of Injury for the Wheelchair Fencers and Sedentary People with Physical Disability in this study in percentages in the figure**

| Vitality (VT) | 67.14 | 5.20 | 72.5 | 3.38 | 55.36 | 6.16 |
| Social Functioning (SF) | 92.86 ** | 3.86 | 87.5 *** | 5.07 | 60.65 | 8.30 |
| Role Emotional Limitation (RE) | 92.85 | 5.16 | 61.85 | 11.51 | 59.47 | 12.68 |
| Mental Health (MH) | 76.29 ** | 3.96 | 72.57 *** | 4.31 | 50.29 | 7.18 |
| Physical Composite Score (PCS) | 83.34 ** | 5.07 | 66.61 *** | 4.55 | 50.31 | 7.19 |
| Mental Composite Score (MCS) | 82.29 ** | 6.38 | 73.61 | 5.27 | 56.44 | 2.34 |

* Statistically significant difference between groups CF and WF p < 0.05  
** Statistically significant difference between groups CF and SD p < 0.05  
*** Statistically significant difference between groups WF and SD p < 0.05
DISCUSSION

The present study aimed to compare HRQOL assessed by SF-36, among CF, WF and SD. Although a few studies using SF-36 with people with disability have been already reported in the literature (Fiorilli et al., 2013), none of them have dealt with the conventional fencers, wheelchair fencers and sedentary people with physical disability. The hypothesis of this study was to demonstrate that Paralympic sport, in this case fencing, as a rehabilitation process, might bring excellent benefits to people with a physical disability, in terms of their quality of life.

In this research, the results showed no statistically significant difference with CF in comparison to WF, on seven SF-36 scales: role physical, bodily pain, general health perception, vitality, social functioning, role emotional limitation and mental health. This is consistent with other research that linked sport to a higher quality of life (Kljajic et al., 2016). In contrast, when wheelchair fencers were compared to the sedentary group with a physical disability, the WF group had a higher score and with statistically significant differences on PF, SF, MH, and PCS. Corroborating these results, (Arango-Lasprilla et al., 2010) and (Kljajić et al., 2016) demonstrated that health related to the quality of life of active people with spinal cord injury was higher than when compared to the sedentary group.
It was no surprise that WF and SD had lower scores in the physical functioning and physical composite scores as compared to CF. In this study, 71.42% of WF and 64.28% of SD were with spinal cord injury; this could cause many physical problems that lead to lower physical function and physical composite score (Arango-Lasprilla et al., 2010), demonstrating that, in this case, sport could not make any difference when comparisons were made to people without impairments. A study by (Lidal et al., 2008) demonstrated that PF scores were higher for those with less severe injuries compared to participants with a functionally completed spinal cord injury, also assessed by SF-36. This could explain why people with disability, in this study, could not reach higher scores in the physical scale and subscale as compared to healthy people. In contrast, WF had a higher score and demonstrated statistically significant differences, compared with the SD group, on the PF.

Role emotional limitation is compounded by the following items: work-related changes or same daily activity changes, as a result of psychological problems (Silqueira, 2005). In this study, RE was not statistically different among the three groups. In contrast, mental health and physical composite scores showed significant difference when WF and CF were compared with SD. MCS has also had similar results to both groups (WF and CF). Akin to this study, (Blauwet, 2005) demonstrated that the level of self-esteem had the same score among athletes with disabilities and athletes in the general population.

This study was able to demonstrate that WF and CF are more likely to have a similar experience of Health-Related Quality of Life (HRQOL) in most of the domains. Both CF and WF groups had higher scores than the SD group. The data corroborates that of (Fiorilli et al., 2013), which has shown the effect of competitive Olympic or Paralympic sport might stimulate a positive complex system in athletes without and with disability on vigour and vitality, and lower on tension, fatigue and depression, than people in general.

All the findings support the importance of conducting more research in qualitative studies, which should investigate HRQOL of individuals with a disability participating in other Paralympic sports. The findings demonstrated that sport, as a rehabilitation programme for wheelchair fencers, was the reason for the high score in most of the domains and responsible for improving their quality of life.
Limitation
A limitation of this study was the small size of the study sample. However, in Brazil, only a small number of people engage in Para sport, in this case in wheelchair fencing. Moreover, the public health system in Brazil is affected by lack of finances, due to which many people with disability have not accessed rehabilitation programmes. Using sport as a rehabilitation programme could be an excellent strategy, since wheelchair fencing has demonstrated that it has improved people’s quality of life.

CONCLUSION
According to the data in this study, the HRQOL showed high and similar scores for WF, as compared to CF, on seven scales and was lower only in the physical functioning. Compared to SD, WF showed a higher score in four of the domains assessed by SF-36.

These results might provide supportive evidence that Para sport has had a positive effect on wheelchair fencing individuals since it has been used as a rehabilitation programme. The implementation of a public campaign about disability and rehabilitation is recommended, involving healthcare providers from this area to encourage people with disability to be part of Paralympic sport, either recreational or competitive, to improve their HRQOL.

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Conflict of interest
The authors declare that they have no conflict of interest to be disclosed.

REFERENCES
Arango-Lasprilla, Juan Carlos, Nicholls, Elizabeth, Olivera, Silvia Leonor, Perdomo, Jose Libardo and Arango, Jose Anselmo (2010). Health-related quality of life in individuals with spinal cord injury in Colombia, South America. NeuroRehabilitation; 27(4): 313–319.

Ciconellli, Rozana Mesquita (1997), Tradução Para o Português e Validação Do Questionário Genérico de Avaliação de Qualidade de Vida "Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36)". Tese (doutorado) Universidade Federal de São Paulo: 01-120.


Silqueira, Salete Maria de Fátima (2005). O Questionário Genérico SF-36 Como Instrumento de Mensuração Da Qualidade de Vida Relacionada a Saúde de Pacientes Hipertensos. Tese

Silveira, Marcelo Dalmédio, Costa e Silva, Anselmo de Athayde;,. Godoy, Priscila Samora;,. Calegari, Décio Roberto;,. Araújo, Paulo Ferreira de; and Gorla, José Ireneu (2012). Correlação

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Environmental Accessibility Assessment for People with Vision, Hearing and Speech Disabilities in Mongolia

Tumenbayar Batdulam¹, Byambaa Enkhtsetseg², Davaatseren Uranchimeg³, Ochir Chimedsuren⁴*

1. Department of Public Health, School of Medicine, Mongolian National University
2. School of Science, Economics Department, National University of Mongolia
3. Department of Ophthalmology, Mongolian National University of Medical Sciences
4. The Graduate School, Mongolian National University of Medical Sciences

* Corresponding Author: Ochir Chimedsuren, The Graduate School, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia. Email: chimedsuren@mnums.edu.mn

ABSTRACT

Purpose: The main objective of this paper was to assess environmental accessibility for people with vision, hearing and speech disabilities in Mongolia, with particular focus on public buildings and public transportation.

Methods: A standardised internationally-used questionnaire, consisting of 29 questions, was used for the accessibility of public buildings assessment. The questionnaire results were grouped into categories and descriptive statistics were obtained. To determine quality and accessibility to public transportation a standardised sheet, consisting of 51 questions from the internationally accepted SERVQUAL, was used. This model is commonly used for measurement of the discrepancies between actual performance and customer expectations.

Result: Assessment of public buildings in Mongolia revealed that they were moderately accessible for people with vision, hearing and speech disabilities. The assessment of public transportation found that the discrepancy between actual performance and customer expectation is the highest across all indicators for people with hearing and speech impairments.

Conclusion: The research findings indicated a strong need to pay closer attention to the current environmental unfriendliness and inaccessibility faced by people with vision, hearing and speech disabilities.

Key words: Disability, visually, hearing, speech impairment, accessibility.
INTRODUCTION

There are over 1 billion people living with some form of disability in the world, and 650 million of them reside in the Asia-Pacific Region (World Health Organisation, 2001). According to the official statistics in Mongolia, the number of people with disabilities in the country was 105,730, representing 3.08% of the total population in 2018 (National Statistical Office, 2018). In Mongolia, persons with disabilities and their households represent a population subgroup with substantially higher poverty and lower human development indicators than the rest of the population. For instance, 42% of households with persons with disabilities live in poverty compared to 18% of households with no persons with disabilities; 26% of persons with disabilities around 15–59 years of age are in employment compared to 63% of those without disabilities; and, 43% of persons with disabilities who are 6–18 years of age are unable to read compared to only 4% of people without disabilities. People with disabilities and the families of children with disabilities incur higher expenditure for health services than people without disabilities, including for medicines, diagnostic procedures, and travel costs associated with visiting Ulaanbaatar, the capital, for tests that are not available in provincial hospitals. This increased consumption contributes to higher levels of poverty among households with persons with disabilities (Asian Development Foundation, 2016).

Moreover, Mongolia falls short of the legal environment that ensures people with disabilities access to public transportation (Ayush, 2003), roads (Juluundolgor, 2016), buildings, housing, public facilities (Gonchigbat, 2013), and that explicitly provide people with vision, hearing or speech disabilities access to information and communication with others. There is a necessity to significantly reduce and gradually eliminate the barriers faced by people with disabilities when accessing public transportation (Bat-Orgil, 2016), using public infrastructure (Stark et al, 2008), and using public means of communication.

Limited studies have been carried out in Mongolia on the environmental accessibility for people with disabilities (Asian Development Foundation, 2016). The research on “Equal accessibility to health care services for people with physical disability” conducted by (Munkhuchral et al, 2013) reports that hospitals have no designated parking area outside their buildings (100%), no paved roadways leading to the hospital building or roadways that are accessible by people with paralysis (56.2%) (Orgilbayar, 2009), no ramp access at the main entrance to the
hospital building (18.2%) or standard ramp that can be used by wheelchair users alone (69.1%) (Steinberg et al, 2006).

**Objective**

Therefore, the aim of this study is to assess environmental accessibility, with particular focus on public transportation and buildings for people with vision, hearing or speech disabilities in Mongolia.

**METHOD**

**Study Sample**

The study used random sampling for both public building and public transportation assessment.

- Out of 250 public and private organisations which mainly provide social services in Mongolia, 100 organisations were randomly selected for the public building assessment (Stark et al, 2008). These are divided into 7 categories, specifically:
  
  (i) State administrative organisations, ministries and district municipal offices,
  
  (ii) Offices for labour, social welfare and protection, and social insurance,
  
  (iii) Health care organisations (Cupples et al, 2016),
  
  (iv) Educational institutions,
  
  (v) Public transportation (Ganchimeg, 2013), culture and arts, entertainment service organisations,
  
  (vi) Public places for shopping, banking and financial services, and
  
  (vii) Public accommodations, resorts and sanctuaries, judiciary and law enforcement organisations.

- 100 passengers (with disabilities) of public buses, comprising 50 people with vision impairment and another 50 people with hearing and speech impairment, were selected randomly for the public transportation assessment.
Data Collection
The research was conducted by the team which also involved people with vision, hearing or speech disabilities and their support persons (Barnett et al, 2017). At the beginning of the study, team members were trained in methods to perform evaluation, and the research was collaboratively conducted with full compliance to the ethical norms and in accordance with approved methodology and methods (Grills et al, 2017). The barriers faced by people with vision, hearing or speech disabilities in relation to taking a public bus service for travel to a social service-providing organisation were identified and evaluated through standardised questionnaires. These were communicated to the people with hearing impairment with the help of a sign language interpreter and to the people with vision impairment with the help of accompanying support persons (Jakovljevic and Buckley, 2011).

Study Tool
A standardised internationally-used questionnaire consisting of 29 questions was used to assess the accessibility of public buildings (Gonchigbat, 2013). To determine quality and accessibility to public transportation, a standardised sheet consisting of 51 questions from the internationally accepted SERVQUAL, was used (Muthupandian and Vijayakumar, 2012). This model is commonly used for measurement of the discrepancies between actual performance and customer expectations.

Data Analysis
The questionnaire results were grouped into categories and descriptive statistics were obtained. Environmental accessibility scores between 100%-75% were categorised as “Very accessible or very good”, 75%-50% was categorised as “accessible or good”, 50%-25% was categorised as moderately accessible or average, and 25% or below was categorised as “inaccessible or bad” (Stark et al, 2008).

Quality and accessibility to public transportation were evaluated by a five-point scale, based on the gap between the actual performance and the customer expectation regarding usage of public transportation.

Ethical Considerations
The study methodology was approved by the Researchers’ Council meeting of the School of Public Health, Mongolian National University of Medical Sciences
(MNUMS), on 26th June 2015 (meeting minutes #16) and ethical issues were discussed and approved by the Medical Ethics Committee of the MNUMS at its meeting held on 18th December 2015 (minutes #5/3/2015-05). The research team was given training on how to conduct assessment and provided with Consent Forms (to obtain approval related to ethical issues).

**RESULTS**

**Public Building Assessment**

Overall results of this study show that public building assessment for people with vision, hearing and speech disabilities is insufficient in Mongolia. Average score for public building accessibility for people with vision impairment was 42.81% while it was 31.71% for people with hearing and speech impairment; these are categorised as moderately accessible.

The assessment of public transportation, culture and arts, and entertainment service organisation buildings showed they were “accessible” for both people with vision impairment (61%) and people with hearing and speech impairments (53%). It was concluded that educational institutions were “inaccessible”, with the lowest score of 11.8% for people with hearing and speech impairments.

**Table 1: Comparison of Average Assessment Scores for Environmental Accessibility to the Buildings of Organisations providing Social Services to People with Vision, Hearing and Speech Disabilities**

<table>
<thead>
<tr>
<th>Service Sectors</th>
<th>Accessibility for People with Vision Impairment</th>
<th>Accessibility for People with Hearing and Speech Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>State administrative organisations, ministries and district municipal offices</td>
<td>45.3%</td>
<td>36.3%</td>
</tr>
<tr>
<td>Offices for labour, social welfare and protection, and social insurance</td>
<td>38.3%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Health care organisations</td>
<td>38.9%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Educational institutions</td>
<td>30.9%</td>
<td>11.8%</td>
</tr>
</tbody>
</table>
Table 2 shows more detailed results by 5 categories for people with vision disability.

Average assessment score for public buildings’ accessibility shows that only the indicator

“Have large signs with good lighting” was evaluated as “very accessible”, with an average assessment score of 77.0%.

The indicators “Have guidance handles for people with seeing disability in corridors”, with a score of 50.0 %, and “Have welcoming guide ready to help the customers at entrance”, with a score of 52.0 %, have been evaluated as “moderately accessible”.

For bathroom accessibility, the indicator “Placed mirrors 20cm from the wall next to”, with a score of 32.0%, and for external environment accessibility the indicator “Planned parking space near the building for people with disability ≥3m 50cm”, with a score of 40.0 %, were evaluated as “accessible”. All other indicators were evaluated as “inaccessible”, with a score below 25%.

Out of a total of 18 indicators, only 1 indicator was assessed as “very accessible or very good”, 3 were “accessible or good”, 2 were “moderately accessible or average”, and 12 were “inaccessible or bad”.

<table>
<thead>
<tr>
<th>Public transportation, culture and arts, entertainment service organisations</th>
<th>61.0%</th>
<th>53.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public places for shopping, banking and financial services</td>
<td>43.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Public accommodations, resorts and sanctuaries, judiciary and law enforcement organisations</td>
<td>42.3%</td>
<td>33.1%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>42.81%</strong></td>
<td><strong>31.71%</strong></td>
</tr>
</tbody>
</table>
Table 2: Average Assessment Score for Public Buildings’ Environment Accessibility for People with Vision Disability, by Assessment Indicators

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>(%) Yes</th>
<th>(%) No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entrance Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the floors are on one level without any defects</td>
<td>41.0</td>
<td>59.0</td>
</tr>
<tr>
<td>Have guidance handles for people with seeing disability in corridors</td>
<td>50.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Have tactile boards with 90cm width before and after stairways and elevators</td>
<td>8.0</td>
<td>92.0</td>
</tr>
<tr>
<td>Have floor numbers with Braille along the stairways handle</td>
<td>8.0</td>
<td>92.0</td>
</tr>
<tr>
<td>All the elevator buttons have Braille notes on them</td>
<td>22.0</td>
<td>78.0</td>
</tr>
<tr>
<td><strong>Internal Environment Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have elevator ready when needed to get service from second floor</td>
<td>21.0</td>
<td>79.0</td>
</tr>
<tr>
<td>Elevator announces floor number and displays on monitor 1-2 seconds before reaching the floor</td>
<td>20.0</td>
<td>80.0</td>
</tr>
<tr>
<td><strong>Bathroom Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have floor tactile marks before every bathroom sink and lavatory pans</td>
<td>6.0</td>
<td>94.0</td>
</tr>
<tr>
<td>Have emergency call gadgets in bathrooms</td>
<td>7.0</td>
<td>93.0</td>
</tr>
<tr>
<td>Placed mirrors 20cm from the wall next to</td>
<td>32.0</td>
<td>68.0</td>
</tr>
<tr>
<td><strong>Information Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have information board of services provided by organisation, annotations for directions, bathrooms and emergency exits</td>
<td>11.0</td>
<td>89.0</td>
</tr>
<tr>
<td>Have welcoming guide ready to help the customers at entrance</td>
<td>52.0</td>
<td>48.0</td>
</tr>
<tr>
<td>Have clear room address and good lighting in rooms</td>
<td>77.0</td>
<td>23.0</td>
</tr>
<tr>
<td>Have light and sound alert emergency system for emergency situations specially for people with disabilities</td>
<td>18.0</td>
<td>82.0</td>
</tr>
<tr>
<td>Have specific SOS emergency plan to countermeasure sudden situations for people with disabilities</td>
<td>6.0</td>
<td>94.0</td>
</tr>
</tbody>
</table>
Table 3 shows similar results for people with hearing and speech disability. Only the indicator “Have large signs with good lighting in rooms” has been evaluated as “very accessible”, with average assessment score of 77.0%.

From information accessibility, the indicator “Have flowing advertisements of organisation’s service”, with a score of 71.0 %, and from bathroom accessibility the indicator “Have bathroom signs separately”, with a score of 59.0%, have been assessed as “accessible or good”.

From external environment accessibility, “Planned parking space near the building for people with disability ≥3m 50cm” has been assessed as “moderately accessible”, with the score of 40.0%.

All the others are evaluated as “inaccessible or bad”, with a score below 25%.

Out of a total of 12 indicators, only 1 indicator was assessed as “very accessible or very good”, 2 were “accessible or good”, 1 was “moderately accessible or average”, and 8 were “inaccessible or bad”.

Table 3: Average Assessment Score for Public Buildings’ Environment Accessibility for People with Hearing and Speech Disability, by Assessment Indicators

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>(%) Yes</th>
<th>(%) No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bathroom Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have bathroom signs separately</td>
<td>59.0</td>
<td>41.0</td>
</tr>
<tr>
<td>Have emergency call system in bathroom</td>
<td>7.0</td>
<td>93.0</td>
</tr>
<tr>
<td><strong>Information Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have flowing advertisements of organisation’s service</td>
<td>71.0</td>
<td>29.0</td>
</tr>
<tr>
<td>Have sign language display</td>
<td>4.0</td>
<td>96.0</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>Have sign language interpretation of organisation's website</td>
<td>2.0</td>
<td>98.0</td>
</tr>
<tr>
<td>Have light and sound alert emergency system for emergency situations specially for people with disabilities</td>
<td>18.0</td>
<td>82.0</td>
</tr>
<tr>
<td>Have specific SOS emergency plan to countermeasure sudden situations for people with disabilities</td>
<td>6.0</td>
<td>94.0</td>
</tr>
</tbody>
</table>

**Internal Environment Accessibility**

<table>
<thead>
<tr>
<th>Have clear room address and good lighting in rooms</th>
<th>77.0</th>
<th>23.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have elevator ready when needed to get service from second floor</td>
<td>21.0</td>
<td>79.0</td>
</tr>
<tr>
<td>Elevator announces floor number and displays on monitor 1-2 seconds before reaching the floor</td>
<td>20.0</td>
<td>80.0</td>
</tr>
</tbody>
</table>

**External Environment Accessibility**

<table>
<thead>
<tr>
<th>Planned parking space near the building for people with disabilities ≥3m 50cm</th>
<th>40.0</th>
<th>60.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have guiding signs to the building from the nearest public bus stop for people with disabilities</td>
<td>18.0</td>
<td>82.0</td>
</tr>
</tbody>
</table>

Table 4 shows average assessment score for public buildings’ environment accessibility for people with vision disability, by type of public organisation and categories. For people with vision disability, average assessment score of entrance accessibility ranged from 57.7% - 80.0% and has been evaluated as “good”. Establishments’ internal environment accessibility, including tactile way, hand-rail along the corridors, tactile marks before and after the stairways, floor numbers with Braille markings on stairway hand-rail, Braille markings on elevator buttons, announcer when going in/out from elevator, scored from 19% - 46% and were evaluated as “moderately accessible”.

The internal environment accessibility has been evaluated as “inaccessible or bad”, with 19.1%-19.4% for the buildings of social welfare, insurance, and security organisations as well as schools and kindergartens from educational organisations. Moreover, for the other 71 organisations, internal environment accessibility was evaluated as “moderately accessible or average”, scoring 32.1%-46.0%.

Assessment checked whether establishments’ bathrooms have Braille notations on bathroom doors, whether the floor is tactile in front of sinks and lavatory pans, and for the presence of emergency call system and hand-rails along the
wall. Results showed that bathroom accessibility of public entertainment and media organisations was “moderately accessible”, with a score of 40.0%.

Other 6 categories of 90 establishments’ bathroom accessibility were “inaccessible or bad”, with scores of 10.0% -17.3%.

In addition, the following points were considered for this assessment: whether service information is spread using voice messages, whether there are text messages with Braille notations, and whether they have information boards and guides to help people with disability. Information accessibility was rated as “moderately accessible”, with scores of 32.7% -50.8%. The other 20% was evaluated as “good”, with scores of 53.7% -62.0%.

Assessment has evaluated whether establishments’ external environment has planned parking space for people with disabilities, whether there is a guiding path to the building entrance from the parking lot, and a guiding path from the nearest public bus stop to the building entrance. External environment accessibility was found to be “accessible or good” for 60%. The other 40% was evaluated as “moderately accessible”.

For people with seeing disability, the external environment accessibility of public organisations was found to be “accessible or good” for public transportation, media, entertainment and culture, while for the other 6 categories it was “moderately accessible or average”. Overall, the external environment accessibility of public organisations was found to be “moderately accessible” for people with seeing disability.
Table 4: Average Assessment Score for Public Buildings’ Environment Accessibility for People with Vision Disability, by type of Public Organisation and Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Entrance (%)</th>
<th>Internal environment (%)</th>
<th>Bathroom (%)</th>
<th>Information (%)</th>
<th>External environment (%)</th>
<th>Overall average (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public administration organisations</td>
<td>19</td>
<td>71.1</td>
<td>32.1</td>
<td>13.2</td>
<td>53.7</td>
<td>53.2</td>
<td>45.3</td>
</tr>
<tr>
<td>Social welfare, insurance and security organisations</td>
<td>18</td>
<td>58.3</td>
<td>19.4</td>
<td>15.0</td>
<td>44.4</td>
<td>50.0</td>
<td>38.3</td>
</tr>
<tr>
<td>Healthcare organisations and branches</td>
<td>19</td>
<td>64.7</td>
<td>33.2</td>
<td>9.5</td>
<td>48.4</td>
<td>39.5</td>
<td>38.9</td>
</tr>
<tr>
<td>Education organisations and branches</td>
<td>11</td>
<td>63.6</td>
<td>19.1</td>
<td>17.3</td>
<td>32.7</td>
<td>18.2</td>
<td>30.9</td>
</tr>
<tr>
<td>Public transportation, entertainment, media organisations</td>
<td>10</td>
<td>80.0</td>
<td>46.0</td>
<td>40.0</td>
<td>62.0</td>
<td>60.0</td>
<td>61.0</td>
</tr>
<tr>
<td>Public market, bank and financial organisations</td>
<td>10</td>
<td>65.0</td>
<td>37.0</td>
<td>13.0</td>
<td>46.0</td>
<td>54.0</td>
<td>43.0</td>
</tr>
<tr>
<td>Health resort, court and police organisations</td>
<td>13</td>
<td>57.7</td>
<td>40.0</td>
<td>10.0</td>
<td>50.8</td>
<td>57.7</td>
<td>42.3</td>
</tr>
</tbody>
</table>

Results for public buildings’ environment accessibility for people with hearing and speech disability show that out of 100 organisations in 7 categories, 80% were evaluated as “inaccessible or bad” for information accessibility, with scores of 14.5% –21.1%. The other 20% were “moderately accessible or average”, with scores of 27.7% -38.0%.
Based on the assessment, the main problem for people with hearing and speech disability is to receive information. Consequently, special service and further improvements are needed for this. External environment accessibility was “moderately accessible” with 31.7%, which showed that people with hearing disability could not fully avail of public social service.

**Table 5: Average Assessment Score for Public Buildings’ Environment Accessibility for People with Hearing and Speech Disability, by type of Public Organisation and Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>(%) Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public administration organisations</td>
<td>19</td>
<td>47.4 21.1 45.8 28.9 36.3</td>
</tr>
<tr>
<td>Social welfare, insurance and security organisations</td>
<td>18</td>
<td>36.1 15.6 20.0 25.0 26.7</td>
</tr>
<tr>
<td>Healthcare organisations and branches</td>
<td>19</td>
<td>47.4 14.7 33.2 21.1 31.1</td>
</tr>
<tr>
<td>Education organisations and branches</td>
<td>11</td>
<td>9.1 14.5 13.6 9.1 11.8</td>
</tr>
<tr>
<td>Public transportation, entertainment, media organisations</td>
<td>10</td>
<td>65.0 38.0 58.0 45.0 53.0</td>
</tr>
<tr>
<td>Public market, bank and financial organisations</td>
<td>10</td>
<td>10.0 16.0 48.0 40.0 30.0</td>
</tr>
<tr>
<td>Citizen residential, health resort, court and police organisations</td>
<td>13</td>
<td>0.0 27.7 52.3 42.3 33.1</td>
</tr>
</tbody>
</table>

**Public Transportation Assessment**

Table 6 summarises the results of evaluation of accessibility to public transportation for people with vision, hearing and speech disabilities. The quality and accessibility to public transportation for people with vision, hearing
and speech disabilities were evaluated based on the assessment provided by the people with disabilities as well as the discrepancies between actual performance and customer expectations identified through groups of indicators/factors, namely reliability, understanding of customers, safety, responsiveness, physical environment, and comfort.

The average total discrepancy between actual performance and customer expectations is higher (-2.90) for people with hearing and speech impairments. If the 6 indicators are inspected separately, the discrepancy between actual performance and customer expectations for the “physical environment” is the highest for all people with disabilities (-2.75--3.10). Since the current performance of “physical environment” and “responsiveness” is the lowest for people with hearing and speech impairments, the discrepancy remains the highest (-3.09). However, for people with vision impairment, because the current performance of “physical environment” is the lowest, the discrepancy is the highest (-2.75). The fact that the discrepancy between the standard requirements for public transport - bus stops, pedestrian roads and crossings - and the actual performance is the highest for people with disabilities, leads to a conclusion that the accessibility to public transportation and the surrounding areas is extremely insufficient for people with disabilities.

Table 6: Average Assessment Scores for Quality and Accessibility to Public Transportation for People with Vision, Hearing and Speech Disabilities

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Person with Hearing and Speech Impairments</th>
<th>Person with Vision Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>1.88</td>
<td>0.23</td>
</tr>
<tr>
<td>Understanding of customers</td>
<td>1.79</td>
<td>0.34</td>
</tr>
<tr>
<td>Safety</td>
<td>2.12</td>
<td>0.24</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>1.74</td>
<td>0.23</td>
</tr>
<tr>
<td>Physical environment</td>
<td>1.75</td>
<td>0.31</td>
</tr>
<tr>
<td>Comfort</td>
<td>1.85</td>
<td>0.18</td>
</tr>
<tr>
<td>Total Average</td>
<td>1.86</td>
<td>0.18</td>
</tr>
</tbody>
</table>
DISCUSSION and CONCLUSION

A key finding of this assessment shows that public buildings are moderately accessible for people with vision, hearing and speech disabilities in Mongolia. However, it is important to mention that the accessibility of only public transportation and of the buildings of culture and arts and entertainment service organisations was assessed as “accessible” for people with vision impairment and people with hearing and speech impairments. It was concluded that educational institutions were “inaccessible”.

Out of all the assessment indicators, two-thirds of the indicators were assessed as “inaccessible” or bad for people with vision, hearing and speech impairments.

For public transportation assessment, the discrepancy between actual performance and customer expectations is the highest across all indicators for people with hearing and speech impairments. The discrepancy between actual performance and customer expectations for the physical environment is highest for all people with disabilities.

The research findings indicate a strong need to pay closer attention to the current environmental unfriendliness and inaccessibility faced by people with vision, hearing and speech disabilities in relation to their access to the main social service provider organisations, including the ministries, district municipal offices, social insurance offices, labour and social welfare offices, educational institutions and health care organisations. Systematic actions for improvement at the policy-making level should be considered, based on recommendations from the research and evaluation work. Tasks should be assigned to relevant offices and agencies, and solutions should be introduced in collaboration with non-governmental organisations.

Limitations

This survey tried to assess the environmental accessibility for people with vision, hearing and speech disabilities in Mongolia, for the first time. Although the goals were achieved, there are some limitations. First, the study covered only Ulaanbaatar due to constraints of time and financial resources. Second, only passengers who use public buses were surveyed for the assessment of public transportation. In the future, the quality and accessibility of other forms of public transport, such as trolleybus, trains and airplanes, need to be studied. Lastly, the assessment focussed only people with vision, hearing and speech disabilities.
Assessment for other forms of disability, such as mobility disabilities, should be conducted.

ACKNOWLEDGEMENT

The authors express their deep appreciation to the NGO - Disabled People’s Organisatio for their kind assistance in conducting this study.

The authors state that there is no conflict of interest.

REFERENCES


APPENDIX

Assessment Score for Public Buildings’ Environment Accessibility for People with Vision Disability, by Assessment Indicators

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>(%) Yes</th>
<th>(%) No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entrance Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the floors are on one level without any defects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have guidance handles for people with seeing disability in corridors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have tactile board with 90cm width before and after stairways and elevators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have floor numbers along the stairways handle with Braille</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the elevator buttons have Braille notes on them</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal Environment Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have elevator ready when needed to get service from second floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevator announces floor number and displays on monitor 1-2 seconds before reaching the floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bathroom Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have floor tactile marks before every bathroom sink and lavatory pans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have emergency call gadgets in bathrooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placed mirrors 20cm from the wall next to</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Information Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have information board of services provided by organisation, annotations for directions, bathrooms and emergency exits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have welcoming guide ready to help the customers at entrance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have clear room address and good lighting in rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have light and sound alert emergency system for emergency situations specially for people with disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have specific SOS emergency plan to countermeasure sudden situations for people with disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External Environment Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have flat or allowed elevation platform to be accessed by elders and people with disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planned parking space near the building for people with disabilities $\geq 3m 50cm$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have guiding signs to the building from the nearest public bus stop for people with disabilities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Assessment Score for Public Buildings' Environment Accessibility for People with hearing and Speech Disability, by Assessment Indicators

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>(%) Yes</th>
<th>(%) No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bathroom Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have bathroom signs separately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have emergency call system in bathroom</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Information Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have flowing advertisements of organisation’s service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have sign language display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have sign language interpretation of organisation’s website</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have light and sound alert emergency system for emergency situations specially for people with disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have specific SOS emergency plan to countermeasure sudden situations for people with disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal Environment Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have clear room address and good lighting in rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have elevator ready when needed to get service from second floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevator announces floor number and displays on monitor 1-2 seconds before reaching the floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External Environment Accessibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planned parking space near the building for people with disabilities ≥3m 50cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have guiding signs to the building from the nearest public bus stop for people with disabilities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Questionnaire Table for Assessing the Service Quality and Accessibility for Public Transportation

<table>
<thead>
<tr>
<th>No</th>
<th>Overall Performance</th>
<th>Big capacity/size bus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Current performance</td>
</tr>
<tr>
<td>1.</td>
<td>Assurance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does the public transport orally inform passengers about the complete stop of transportation?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does the public transport orally inform the name of current and next stations to the people with visual impairment?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Does the public transport inform the name of current and next stations through an electronic sign board to the people with hearing impairment?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is 1.5-3m distance reserved between the edge of road and the bus station?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is the warning knob placed on the edge of the switch pedestal on the bus and wagon level change?</td>
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<td></td>
<td>Are there special places equipped with protective belts in the public transportation?</td>
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<td></td>
<td>Are the ramps and doors of the public transportations accessible without any barriers for people with wheelchairs?</td>
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<td>2.</td>
<td>Empathy</td>
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<td></td>
<td>Responsiveness to the complaints and requests of the passengers with disabilities who are travelling by public transportation</td>
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<td></td>
<td>The kindness and friendliness of the public transport service workers to passengers with disabilities</td>
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<td></td>
<td>Workability of service workers in line with the desire of passengers who are travelling in public transportation</td>
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<td>3. Reliability</td>
<td>Is the training being provided on how to deliver services for people with disabilities?</td>
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<td></td>
<td>Have SOS services been implemented and tailored in line with the specific needs of persons with disabilities?</td>
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<td></td>
<td>Is the assistive service being delivered when it is required for passengers with disabilities?</td>
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<td>Is the service being delivered to the passengers with wheelchairs by the conductors, drivers, and supervisors who are working in the public transportation?</td>
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<td></td>
<td>Is the working timetable of the public transportation flexible to passengers with disabilities?</td>
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<td>4. Responsiveness</td>
<td>Travel time maintainability for public transportation?</td>
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<td></td>
<td>Reliability and quality standards of public transportation services?</td>
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<td>Information availability on getting the route and timetable of the public transportation?</td>
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<td></td>
<td>Does the public transportation have the boards that contain the route map for bus stations as marked?</td>
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<td></td>
<td>Is the public transportation equipped with a warning signal which is able to announce information about upcoming stations?</td>
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<td></td>
<td>Is the public transport equipped with the electronic sign board which is able to deliver information about upcoming stations?</td>
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<td></td>
<td>Attitude and communications of public transportation workers to the passengers</td>
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<td>Transparency of public transportation service providers</td>
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<td>Accountability of public transportation service providers</td>
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<tr>
<td>Skill set of public transportation service workers</td>
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<td>Skill set and service delivery capability of public transportation service workers to passengers with disabilities</td>
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<tr>
<th>5. Tangible</th>
<th>Accessibility and clarity of information being displayed on public transportation stations</th>
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<tr>
<td></td>
<td>Are the public transportation stations equipped with information boards?</td>
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<td></td>
<td>Are the information boards equipped with lights?</td>
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<td></td>
<td>Is the information board accessible to the passengers with visual and hearing impairments?</td>
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<td></td>
<td>Are the public transportation stations equipped with Braille and audio equipment for passengers with visual impairment?</td>
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<td></td>
<td>Compatibility of public transportation stations’ surrounding environment to the passengers’ needs?</td>
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<td></td>
<td>Entrance accessibility to public transportation stations for delivering “Get in &amp; Get off” the bus services to passengers with disabilities</td>
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<td></td>
<td>Ensuring the entrance accessibility to the public transportations for people with disabilities by enabling the same level between bus and road edges</td>
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<tr>
<td></td>
<td>Is the ramp accessibility being provided for people with disability to enter the public transportations?</td>
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<td></td>
<td>Is the guide road being provided for passengers with visual impairment?</td>
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<td></td>
<td>Is the pedestrian ramp and signal being provided near the public transportation stations?</td>
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<td></td>
<td>Are there any other entrance barriers to the pedestrian and near</td>
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<td>the bus stations for people with disabilities?</td>
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<td></td>
<td>Are the public transportations equipped with the accessible</td>
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<td>tools and techniques?</td>
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<td></td>
<td>Do the public transportations use ramps?</td>
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<td>Are the public transportations equipped with knobs in front of</td>
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<td>seats for the people with disabilities to communicate with</td>
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<td></td>
<td>drivers?</td>
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<td>6. Comfortable</td>
<td>Are the public transportations equipped with special chairs for</td>
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<td>passengers with disabilities?</td>
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<td></td>
<td>Are the chairs equipped with the special signs being used for</td>
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<td></td>
<td>passengers with disabilities and elder people?</td>
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<td></td>
<td>Comfort of public transportations for travel</td>
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<td></td>
<td>Whether the public transport service driver is driving the bus</td>
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<td>safely and comfortably?</td>
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<td></td>
<td>Adaptation of passengers with public transport travel times</td>
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<td></td>
<td>What is the current condition of overloading of passengers in</td>
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<td>public transportations?</td>
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Impact of Exercise Training on Depression among People with Type 2 Diabetes Mellitus: A Narrative Review

Nizar Abdul Majeed Kutty1*, Dinuraj Ramakrishna Pillai2
1. Senior Lecturer, Department of Physiotherapy, University Tunku Abdul Rahman, Malaysia
2. Physiotherapist, Alberta Health Services, Grand Prairie, Alberta, Canada

ABSTRACT

Purpose: The prevalence of clinically relevant depressive symptoms among clients with Type 2 diabetes mellitus is in the range of 30%. Since these conditions are often under-diagnosed and under-treated in clinical practice, they negatively affect functional recovery, adherence to treatment, and the quality of life. Despite the large body of evidence regarding the effects of exercise training on different aspects of diabetes, no updated conclusive article that reviews depression is available. This article aims to review the current literature on exercise training and its effect on depression in people with Type 2 diabetes mellitus.

Method: An electronic search of literature from 2010, highlighting the effects of exercise on depression among Type 2 diabetes mellitus clients, was conducted using Google Scholar and PubMed. Relevant articles were utilised for this review. The selected studies are based on relational and rehabilitative exercise training approaches.

Results: While most of the studies support the efficacy of exercise training, study settings and described models are not conclusive. No single clearly defined model exists for exercise training for depression among people with diabetes. There is evidence for the efficacy of supervised aerobic exercise in the treatment of depression, when undertaken three times weekly at moderate intensity, for a minimum of eight weeks. Further research is required to develop specific exercise training models that can be tested in experimental studies for this client group.

Conclusion: The current review showed that exercise training can be used to alleviate depression among people with diabetes. Future studies should adopt rigorous methodological criteria to back up the present findings.

Key words: Exercise training, Type 2 diabetes, depression, aerobics.

* Corresponding Author: Nizar Abdul Majeed Kutty, Senior Lecturer, Department of Physiotherapy, University Tunku Abdul Rahman, Malaysia. Email: nizarabdul@utar.edu.my
INTRODUCTION

The prevalence of diabetes is steadily increasing globally, most markedly in the world’s middle-income countries. In 2016, diabetes was the direct cause of 1.6 million deaths (World Health Organisation, 2018). Diabetes and its complications bring about substantial economic loss to people with diabetes and their families, and to health systems and national economies, through direct medical costs and loss of work and wages. Among chronic diseases, diabetes is unique because treatment largely depends on self-management. It is therefore a priority to investigate integrative approaches to treatment that offer added benefit to clients engaged in diabetes self-management training. Training provides diabetics with knowledge about diet and exercise, as well as how to cope with stress levels.

Type 2 diabetes mellitus (T2DM) is the most common form of diabetes, affecting approximately 95% of individuals with the disease. It is widely known that clients with T2DM are at high risk of decreased psychological well-being (Gask et al, 2012; Stuckey et al, 2014). This is due to strained coping with changed life routine (such as relationships, work-related and financial issues) right from the time of diagnosis of diabetes mellitus (Walker et al, 2012). An international survey, the ‘Diabetes Attitudes, Wishes and Needs second study (DAWN2)’, that included over 16000 individuals (comprising clients, family members and healthcare providers) in 17 countries across four continents, reported that the proportion of the people with T2DM who were likely to have depression and diabetes-related distress was 13.8% and 44.6% respectively, with overall poor quality of life at 12.2% (Nicolucci et al, 2013).

Individuals with T2DM and a mental health condition are at increased risk for hyperglycemia (Brieler et al, 2016), coronary heart disease (Kinder et al, 2002), poor quality of life (de Groot et al, 2006) and increased health care costs when compared to those with diabetes alone. Positive emotional health may sustain long-term coping efforts and protect clients from the negative consequences of prolonged emotional disorders and illness perception, thus facilitating diabetes self-management behaviour and better physical health. Although the interaction between emotional health and diabetes physiology are becoming clearer, there is still a paucity of structured exercise training programmes that incorporate human psychology and intervene effectively in clients with T2DM for improved clinical outcomes. To date, a wide variety of programme combinations have been utilised in random controlled trials, making it challenging for the practitioner to prescribe effective exercises for clients with depression. Thus, the purpose of this
review is to analyse the studies published since 2010, which report the effect of exercise for treatment of T2DM with depression, and to examine the programme variables which may lead to successful treatment. Researchers and practitioners may draw upon the resultant recommendations to design exercise interventions for the treatment of diabetes clients with depression.

METHOD

An electronic search of literature from 2010, highlighting the effects of exercise on depression among T2DM clients, was conducted using Google Scholar and PubMed. Relevant articles were utilised for this review. The keywords used for literature search included ‘type 2 diabetes mellitus’, ‘aerobics’, ‘exercise training’ and ‘depression’. Randomised controlled trials or RCTs published in English between 2010 and 2018 were included. A broad research approach was chosen to minimise the chances of missing relevant articles. Articles that assessed variables reflecting diabetes mellitus and the effect of exercise training provided to T2DM clients independently or in combination with other strategies were included. The studies were double checked and only full text articles were used for the review. The abstracts and articles published in languages other than English and with incomplete data were excluded. Totally 4 studies were selected to emphasise the effect of exercise training on depression in T2DM clients. The main findings are summarised in Tables 1 - 4.

Table 1: Risk Factors for developing Depression in Individuals with Diabetes

<table>
<thead>
<tr>
<th>Risk factors for developing depression in individuals with diabetes include:</th>
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<tbody>
<tr>
<td>Female gender</td>
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<tr>
<td>Adolescents /young adults and older adults</td>
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<tr>
<td>Poverty</td>
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<td>Few social supports</td>
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<td>Stressful life events</td>
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<td>Poor glycemic control (particularly with recurrent hypoglycemia)</td>
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<td>Longer duration of diabetes</td>
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<td>Presence of long-term complications</td>
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Table 2: Symptoms of Depression

Symptoms of depression can be mild to severe, and include:

- Feeling sad or empty
- Losing interest in favourite activities
- Overeating or not wanting to eat at all
- Not being able to sleep or sleeping too much
- Having trouble concentrating or making decisions
- Feeling very tired
- Feeling hopeless, irritable, anxious, or guilty
- Having aches or pains, headaches, cramps, or digestive problems
- Having thoughts of suicide or death

Table 3: Standardised Outcome Measures used for Assessment of Depression in People with Diabetes

Standardised outcome measures for assessment of depression in people with diabetes

- Beck Depression Inventory (BDI-II)
- Geriatric Depression Scale (GDS)
- Hospital Anxiety and Depression Scale (HADS)
- Short Depression Screening Tool
- Primary Care Health Questionnaire (PHQ-9)

Table 4: Symptoms of Depression- Results

<table>
<thead>
<tr>
<th>Source</th>
<th>Interval</th>
<th>Evaluation Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaka et al, 2018</td>
<td>8 weeks</td>
<td>Beck Depression Inventory</td>
<td>Significant between-group difference</td>
</tr>
<tr>
<td>Lin et al, 2017</td>
<td>12 weeks</td>
<td>Beck Depression Inventory</td>
<td>Significant between-group difference</td>
</tr>
<tr>
<td>Lincoln et al, 2011</td>
<td>16 weeks</td>
<td>Geriatric Depression Scale</td>
<td>Significant between-group difference</td>
</tr>
<tr>
<td>Sardar et al, 2014</td>
<td>8 weeks</td>
<td>Geriatric Depression Scale</td>
<td>No significant between-group difference</td>
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RESULTS AND DISCUSSION

Diabetes and Mental Health

It is well recognised that many individuals with chronic illnesses also have co-morbid unrecognised mental health disorders (Diabetes UK, 2018). The International Federation of Diabetes has stressed the importance of integrating psychological care in the management of diabetes. Three in five people with diabetes experience emotional or mental health problems. New research from Diabetes UK finds that one in five people living with diabetes use counselling from a trained professional to help them manage their ailment. It has been estimated that the risk of getting depression in the general population is 10-25% in females and 5-12% in males. Systematic reviews have shown that diabetics have a higher prevalence of depression than non-diabetic populations (Nouwen et al, 2010).

The prevalence of clinically relevant depressive symptoms among clients with diabetes is in the range of 30%. The prevalence of major depressive disorder (MDD) is approximately 10%, which is double the overall prevalence in people without a chronic medical illness. Depression in clients with diabetes amplifies symptom burden by a factor of about 4. Researchers have identified the risk factors for developing depression in individuals with diabetes, as listed in Table 1.

Globally, an estimated 43 million diabetics have symptoms of depression. Being diagnosed with diabetes is a life-stressor by itself. It requires a large number of physical and mental accommodations. Depression adds to the burden of managing diabetes. Furthermore, health care utilisation and costs (Egede et al, 2002; Subramaniam et al, 2009) increase with the coexistence of diabetes and major depression.

A growing body of literature has reported that clients with diabetes are almost twice as likely to suffer from anxiety and depression as the general population (Ghuloum et al, 2010). Such symptoms were associated with poor glycemic control, diabetes complications, worsened prognosis and quality of life as well (Lustman et al, 2000). It was reported that blood pressure, duration of diabetes, obesity and physical inactivity were significant risk factors for depression in clients with diabetes (Bener et al, 2011). Only 25% to 50% of people with diabetes who have depression get diagnosed and treated. The symptoms of depression are listed in Table 2 (Centres for Disease Control and Prevention, 2018).
Compared to those with diabetes alone, individuals with diabetes and mental health concerns have decreased participation in diabetes self-care, decreased quality of life, increased functional impairment, increased risk of complications associated with diabetes, and increased healthcare costs. Individuals with serious mental illnesses, particularly those with depressive symptoms or syndromes, and people with diabetes share reciprocal susceptibility and a high degree of comorbidity. The interplay between diabetes, major depressive disorder and other psychiatric conditions are depicted in Figure 1.

**Figure 1: The Interplay between Diabetes, Major Depressive Disorder and other Psychiatric Conditions**

Note: Figure is adapted from 2018 Clinical Practice Guidelines, Diabetes and Mental Health, Diabetes Canada Clinical Practice Guidelines Expert Committee (Robinson et al, 2018)
In a primary care setting, several validated tools are available to assist in the diagnosis of depression (Table 3). Four studies examined the effects of exercise training on symptoms of depression. The results are listed in Table 4. Most intervention programmes were performed three times a week and were of moderate exercise intensity. All included trials used aerobic exercise, either treadmill or rebound exercise, swimming or stationary cycle. Intervention duration ranged from eight to sixteen weeks. Exercise training was shown to be effective in lowering the symptoms of depression. Some level of supervision is recommended.

**Exercise Training and Depression**

Depression is prevalent among people with diabetes and is associated with significant morbidity, increased risk of mortality, and economic burden. Although effective treatments for depression exist (e.g., antidepressant medication, cognitive-behavioural therapy), the disorder remains inadequately treated for many clients. Recently, the use of exercise as a treatment for depression has received increased attention.

Based on the data from World Health Organisation, depression is ranked as the second largest healthcare problem globally, in terms of years lived with disability (Ustun et al, 2004). Depending on its severity, depression is often treated using psychotherapy, antidepressants or a combination of both. However, the clinical benefits of antidepressants (Turner et al, 2008; Jakobsen et al, 2017) and psychotherapy (Jakobsen et al, 2012) have been challenged. Both treatments are costly in terms of time and money and may also have adverse effects. Compliance with antidepressant treatment is poor; the dropout rate in clinical trials is reported to be between 12% and 40% within the initial 6–8 weeks of treatment (Cipriani et al, 2009). The weakness of evidence for the beneficial effect of current interventions, along with problems related to low compliance and harm, has resulted in interest in alternative interventions. The use of exercise as an intervention has attracted considerable attention, and various forms of exercise, varying in intensity, have been assessed in a number of randomised clinical trials to test their effectiveness as a treatment for clients with depression.

No serious adverse events were reported in any of the trials that were analysed. Treadmill, stationary cycling, swimming and resistance training were the various exercise training used as intervention in the trials. Three of the four randomised controlled trials reported statistically significant difference in depression.
outcomes for the primary analysis reflect depression severity; however, an in-deepth discussion of the included assessment scales is beyond the scope of this review. To further elaborate on the current findings, it is recommended that future trials must include blinded outcome assessors.

Swimming training, three times a week for 8 consecutive weeks, was found effective in reducing depression among people with diabetes. The swimming training programme consisted of maximal crawl 30 minutes (2 min activity and 3 min rest) for 3 days a week in the first month, and 30 minutes (2 min activity and 1 min rest) for 4 days a week in the second month. During this study, subjects were encouraged to keep low to moderate intensity for accommodate conditioning. The reason for this effect probably related to an increase of endorphin in subjects, under the influence of physical exercise. Endorphins could generate happiness and be a feel-good factor. Beck Depression Inventory was used for measuring depression in this study (Saiiari et al, 2011).

One of the most effective mechanisms in reducing depression through exercise training can be the increased levels of serotonin and norepinephrine, which result in endorphin release and reduced secretion of cortisol (Dery et al, 2013; Lee et al, 2013). Probably increased levels of endorphin, norepinephrine and serotonin, followed by a decrease in cortisol secretion, were some of the reasons for reduced depression. Rebound exercise and circuit training were also found effective in reducing depression in a trial involving a total of 70 participants for eight weeks (Kaka & Maharaj, 2018). Rebound exercise on the mini trampoline moves all parts of the body at once, so it is also called cellular exercise (Tobkin, 2018). It may be superior to any other type of exercise as it utilises gravity and forces of acceleration and deceleration, so that at the top of the bounce one experiences weightlessness, and at the bottom the weight doubles, pulling into the centre of the rebounder. It was reported that moderate-intensity exercise training improves insulin sensitivity, quality of life and depression status in T2DM clients particularly over time, within a 12-week exercise training course (Lin et al, 2017).

A study conducted among older adults with poorly controlled Type 2 diabetes, reported significant reduction in depression when participants were submitted to exercise training under supervision, three times per week for 16 weeks. Each session lasted approximately 45 minutes and included warm-up, progressive resistance exercise training and cool-down exercises. Geriatric Depression Scale was used by researchers to assess the level of depression. The findings of this study
demonstrated that participation in progressive resistance training had the added benefit of significantly improving mental health (Lincoln et al, 2011). In older individuals, progressive resistance exercise has been previously demonstrated to be safe and feasible (Fiatarone et al, 1994).

A recent study examined the effects of aerobic exercise training on psychosocial aspects (mental health, the aspects of physical symptoms, anxiety and insomnia, social functioning, and depression) in clients with T2DM. The eight-week moderate intensity aerobic exercise training, that lasted 45 to 60 minutes, had significant effects on mental health, subscales of physical symptoms, and anxiety and insomnia (Sardar et al, 2014). General Health Questionnaire (GHQ-28) was used as the outcome measure in this study. However, aerobic exercise training had no effect on the subscales of social functioning disorder and depression, which was inconsistent with the findings of other studies. The reasons for these contrasting findings may be due to the duration, intensity, and type of exercise training (aerobic exercise in water), because exercise conducted in water is more pleasant than other aerobic exercises. Researchers argued that diabetics usually suffer from depression, which prevents them from participating in physical activities. Hence, it would appear that they need physical activities of longer duration, and they must be the ones to select the type of exercises.

CONCLUSION

Mental health and diabetes are intricately linked, making it necessary and appropriate to address them in tandem. Research on exercise training for the improvement of mental health in diabetes has been encouraging. There is strong evidence to support the use of exercise for the treatment of depression in people with T2DM. Interventions lasting 8-12 weeks, with the frequency of 3 sessions per week at moderate intensity, were found effective in majority of the studies analysed. Further research should be carried out with a larger sample size with adequate allocation concealment, using blinded outcome assessments and focused on ideal frequency, duration, intensity and type of exercise, exploring the mechanistic pathways.

This review concludes that exercise is an outstanding intervention in the treatment of clients who have a mix of mental and physical health problems, and exercise training is a holistic care option.
REFERENCES


Intersections of Disability and Gender in Sports: Experiences of Indian Female Athletes

Nainika Seth¹, Megha Dhillon²*

1. Lady Shriram College for Women, University of Delhi, New Delhi, India.
2. Assistant Professor of Psychology, Lady Shriram College for Women, University of Delhi, New Delhi, India.

ABSTRACT

Purpose: This qualitative study aimed to compare the experiences of two groups of female athletes—those with and without visual disability—who participate in sports.

Method: In-depth interviews were conducted with 16 athletes and thematic analysis of the data was done.

Results: Both groups identified various benefits of engaging in sports, including increased fitness and higher self-esteem. Para-athletes felt that sports provided them with opportunities to break stereotypes associated with disability. Both groups also identified certain barriers impeding sports participation, the most pervasive of these being poor infrastructure. In terms of differences, athletes without disability were initiated into sports at a much earlier age, had enjoyed more freedom in choosing their sport, and were given more family support than the para-athletes.

Conclusion: An analysis of the findings in terms of the Self-Determination Theory (Deci & Ryan, 2002) indicated that needs for competence, autonomy and relatedness were being more wholly met through sports-related experiences for athletes without disability than for the para-athletes.

Implications: Current conditions within para-sport need to be improved by providing more sporting choices to athletes with disability, easier access to sports opportunities at an earlier age, development of self-efficacy with regard to sports, challenging of stereotypes, and generating awareness among parents that sports can be a viable and safe option for their daughters.

Keywords: Athlete, visual disability, sports, qualitative research, Indian.

* Corresponding Author: Megha Dhillon, Assistant Professor of Psychology, Lady Shriram College for Women, University of Delhi, New Delhi, India. Email: meghadhillon@gmail.com
INTRODUCTION

Engagement in sports is influenced by several intersecting factors, such as family support, a household’s economic status, government support, availability of infrastructure and cultural traditions (Berger et al, 2008; Schiavon & Soares, 2016). Two variables intrinsically interwoven with sports participation are gender and disability. Despite the UN Convention on the Rights of Persons with Disabilities calling for States to enable persons with disabilities to participate on an equal basis with others in sporting activities, research has found that presence of a disability continues to negatively impact sports participation. The Active People Survey conducted in June 2014 in the UK found that 72.1% of persons with disability do not take part in any sport or physical activity, compared to 47.8% of persons without disability. Also, 17.8% of persons with disability take part in sport for 30 minutes, once a week, compared to 39.2% of persons without disability. While media coverage of para-sports is now on the rise, elite athletes with disability continue to remain less visible than their counterparts without disability (Rees et al, 2017). Furthermore, para-athletes tend to earn less than able-bodied athletes. It was only in 2018 that the US Olympic Committee voted to start awarding Paralympians the same medal bonuses as Olympians receive.

Sport has traditionally been a male dominated arena, with men participating in greater numbers than women. Even within the European Union where gender disparities appear to be relatively fewer, men practise sports more often than women (Global Sport Report, 2016). When women participate in sports there is evidence of a gender pay gap, including athletes’ contractual earnings and prize money (Thompson & Lewis, 2014). Although approximately 40% of sports participants are women, they receive only 4% of all sports media coverage (Tucker Centre for Research on Girls and Women in Sport, 2014). Certain gender gaps are also visible in para-sports. The Active People Survey (2014) found that men with disability are more likely to take part in sport than women with disability. While 20.1% of men with disability take part in 30 minutes of sport a week, only 15.5% of women with disability do the same. Many studies (e.g., Blinde & McCallister, 1999; Hardin & Hardin, 2005) have asserted that women with disabilities suffer from a ‘double disadvantage’, both inside and outside of sport contexts.

Despite gender-related biases, sports participation of women with and without disability is on the rise. The ‘Women in Intercollegiate Sport: A Longitudinal, National Study’ report (2014) states that 40 years after the passage of federal legislation to prevent gender discrimination in college sports, female participation
opportunities have reached a record high in the US. In another development, the England and Wales Cricket Board reported an increase in the number of women playing cricket (BBC, 2013). The ‘Women's Football across the National Associations’ report in 2014-15 noted the increase in the number of registered female football players and the number of football academies dedicated to girls.

Nations such as India are also witnessing the growth of sports for women, marked noticeably by a number of young female sporting stars gaining popularity over the last few years. Developments such as these are paving the way for young Indian women to envision a future for themselves as professional sportspersons. Indian female athletes have also begun to demonstrate success in other sporting events, the most recent being the Commonwealth Games 2018 (Kathuria, 2018) where women won 12 of the country’s 26 gold medals.

While male para-athletes have won more medals for India, female para-athletes are also beginning to make their mark. In 2016, Deepa Malik created history by becoming the first Indian woman to win a Paralympics medal in shot-put. This was followed by Karamjyoti Dalal's bronze medal in the women's discus throw F-55 event. The success of Indian athletes in international arenas has prompted the Indian government to take some initiatives towards the promotion of para-sports in the country. For instance, an Open Para Athletics Championship took place in the city of Bengaluru in 2018. Earlier, on 5th February 2017, the Sports Minister of India laid the foundation stone of the first-ever training centre for para-athletes, to be equipped with world-class facilities, in Gujarat (Press Information Bureau, 2017). On the other hand, although India was slated to hold the inaugural National Para Games in 2018, the Games never took place. Not surprisingly, a World Bank report, released in 2007, concluded that while India has a very progressive disability policy framework, implementation remains poor. India presents a unique sporting paradox, where the tremendous popularity of sports exists alongside inadequate facilities, limited institutional support and gender and disability-related inequalities.

Given this kind of milieu, one research question that arises is how young Indian female athletes and para-athletes perceive their sporting journeys. Their narratives, and particularly those of female para-athletes, have remained largely undocumented. From this topic arises another research question pertaining to the barriers that impede sports participation. While these have been identified among female athletes and para-athletes in other nations, little research has been conducted in India. The limited work that has been done on able-bodied
female athletes shows that barriers range from lack of money to buy equipment to misconceptions about the effect of sports on girls’ bodies (Kumari, 2017). Alongside understanding the barriers, it is also important to understand the benefits gained through participation in sports and to take note of the changes athletes and para-athletes desire to see in the sporting systems of the country. The present study attempts to answer these questions by eliciting the personal accounts of athletes and para-athletes.

**Objective**

This study aimed to understand, compare and contrast the sporting experiences of Indian female athletes with and without disability. The study focusses specifically on the sport of athletics as it has received less attention than other sports. Each type of disability may pose unique challenges to sports participation. Hence the challenges faced by persons with a sensory disability may vary distinctly from those with locomotor disabilities. However this research limits itself to athletes with visual impairment.

**Important Definitions:**

The following definitions were adopted for the current study. These have been incorporated from the International Paralympic Committee Handbook (1992).

- **Athlete** - Any person training regularly in preparation for competition in a sporting event and having participated in at least one sporting competition in the last 1 year (inter-college, state or national level).

- **Athlete with (visual) disability** - Any person with visual impairment in the categories B1, B2 and B3, training regularly in preparation for competition in a sporting event and having participated in at least one sporting competition in the last 1 year (inter-college, state or national level).

B1, B2 and B3 are medical-based Paralympic classifications for blind sport.

**B1.** Those placed in this classification are totally or almost totally blind. Athletes in this category receive assistance while participating in sports events.

**B2.** Competitors in this classification have vision that falls between the B1 and B3 classes. Athletes in this category are given the choice of receiving assistance while participating in sporting events.
B3. Athletes in this classification have partial sight, with visual acuity from 2/60 to 6/60. Athletes in this category do not receive assistance while participating in sporting events.

METHOD

Research perspective
This research stems from a liberal feminist perspective. The pioneers of this framework challenged essentialist notions around femininity and the dichotomy that conjectured rationality as masculine and emotionality as feminine. Scraton & Flintoff (2013) explain that liberal sports feminism sees sport as a positive experience that women must have access to. It attributes differences in male and female sports participation to socialisation practises of institutions such as the family, schools and media that present sports as more viable options for boys than girls. Discriminatory practices prevent women from having equal access to sporting opportunities and resources. Supporting evidence for this notion has been provided by Eccles and Harold (1991) who, in evaluating the utility of Eccles' expectancy-value model for understanding gender differences in sport participation, found that differences in children's attitudes toward sport are quite strong. They emerge at a very young age and seem to result mostly from gender-role socialisation rather than “natural” aptitudinal differences between girls and boys. Liberal feminist research also focuses on the underrepresentation of women in decision-making, coaching and leadership positions in sports (Scraton & Flintoff, 2013). This study grounds itself in the concept of intersectionality embraced by feminist researchers. An intersectional lens can be beneficial in understanding the relationship of gender to other social categories in sporting contexts including disability, race, caste and socio-economic strata. This study specifically looks at the intersectionality between gender and disability.

Study Design
The current study was qualitative and exploratory. An interpretive, naturalistic approach to the subject matter was adopted. The naturalistic approach is grounded in studying people in their natural settings and attempting to make sense of phenomena in terms of the meanings people bring to them. Qualitative research is context bound. It was therefore understood that the research process had to remain sensitive to the social systems and the feedback loops in which
the participants were embedded. Such research also involves reflecting on how the researcher is located vis-à-vis the participant, especially in terms of power differentials and considering how these power differentials have been addressed (Bryman, 1988). In line with a great deal of qualitative research, the study adopted a non-judgemental and empathetic stance towards the views of the participants. Qualitative research demands reflexivity from the researcher. In the present study therefore, the researcher was engaged in a constant process of self-reflection to recognise the on-going interaction between own values and conceptions on the one hand and the unfolding research process on the other hand. In qualitative research, the data is represented or summarised in narrative or verbal forms, so data collection methods which obtain detailed, descriptive data are preferred. The method chosen in this study was in-depth interviews with participants. This type of interview allows flexibility in terms of the questions that may be posed to the participants, and allows the researcher to enter previously unanticipated areas while interviewing them.

Study Sample

The sample consisted of 16 female athletes, recruited through purposive sampling, from Delhi, the capital city. Half the participants were athletes with visual disability (B1, B2 or B3) and the other half were athletes without disability. All the participants were between 18 and 21 years of age. They were included in the sample only if they were training regularly for sporting competitions and had participated in at least one competition during the past year. These individuals were competing in Inter-college, Inter-university and National level events. None had participated as yet in any international competition. The researchers chose to work with a young group of athletes who were striving to make a mark in the world of sports. These initial journeys often remain undocumented and, if documented, are usually narrated and written in retrospect.

Female athletes who met the inclusion criteria for the study were contacted and requested to participate. The purpose of the study was explained to each of them. They were told that the study aimed to understand the experiences of athletes with and without visual disability, and that participation was voluntary and they could withdraw from the research process without fear of consequences. They were also assured that their responses would remain confidential and would not be revealed to any coach or sporting authority. Participants were encouraged to express their thoughts and experiences freely as there were no ‘right’ and ‘wrong’ answers. Their queries, if any, were also addressed.
Data Collection
A semi-structured interview schedule was constructed for the study. The domains on which the schedule was based included the sports background of the athlete, perceived benefits of sports participation, barriers impeding sports engagement, the role of significant others, and sports and disability (explored mainly with athletes with disability). These were developed through an in-depth review of literature. English and Hindi (local language) versions of the schedule were devised and pilot-tested before use.

Those who were willing to be interviewed were met at a convenient time. All the interviews were audio-taped with their consent. Each interview was brought to a close by thanking the participants for sharing their experiences and assuring them that they were entitled to know the results of the study.

Data Analysis
The interviews were audio-taped with the consent of the participants and later transcribed. They were then analysed using the six-phase approach of thematic analysis presented by Braun and Clarke (2006), which includes Familiarising yourself with the data, Generating initial codes, Searching for themes, Reviewing potential themes, Defining and naming themes and Producing the report. In conducting the thematic analysis, the inductive approach was followed wherein the themes identified are strongly linked to the data. In such a case, coding of the data occurs without attempting to fit it into pre-existing categories and frameworks. Nevertheless, Braun and Clarke (2006) aver that induction in thematic analysis is not 'pure' induction as it is not possible for the researchers to free themselves from paradigmatic assumptions. Thus, the coding process shall inevitably reflect the researcher’s standpoint and values. Thematic analysis was chosen because it is a highly systematic technique that helps in identifying shared meanings and experiences of participants or the commonalities across different data sets. However, the researcher ensured that individual perspectives were noted in the analysis.

Many criteria have emerged that may be used to evaluate the quality of qualitative work (e.g., Lincoln & Guba, 1985). Different means were used to achieve quality, including member checking, peer de-briefing and engagement in a constant practise of reflexivity. These checks were in place to minimise subjective biases and produce an account that authentically represented the experiences of the participants.
RESULTS and DISCUSSION

The analysis presented below focusses on capturing similarities as well as differences in the experiences of the two groups of athletes.

Initiation into Sports

All athletes without disability began participating in sporting competitions between the ages of 7 and 17 years, while they were still in school. Most of them had been encouraged to join sports by a significant adult in their life, such as a coach, parent or teacher. The reasons for having chosen athletics over other sports, as mentioned by athletes without disability, were that they had a natural aptitude for it, were good at it, felt a connection with athletics, and that they had started winning competitions very early.

The interviews of athletes with disability presented a different picture. All the para-athletes had begun to participate and compete in sports only after entering college. For some, their schools had presented few opportunities, with minimal or no sports equipment for persons with disability. The para-athletes reported that their main motive for sports participation in college was necessity-based. Engagement in sports (or social service) for a specified time period was necessary for them to graduate with their academic degrees. Also, the para-athletes chose athletics for very different reasons from those given by typical athletes. Some said that they chose athletics because certain other sports such as badminton and volleyball required good vision. Others said that they had chosen athletics because most other visually impaired students in their college had done so, or because it was the most "accessible" sport for them in college.

A comparison of the responses provided by the two groups indicates that the reasons given by athletes without disability were more closely associated with a sense of accomplishment or pride. Those given by athletes with disability were associated more with the feeling that their choices were limited in some way. One implication of this finding is the need to create more options with respect to para-sports (especially at school and college levels) so that athletes with disability can have more choice when making sporting decisions. This is likely to result in higher feelings of autonomy and enjoyment of sports for para-athletes (Van Prooijen, 2009). This point will be revisited further on in the analysis.
Sports and the Self

All the athletes without disability explained that sports had become a significant part of their lives by making them fitter and by fostering discipline, perseverance and sportsmanship in them. They also believed that sports had brought them and their parents praise and recognition. Athletes without disability had the tendency to express a strong athletic identity, which in turn has been linked to physical fitness (Marsh, 1993), self-esteem (Marsh et al, 1995) and improved confidence (Petitpas, 1978). Sport-related benefits are manifested most strongly in athletes whose self-concepts are strongly tied into the athlete role (Martin, 1999).

In comparison, only four out of eight para-athletes expressed a strong athletic identity. Research on athletic identity among athletes with disability has produced mixed results. Some studies have found athletic identity to be stronger in athletes with disability than among their able-bodied counterparts (e.g., Van de Vilet et al, 2008), while others (e.g., Tasiemski et al, 2012) have found athletic identity levels of able-bodied athletes to be significantly higher than among para-athletes. The strength of one’s athletic identity is thought to vary with past and current athletic experience and the relative success or failure in this domain (Horton & Mack, 2000). It is also linked to the reactions of others to one’s sports participation (Guerrero & Martin, 2018). These factors may not have been as potent in the case of athletes with disability as in the case of athletes without disability. For example, given that sports had become a part of their lives recently, they may not have enjoyed as much success to date as athletes without disability. Not all athletes with disability may have garnered recognition for their efforts. Also, their families have not been as supportive of their sports endeavours as in the case of athletes without disability. This point is discussed further, in the theme ‘Role of family and coaches.’ Yet, the para-athletes did regard sports as integral to their lives and felt that sports participation had brought them many benefits.

Benefits of Sports Participation

Participants across both groups reported multiple benefits of sports participation.

In terms of physical benefits, athletes with and without disability believed that engaging in sports had led to increasing their stamina, endurance, fitness and strength. Athletes in both groups also identified several psychological benefits of sports participation, such as the increased ability to deal with life pressures and greater feelings of optimism, independence and self-esteem. The para-athletes interviewed in this study mentioned that sports had given them confidence to
express themselves and do things they never thought they could. Most para-athletes believed that joining sports had opened up a new vista in their lives. It had provided them opportunities to break boundaries and stereotypes imposed on persons with disability. It has been suggested that among those with disability, physical activity may be used as a means to project an image of the active and skilled person helping to counter societal stereotypes of incompetence. Scholars have argued that the sporting space empowers athletes with disability to transcend disabling social contexts (e.g., Ashton-Shaeffer et al, 2001), as was the case here.

In terms of social benefits, participants in both groups mentioned that engaging in sports had helped to widen their social circle and make new friends from diverse backgrounds. Four athletes without disability also said that they had been able to develop strong bonds with their teammates, although only one athlete with visual disability reported the same. Earlier research has found ‘community experience’ to be an important social benefit of sports for athletes with and without disability (e.g., Goodwin et al, 2009). This may not have been mentioned too often in this study because athletics is an individual sport, where team events are limited to relay races. Also, in the present sample, athletes with disability had participated in even fewer team events than athletes without disability, which may explain the fewer instances of team bonding.

A social benefit derived from sports could be the recognition it brings from others. All athletes without disability in this study said that their sporting performance had brought them appreciation and praise. However, only three participants with disability reported having received similar feedback. This lack of recognition may be grounded in the general perception of para-sports. It has been found that there is resistance on the part of the public to acknowledge athletes with disabilities as genuine athletes. Such resistance may simply reflect a bigger phenomenon rooted in the long-standing debate about which activities qualify as real sports (Lagaert & Roose, 2014). Sport is viewed as an emblem of strength and skill. In contrast, disability is often erroneously equated with deficiency and incompetence. When faced with such assumptions, people tend to downgrade disability sport and deem it inferior to able-body sport (Donnelly, 1996). One participant with disability expressed the need to challenge these notions by saying, “So I know that people don’t believe much that we can do it....there is a lot of need for creating awareness.”
Barriers in Sports Participation

Despite the benefits that sports offered, only half the participants in each group were sure of having a long career in sports. Decisions to quit after a few years or remain with sports were heavily influenced by the perception of barriers. For some the barriers appeared surmountable. However for others, they appeared rather formidable. Among the barriers identified by athletes without disability were infrastructural constraints, including the lack of a running track within their college campus. Three participants also mentioned the poor state of their college gym. These points were raised by athletes with disability as well. Outside college, the stadia that the participants without disability frequented for practise also lacked basic infrastructure and adequate training equipment. Moreover, several athletes without disability said that the accommodation arranged during tournaments was very poor.

The para-athletes interviewed in this study did not discuss the condition of stadia or travel accommodation. However the reason for this may primarily be that they mostly trained in college and had not travelled outside Delhi for sporting events. It may be noted that in case they do travel, they may face the same issues mentioned by the athletes without disability. A leading newspaper of India highlighted the poor quality of accommodation offered to para-athletes at the 18th National Para Athletics Championship held in 2018 (Press Trust of India, 2018), ranging from washrooms with doors too narrow for wheelchair to enter, to poor drinking water (Raj, 2018).

Interestingly, despite belonging to a country with strong gender-biases, none of the participants felt that being young and female had impeded their sports participation. Most participants in the present study believed that sports was opening up as an arena for women and promised good opportunities for female athletes. It was anticipated that safety would frequently be mentioned as a barrier, as the participants were females living in a city considered highly unsafe for women, but only two athletes without disability mentioned this. They spoke of safety concerns in three different contexts- in terms of being stared at by men, of getting injured, and of being lured into using performance-enhancing drugs. Only the first issue (being stared at) was gender-based. Safety was mentioned as a barrier by four athletes with disability, but they spoke of it in terms of the dangers of getting injured. Some mentioned that they had been injured in the past because of the multiple games taking place at a single venue and because they were unable to see their surroundings. Uneven ground, obstacles and narrow spaces also posed dangers.
Role of Family and Coaches

All athletes without disability believed that their families had played a significant role in encouraging them to pursue sports. However, half of them also reported that their families still held high expectations that they would succeed in academics because it was seen as a more secure route to gainful employment. Furthermore, the athletes agreed with their parents’ views.

Among the athletes with disability, family support varied from being strong to virtually non-existent. The absence of parental support in the lives of some athletes with disability is a critical factor to be considered. Parental involvement, although at times a double-edged sword, has a very important role to play in an athlete’s development (Lindner & Johns, 1991; Siekańska, 2012). In the present study, in instances where parents were unsupportive, the reasons included believing that sports was an inappropriate option for their daughters, that there was no future for their daughters in sports, and that the risk of injury was too high. Clearly these athletes lacked a significant form of social support for their sporting endeavours.

Both groups of athletes reported that their coaches played an extremely vital role in their engagement with sports by motivating them, providing guidance and sharing their expertise.

The nature of interactions between the coach and the athlete has important implications for the athlete’s well-being, skill development, and performance (Jowett, 2007; Côté & Gilbert, 2009). The athletes with disability considered the coach’s role to be crucial as they had begun to play sports only in college. In cases where family support for sports engagement was lacking, the support provided by the coach may have been the only source of motivation.

As an exception to the positive notions mentioned in the theme, there were two athletes without disability who mentioned being discriminated against by certain coaches they had encountered. No instances of discrimination were mentioned by athletes with disability. Earlier studies have identified problems between coaches and athletes, such as poor communication, lack of quality coaching (Sherrill & Williams, 1996; Robbins et al, 2010) and changing of coaches. No such problems were reported in this study. While this may be an appreciable and positive finding, it is also possible that the participants’ responses related to this theme could have been affected by social desirability, despite assurances of confidentiality.
CONCLUSION

The Self-Determination Theory or the SDT (Deci & Ryan, 2002) argues that the needs for competence, relatedness and autonomy are essential to psychological health. The interviews indicated that sports participation was fulfilling these needs in both groups of athletes, albeit to varying extents. For instance, sports enabled both groups of athletes to feel more competent, physically as well as psychologically. Yet, a major difference between the two groups was that while sports had served as a source of competence since school years for athletes without disability, it was happening only at a later stage for athletes with disability. Regarding relatedness, sports had opened newer social avenues for the athletes. They had made friends, met superior athletes, found role models and inspiring coaches through sports. Yet again there was one major difference between the groups, as athletes without disability appeared to receive more recognition and support for their endeavours than the para-athletes. Autonomy refers to the regulation and endorsement of the self. The capacity to act autonomously is strongly impacted by the social environment which can vary from being controlling to supportive. Regarding feelings of autonomy, these can be inferred to be higher among athletes without disability on certain counts. First, it was generally their own choice to opt for and pursue sport and athletics, while athletes with disability expressed some sense of compulsion for these choices. Also, some athletes with disability reported feeling that they would eventually have to leave sports due to lack of family support. It may be supposed that such feelings, derived from an unsupportive social environment, can undermine a person’s sense of autonomy.

These findings are important because the fulfilment of these needs has a relationship with an individual’s levels of intrinsic motivation. Activities that more fully fulfil these needs are experienced as interesting and enjoyable, and as offering opportunities for learning and personal accomplishment. This in turn can have a direct impact not only on well-being but also on practise and performance (Gagne et al, 2003). If adequate opportunities and infrastructure are provided, sports can be a source of basic need fulfilment of persons with and without disability. However current conditions regarding sports participation largely favour the fulfilment of these needs in persons without disability. This must be altered by providing athletes with disability with more sporting choices, easier access to sports opportunities at earlier ages, development of self-efficacy with respect to sports, and awareness generation among parents regarding sports being a viable and safe option for their daughters. The sporting culture in...
India requires efforts to challenge the misperceptions of families and institutions which doubt the ability of athletes with visual disability to succeed in sport. Parents may also be more encouraging if they believe that their children with disability shall find better employment due to their sporting careers, an aspect that must be looked into through government policies. The findings also point to a need for policies detailing a programme or the obligation of educational institutions to provide physical activity and sports opportunities for individuals with disabilities.

**Limitations and Implications**

This study has explored the perspectives of a small sample. While this allowed in-depth study of their perspectives, small samples are considered unrepresentative. Experiences of sports participation and experiences of disability can be varied across individuals. Hence the findings cannot be generalised beyond this sample. The researcher's presence during data gathering, could have affected the subjects' responses. Issues of anonymity and confidentiality may have prevented some participants from expressing certain views.

Future research on the sporting experiences of young females must assess perspectives of the people who play a significant role in their lives, such as family and coaches. Also, while this study assessed views of athletes with visual disability, future research must look at other types of disability and explore the experiences of those who participate in different sports. Cross-national studies of sporting experiences of young women are also important as they could throw light on facilitators and inhibitors of sports participation in different national settings.

**REFERENCES**


‘Enabling Access’: A Pilot Study on Access and Use of Assistive Products in the Northern Province, Sri Lanka

Shyamani Hettiarachchi1, 2*, V Subramaniam3, Emil Rajah4, Paramaguru Gowritharan5, Shamra Nizar6, Shakeela Saleem1

1. Department of Disability Studies, Faculty of Medicine, University of Kelaniya, Sri Lanka
2. School of Social Work and Social Policy, Trinity College Dublin, The University of Dublin, Ireland
3. Organisation for Rehabilitation of the Handicapped (ORHAN), Vavuniya, Sri Lanka
4. Caritas-Valvuthaym, Centre for Disabled (CFD), Mannar, Sri Lanka
5. Speech & Language Therapist, Mannar Base Hospital, Sri Lanka
6. Freelance Speech & Language Therapist, Sri Lanka

ABSTRACT

Purpose: The need for suitable assistive technology is growing all over the world, not only for people with disabilities but also for the ageing population with functional decline and non-communicable diseases. Access to assistive technology promotes access to education, employment and active societal participation. The aim of this study was to assess the self-reported need by persons with disabilities and by people who were 65 years and older without disabilities in the Northern Province of Sri Lanka, for assistive products; and to identify barriers to accessing these assistive products.

Method: This mixed-methods pilot study included 76 participants who were either persons with disabilities or their caregiver or persons 65 years and older, from the Northern Province of Sri Lanka, affected by the now-ended 30-year civil war. To ascertain trends in the local need for assistive products, a translated version of the World Health Organisation’s Priority Assistive Products List of 50 items was used. In addition, semi-structured interviews with key participants were conducted, to gain some insights into the barriers to accessing assistive products.

Results: The most widely used assistive products among persons with disabilities were connected to war-related injuries. In contrast, those used by the older age group of persons without disabilities were connected to non-communicable diseases and age-related frailty. The assistive products requested by both groups were aids to promote independence in daily activities and to support access to education and employment. The emergent themes included

* Corresponding Author: Shyamani Hettiarachchi, Department of Disability Studies, Faculty of Medicine, University of Kelaniya, Sri Lanka. Email: shyamanih@yahoo.com
affordability, employment, independence in activities of daily living, stigma and psychological impact, and a lack of awareness and guidance in the use of assistive devices.

**Conclusion:** The findings highlight the need for policies and practices to be informed by local socio-cultural, historical and geographical realities.

**Key words:** Assistive products, Global South, Sri Lanka, war, priorities the Assistive Products List, Version.

**INTRODUCTION**

An assistive product has been defined as “any product (including devices, equipment, instruments and software), either specially designed and produced or generally available, whose primary purpose is to maintain or improve an individual’s functioning and independence and thereby promote their wellbeing” (Khasnabis et al, 2015). The terms assistive products, assistive technology and assistive devices are used interchangeably throughout this paper. The WHO defines universal health coverage as “ensuring that all people can use the promotive, preventive, curative, rehabilitative and palliative health services they need” (WHO, 2016a). The concept of universal health coverage is pivotal to achieving the Sustainable Development Goal 3 of enabling healthy lives, and in promoting well-being for all citizens, young and old (WHO, 2017a). In fact, Tebbutt et al (2016) illustrate the symbiotic connection between assistive products as a ‘mediator’ and a ‘moderator’ to achieving all 17 of the SDGs so that ‘no one will be left behind’ (United Nations, 2016). However, access to assistive technology is limited in many countries (Borg et al, 2011; Marasinghe et al, 2015), with general agreement that the provision of assistive products within resource-poor contexts is a concern, reflecting limited service delivery models (Borg & Ostergren, 2015; Visagie et al, 2017).

With the large population of persons with disabilities and the growing population of older people, the need for assistive technology has been increasing exponentially. The number of people above 60 years of age, and older people experiencing functional difficulties, is expected to rise in low- and middle-income countries (Marasinghe et al, 2015). Tebbutt and colleagues (2016) identify people with disabilities, those who are frail or experiencing long-term illness, people experiencing mental health-psycho-social difficulties or those undergoing physical and cognitive changes due to ageing, as potential beneficiaries of assistive
products. Although the World Health Organisation (WHO) estimates that over one billion people around the world need one or more assistive products, only around 10% are said to have access to them (WHO, 2017b). This means that nine out of ten people requiring assistive products not only have no access to them but also by extension have little, unequal or no access to education, employment and all aspects of civic life. This is particularly apparent in children with disabilities who often have limited access to education and to economic participation in later life (UNICEF & WHO, 2015). There is, therefore, a wide gap between the need for assistive technology and the provision of these devices (MacLachlan et al, 2018). Viewed through a human rights lens, the access to individualised assistive technology offers persons with disabilities or older people the opportunity to continue to be active, contributing, valued and independent members of society (Disability Federation of Ireland, 2016; MacLachlan et al, 2018). Assistive technology enables individuals to fulfil their fundamental human right to autonomy and societal participation (Disability Federation of Ireland, 2016). The access to assistive technology is part of the wider concept of accessibility and a precursor to ensuring additional rights and avoiding social exclusion (MacLachlan et al, 2018) and reducing functional decline (Marasinghe et al, 2015). Therefore, access to currently available and affordable assistive products is also a right (Borg et al, 2011).

The systematic review of the available literature by Nicolson et al (2012), though limited to 5 studies, reported on the positive influence of using assistive technology on both children with physical disabilities and their caregivers. Additionally, social stigma associated with the uptake and use of assistive technology has been noted within low-income countries (WHO, 2011a). The lack of access to assistive products can entrap people in a downward spiral of poverty and marginalisation affecting the person, family and community (Tebbutt et al, 2016). MacLachlan and colleagues (2018) recognise the particular challenge to accessing assistive technology by the citizenry of resource-poor countries. Among the reasons for this are the high cost and the lack of availability of affordable high quality assistive products, particularly in poorer countries (WHO, 2008, 2011b). To be able to increase access to assistive products for those who require them in Sri Lanka, it is necessary to better understand the need within the local context. In a community survey on barriers to using assistive products for lower limb difficulties in Sri Lanka, Weerasinghe and colleagues (2015) identified poverty and financial limitations as the key deterrents to accessing and using assistive
technology, in addition to the lack of availability of products locally. The impact of lower limb difficulties and the lack of access to assistive devices for activities of daily living and employment were also highlighted.

The GATE Initiative
In order to respond to the growing inequalities and concern regarding the lack of access to assistive products, the WHO’s GATE Initiative (Global Cooperation on Assistive Technology) has devised a Priority Assistive Products List (APL) of 50 key high-quality affordable assistive products (WHO, 2016b). The GATE Initiative, through the establishment of a GATE Research Group, recognises the urgent need for global research in this area. Its aim is to encourage Member States that have ratified the UNCRPD to develop their own locally-applicable assistive products list and to enable easier procurement and provision of assistive products for everyone, everywhere.

Within the backdrop of very limited access to assistive technology/products (WHO, 2008, 2011a, 2011b), there is an urgent need to respond to some key questions such as, what is the Provincial-level and country-level need for assistive technology/products in Sri Lanka? What are the local priorities for assistive technology/products? How do these priorities compare with WHO’s Priority Assistive Products List? What are the challenges and facilitators to the process of production, procurement, distribution, continued use and maintenance of assistive technology/products?

Objectives
The research questions for this pilot phase of the study were as follows:

- What is the self-reported need by persons with disabilities and by people, 65 years and older, without disabilities in the Northern Province of Sri Lanka for the assistive products on the WHO’s Priority Assistive Products List and for any assistive products not listed?

- What are the self-reported barriers to accessing assistive products by persons with disabilities and by people, 65 years and older, without disabilities in the Northern Province of Sri Lanka?
METHOD

Study Design
A mixed-methods study design was adopted. A survey questionnaire for all participants offered quantitative data, and semi-structured interviews with key participants offered qualitative data. The survey questionnaire was aimed at gaining a better understanding of the local trends with regard to access to key identified assistive products. It was made available in Tamil, Sinhala and English. The survey was completed either via a face-to-face meeting or through telephone contact or email, or even via a postal survey, as chosen by each participant. The semi-structured interviews were undertaken with key participants using a simple interview guide in a language of their choice. The research team included first-language speakers of Tamil and Sinhala, which facilitated data collection.

Ethical Governance
Ethical approval was sought from the Ethics Review Committee of the Faculty of Medicine, Ragama, Sri Lanka. All participants were offered an information sheet and a consent form in the language of their choice (Sinhala, Tamil or English). Anonymity was maintained by assigning a participant code to each participant.

Study Sample
The pilot study included two groups of participants:
1. Parents of children with disabilities and adults with disabilities,
2. Adults (65 years and older) without a medical- or self-diagnosis of a disability.

A convenient sampling method was used, with participants identified through contacts with Disabled Persons’ Organisations and academic members of staff in the Northern Province. Attempts were made to include a representative sample from the two target groups of participants.

The rationale for including adults 65 years and older was because many older citizens are already using assistive devices or would require one or more assistive devices, such as a hearing aid or spectacles, due to age-related deterioration in skills, even if they did not have a medical diagnosis of disability or were self-identified as persons with disability.
The inclusion criteria were that participants should:

- Be a parent of a child diagnosed with a disability or an adult (over 18 years old) with a diagnosis of a disability or an adult 65 years or older without a medical- or self-diagnosis of a disability
- Be willing to be part of the study

The exclusion criteria concerned adult participants who were not able to understand the information sheet and therefore not able to give informed consent (as determined by one of the researchers who is a speech and language therapist).

Study Setting

The survey questionnaire was administered to 76 participants in the Northern Province. Through contact with local Disabled Persons’ Organisations, local residents who were sensitive to the needs of persons with disabilities were identified as research assistants to conduct the survey. In addition, research assistants with an academic background who were speech and language therapists, with experience in working with people with literacy difficulties and/or proficient in all local languages including Sri Lankan sign language, were part of the research team. As per the request of each participant, the survey was conducted face-to-face, through telephone, via email or as a postal survey. The research assistant read out or, if required, signed the questions on the questionnaire to the participant, as well as wrote down the participant’s responses, as needed.

Study Tool

The survey questionnaire was compiled with reference to the WHO’s Priority Assistive Products List (APL). With written permission to use the list with the accompanying pictures of the target assistive products, the first author developed the questionnaire with support from the second author, who is a person with a disability and a representative of a key Disabled Person’s Organisation in the Northern Province. The questionnaire was reviewed by the three speech and language therapists of the team. The questionnaire, information sheets and consent forms were made available in Sinhala, Tamil and English. Arrangements were made to make it available through Braille if required.
The English version of the questionnaire was translated into Tamil by a bilingual person, who is a first-language speaker of Tamil and a lecturer in English as a Second Language (ESL) within the university system. The Tamil translation of the questionnaire was sent for comments to the second and third authors, who are trilingual (Tamil-English-Sinhala), working within the disability-development sector, with the former being a person with disabilities who is well-versed in the use of appropriate terminology. Comments from these two reviewers were added and the final version of the questionnaire was reviewed by the fourth and fifth authors, both first-language Tamil speakers who are speech and language therapists by profession. The fourth author works in the Northern Province and is therefore aware of any regional sensitivities and nuances regarding terminology and areas of questioning. A similar process was undertaken for the Sinhala translation of the questionnaire, with the first translation undertaken by a disability-inclusion officer who is a Sinhala-English bilingual. The translation was reviewed by the first author, who is a Sinhala-English bilingual working as a speech and language therapist.

The face validity of the questionnaire was assessed by the second and third authors who both lead disability-rights organisations in Northern Sri Lanka. The questionnaire was also reviewed by two senior colleagues of the local WHO office, with valuable feedback offered. Following on from the revisions to the questionnaire and translations, both the Tamil and Sinhala versions of the questionnaire were pilot-tested to assess the reliability, with one participant each from the Northern Province. This required the support of the fourth author, who was working as a local speech and language therapist.

The first and fifth authors, both speech and language therapists, devised a simple topic guide to aid the semi-structured interview, with open questions on the availability, use and barriers to assistive products. The topic guide was formulated with reference to the literature and with input from the second author, a person with disability and a key member of a disability-rights organisation in the Northern Province of Sri Lanka. The topic guide included the following prompts:

- Tell me about your views on assistive products.
- Tell me about your experience of accessing assistive products.
• Tell me about your experience of using assistive products.
• Tell me more specifically of the barriers to accessing and/or using assistive products.
• Tell me more specifically about the factors facilitating the access to and/or use of assistive products.
• Tell me your recommendations regarding access or use of assistive products.

Data Collection
This pilot phase consisted mainly of a combination of telephone interviews, face-to-face interviews and postal surveys. One participant completed the survey online through email correspondence. The face-to-face interviews were conducted by local Tamil-speaking disability rights advocates affiliated to Disabled Persons’ Organisations in the area. These research assistants had all completed their Advanced Level examination and had at least 3 years of field experience in disability-inclusive development in the area. The interviews were conducted by three Tamil-speaking graduate speech and language therapists, including one working locally, either face-to-face or via telephone, as per the participants’ request.

Data Analysis
Percentage data was calculated to focus on the emerging trends with regard to the needs and the availability/non-availability of assistive products. This included the identification of the assistive products on the list that were reported as most required, the assistive products to which the participants have the most access at present and the assistive products most identified as required but not on the current list.

The qualitative interview data was translated into English by two speech and language therapists who are first language users of Tamil (authors 4 and 5). The data was thematically analysed using the key principles of framework analysis (Ritchie & Spencer, 1994) by the first and fifth authors, with author 4 reviewing the data analysis of five of the transcripts. Following close readings of the interview transcripts and familiarisation with the data by the first and fifth authors, the emergent themes were highlighted and colour-coded, with notes and definitions
stated directly on the text. A simple chart was devised with the emergent theme, operational definitions and examples from the participant data. Review of the chart enabled the identification of key themes and connected sub-themes.

The data was collected by speech and language therapists and disability advocates from the local community, which may have positively impacted on the data collection process. All the research assistants had some background in the disability field, which may have helped in conducting the interviews sensitively. The individual interview transcripts were re-checked with three of the participants who were easily accessible to the researchers. The emergent themes were reported back to 36 of the participants through the second and third authors, since the participants were linked to local disability-advocacy groups. Additionally, ten of the transcripts were re-analysed by a linguist who was not part of the research team. Comparable themes were noted within peer checking, with no further measurements required to reach consensus.

**RESULTS**

**Trends Observed**

Of the 76 participants included in this phase of the study, 78.9% (N=60) were already using one or more assistive devices while 21% (N=16) were not. Only 3% of the assistive devices currently used by the participants had been received through a government scheme; 97% had received their devices through a non-government scheme (Table 2).

**Table 2: Source of Assistive Device**

<table>
<thead>
<tr>
<th>Government Scheme</th>
<th>Self-funded</th>
<th>Disabled Persons’ Organisation</th>
<th>Non-governmental Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3%</td>
<td>27%</td>
<td>5%</td>
<td>65%</td>
</tr>
</tbody>
</table>
Of the assistive devices currently in use, orthoses, lower limb (23), crutches, axillary elbow (11) and wheelchairs, manual with postural support (48), were the most widely used as reported by the participants in the present study. This reflects the higher number of participants with mobility difficulties due to war-related injuries or diagnosed medical conditions (Figure 1) included in this phase of the study.

Figure 1: Comparison of Assistive Device use by Group
The assistive devices most commonly used by participants with a disability were, reportedly, mobility aids including manual wheelchairs (48), lower limb prosthesis (31), walking frames/walkers (44), lower limb orthoses (23) and crutches (11), as shown in Figure 2.

**Figure 2: Assistive Devices currently used by Participants with a Disability**
The assistive devices most frequently used by participants, 65 years and older, without a diagnosis of disability were spectacles and canes/sticks (5) due to age-related difficulties and pill organisers (28), as seen in Figure 3.

Figure 3: Assistive Devices currently used by Older Participants without a Disability

The assistive devices the participants identified as required but currently not available to them, were devices that enabled easier self-care during daily activities connected to leading a life of dignity and independence. These included chairs for shower/bath/toilet (6) and mobility devices of adjustable standing frames (38) and manual assistant-controlled wheelchairs (47).

Closer inspection of the data indicates that the group of participants with disabilities identified chairs for shower/bath/toilet (6), adjustable standing frames (38), tricycles (42), hearing aids (digital) and batteries (17) and communication boards/books/cards (9) as the assistive devices most required. The group of older
participating adults, over 65 years of age and without a diagnosed disability, who experienced mainly age-related difficulties with skills, identified manual assistant-controlled wheelchairs (47), walking frames/walkers (44), spectacles; low vision, short distance, long distance, filters and protection (37), chairs for shower/bath/toilet (6), canes/sticks (5) and therapeutic footwear; diabetic, neuropathic, orthopaedic (39) as most required devices, as shown in Figure 4.

Figure 4: Assistive Devices requirement per Group

Of the 76 participants included in this phase of the study, 78.9% (N=60) were already using one or more assistive devices, while 21% (N=16) were not.
Apart from the 50 key items on the Assistive Products List, two participants identified the need for adult diapers and one participant reported his need for a voice amplifier.

The main reasons for the current lack of access to assistive devices were financial difficulties or the lack of affordability, inadequate guidance on the need for assistive devices by healthcare and educational professionals, as well as a lack of awareness on the need for assistive devices and on its availability locally (Figure 5).

**Figure 5: Reported reasons for Lack of Access to Assistive Devices**

![Reported reasons for Lack of Access to Assistive Devices](image)

**Barriers to Access**

The qualitative data was gathered through discussions within the face-to-face and telephone-interview presentations of the survey with 15 key participants. Answers to the open question on the reasons for the lack of access, if any, to assistive devices, generated a number of emerging themes: affordability, employment, access to daily needs/dignity/quality of life, stigma, loss of hope/psychological impact, and the lack of awareness and guidance. The need for assistive devices was directly related to the participants’ need for more access to the community and to employment, in order to be independent financially, less dependent on others for help and to live their lives with dignity and with a better quality of life.
The following excerpts from the interviews highlight the participants’ opinions in this regard. Their views, expressed in Tamil, have been translated into Sri Lankan English and no changes have been made to words that may be deemed politically incorrect or offensive, in order to retain the authenticity of the participants’ voices.

The key emergent themes and sub-themes are presented in Figure 6.

**Figure 6: Emergent Themes**

![Diagram with themes and sub-themes](image)

Three themes - affordability, loss of hope/psychological impact and lack of awareness and guidance - emerged as the main barriers to accessing assistive devices. These three factors affected employment prospects and, similarly, influenced independence in daily activities. There was also a symbiotic relationship between independence in daily activities and employment opportunities.

**Affordability**

Financial difficulties were identified as the main challenge to accessing assistive products.
“I don’t have money to buy a prosthetic leg. Can you please help me?” (Participant P1).

“I am managing my day-to-day activities but I need a tricycle motor bike. I can’t afford it, so please help me to get one. I am begging you for help” (Participant P7).

Although there was awareness among some of the participants regarding the urgent need for assistive products and clarity on how they may benefit from them, financial constraints were a barrier to access. Making this point succinctly, a young woman from Mannar with hearing loss said:

“I got a hearing aid donation from an NGO through the hospital. It was very useful when I was schooling. The hearing aid batteries don’t work and the hearing aid is old now. I want a better hearing aid but they say it is 50,000 to 80,000 rupees. I can’t afford it. I went back to the hospital for help, but they told me the donations are over” (Participant P36).

A graduate with low vision shared the hardships she was facing at the moment:

“I am a graduate, but I am unemployed. I used Braille at university. I would like to get a teaching job. My husband also has low vision. We both need devices but can’t afford it. The government grant is 3000 rupees per month. My husband is doing a small job but we have a child and face severe financial difficulties. We don’t need charity. If I can get a job, we can afford these devices” (Participant P30).

**Employment**

The provision of assistive devices is the key to supporting equal participation in all aspects of civil life - from accessing education and employment to establishing friendship groups, and religious and political participation.

Tricycles were identified as the main assistive device that participants with motor difficulties hoped for, in order to have better access to work, be less dependent on public transport, be more independent and live with dignity. Some were using simple, home-made adapted tricycles which were worn-out, and they were in need of new, better quality and durable personal transport systems.

A man from Jaffna who had been diagnosed with polio said:

“I bought a hand-propelled tricycle with my own money but it is almost broken now. I urgently need a tricycle motor bike, which can be manually operated. My employment depends on my mobility” (Participant P3).
A young man from Jaffna with lower limb difficulties from birth shared similar sentiments:

“My main concern is that I am currently not in employment. If I have a tricycle motor bike, I can find work. I am begging you again to give me a tricycle” (Participant P7).

Akin to this, a person who had lost one hand through a war injury said:

‘I don’t have one hand, but I am able to ride a motor bike and do planting in my garden. But if I get a prosthetic hand, then I can increase my earnings and have a better functional life” (Participant P4).

**Independence in Activities of Daily Living**

Many participants voiced the need for assistive products to support everyday activities, particularly for using the toilet more independently and with dignity.

A man who had lost both his legs during the war explained:

“My house is very simply built. It does not suit a person with a disability. It is difficult for me to use the toilet because of my impairment. It would be good if I can get a specialised sitting commode” (Participant P1).

Among the older participants who did not self-identify as persons with a disability, there was one who had been injured in an elephant attack in Mannar two weeks earlier. He said:

“My son and nephew made a makeshift toilet for me from a plastic chair because I can’t walk much. I was in hospital for a week after an elephant attack. I am lucky to be alive. I need a better toilet” (Participant P24).

A few of the participants also made a clear connection between the lack of assistive products and how it deterred independence and a life of dignity. Explaining this cogently, a person with a spinal cord injury said:

“When people are visiting, I have no way to go to the toilet undetected. It is embarrassing. They can see me on the bed. It is not good for me as a young person. A special chair will be useful” (Participant P25).

Adding to this and making a point about his overall quality of life, another person with a diagnosis of spinal cord injury said:

“I faced difficulties with purchasing an air mattress for my bed. It costs too much. It is difficult for me to buy. So I have to suffer. Can you help me please?” (Participant P6).
Stigma
There appears to be stigma attached to war-related disabilities, making the participants apprehensive about engaging in research. Nevertheless, since the researchers were introduced to the persons with disabilities through Disabled Persons’ Organisations, the participants were a little more open to engaging in the study. Indicating a reluctance to divulge too much sensitive information, one person shared the following:

“You know, I was in the war. People look at me differently. I can feel it. It is not nice. They know I was part of the war because of my disability. … It is difficult for me to ask for help from the government…or from anyone” (Participant P5).

Talking of the everyday prejudice she faced, a woman with mobility difficulties from birth said:

“I am employed as a seamstress. I stitch dresses at a shop. I have to go by tuktuk (colloquial term for an auto-rickshaw) every day. It is very difficult to find a tuktuk sometimes. They don’t always stop for me and it takes a long time to find one and to travel from home to work. If I can get a tricycle motor bike, that would be better. Then, I can drive by myself” (Participant P2).

Loss of Hope/Psychological Impact
The potential psychological impact of war-related injuries, the lack of perceived support and inability to purchase assistive devices to enable independence, echoed through some of the interviews with the participants.

Participant P5 who had sustained injuries in the war and had a spinal cord injury, was reluctant to engage in a long conversation, simply saying, “Nothing is useful as I am bed-ridden”. He however reported that he received a donation of a wheelchair from an NGO some time back.

Participant P76, a young man with hearing loss after the war, put it bluntly when asked if his hearing loss was congenital: “No, it was your bombing”. He went on to explain that he had got his hearing screened at a free medical camp a few years ago, but could not afford to buy a hearing aid, so had “given up on it”.

In contrast, a 17-year-old from Mannar appeared desperate to secure a suitable assistive device. He spoke in very moving terms about the impact of hearing loss on his life:
“My parents did not get me a hearing aid. They did not prioritise it. They did not try. They are poor but they could have done something. I now need one urgently. I sat for my O/Ls last year but I did not pass it. School was difficult because I can’t hear very well, no? I am now trying to find a job; a labourer job, but I need to hear better, no? They will not want to give a job to a deaf boy, no? I will feel better psychologically if I have one. … more confident (cries)... I can’t tell my mother” (Participant P35).

**Lack of Awareness and Guidance**

A few of the parents in the study did not have adequate awareness about assistive products that were available and may have been able to support their children. This lack of awareness was also reflective of limited guidance received from healthcare and educational professionals.

Stating this point a parent from Mannar, who had a 9-year-old son with bilateral hearing loss, explained:

“We did not know till recently when we were visited by a special speech teacher from an NGO, that he can’t hear. We thought he was dumb. He goes to school but the teacher did not tell us anything, no? She said we need to get his ears tested and get a hearing instrument. She said he is a smart boy. We can’t afford it, no? Aiyo, how can he learn in that school?” (Participant P48).

Another parent from Mannar, who had a 6-year-old son with cerebral palsy, added:

“We did not get proper guidance from anyone for my son. He has cerebral palsy. Some said ‘no need for devices’ and some said ‘you must /continue to use it’. We were very confused. The hospital did not give us enough guidance. We are also poor, so we can’t afford to buy him a wheelchair. Can you help us?” (Participant P38).

**DISCUSSION**

The current pilot study was conducted in the Northern Province of Sri Lanka with 76 participants, with or without disabilities, using a mixed-methods design. Initial findings indicate that the most widely used assistive products among the study participants with disabilities were mobility devices (including orthoses/ lower limb devices, crutches, axillary/elbow and wheelchairs). This finding may be reflective of the particular geographical region chosen for the pilot study, as many of the mobility difficulties were reported to be due to war-related injuries.
An estimated 40,000 people are said to live with war-related injuries in post-war Sri Lanka with almost 20,000 living in the Northern Province (Perera, 2015). This finding highlights the need to take account of local histories and realities, both at policy-level and in making particular assistive products accessible to local communities. In support of the above, MacLachlan and colleagues (2018) argue that any assistive technology policy should be tailor-made to the specifics of the local context, its realities and available resources.

In contrast, the other group of participants, 65 years and older, without a diagnosis of disability, reported the current use of spectacles, canes/sticks and pill organisers. The assistive devices in use are in line with what one would expect, given the predicted decline in mobility and visual skills with age.

Both groups of participants identified the need for certain assistive products to aid activities of daily living, such as chairs for shower/bath/toilet. This theme was reiterated within the interviews in which the participants explained how assistive products could promote activities of daily living and in so doing, safeguard dignity and encourage better quality of life. With reference to the International Classification of Functioning, Disability and Health - ICF (WHO, 2001), the assistive devices requested were with a view to gaining more agency of one’s own; to be as independent as possible. Echoing this, Khasnabis and colleagues (2015) have made a strong claim that assistive products have the ability to maintain or increase functioning and encourage independence.

Reflecting age-related decline in visual acuity, spectacles were also identified as an assistive device required by participants over 65 years of age. This links to current country-level initiatives to curb preventable blindness and support vision as part of the global response to Vision 2020 (College of Ophthalmologists Sri Lanka, 2017). In addition, the group of older participants without a disability made a request for more mobility-related equipment including therapeutic footwear, canes/sticks, walkers and wheelchairs, mostly due to the rising impact of non-communicable diseases. As assistive products play a part in primary and secondary prevention of non-communicable diseases such as diabetes, and communicable diseases such as leprosy (Tebbutt et al, 2016), these would be priority items for this particular participant group.

Additionally, the group of persons with disabilities had identified a range of assistive products including standing frames and tricycles that could enable better access to employment. Again, participation as per the ICF model (WHO,
2001) and autonomy were key goals among this group of participants. This was reiterated by the key participants included in the interviews. The assistive products were said to facilitate better access to education for children, and to employment for adults.

The World Report on Disability (WHO, 2011) found comparatively lower educational attainment and employment among persons with disabilities than among people without disabilities. One-third of students out of school are reportedly children with disabilities (UNICEF & WHO, 2015). Assistive technology is recognised as offering opportunities to counter social exclusion (MacLachlan et al, 2018) from education, employment and from active direct participation within society and minimises inequalities (Tebbutt et al, 2016). Within a culture where arguably the charity model of disability prevails together with karmic narratives of disability (Attanayaka & Gunawardena, 2016), it is conceivable that any dependence may be construed as weakness, with persons with disabilities deemed requiring ‘help’ and pity; feeding into prevalent stereotypical notions of disability. With reference to the ICF (WHO, 2001), a disability or advancing age can influence how one performs in an activity (activity limitation), with implications for overall participation. Assistive products could minimise activity limitation and encourage participation by mitigating difficulties experienced by persons with disabilities. Assistive products encourage a life of independence and dignity (Tebbutt et al, 2016) which, in effect, may be powerful instruments that can challenge the archaic view of disability and empower persons with disabilities to live with independence and dignity, and to achieve their fullest potential.

The stigma surrounding disability, though not an unusual finding in Sri Lanka or South Asia, indicated a specific local reality within this study. Weerasinghe and colleagues (2015) found a psychological dimension among their participants as a barrier to using assistive technology, as assistive products were thought to signify a disability. From an ableist perspective (Campbell, 2009), the assistive product was thus viewed as an external symbolic reminder of disability or ‘inability’. In the current study, while the assistive product was similarly symbolic of the disability, there was said to be a particular stigma related to post-war disability in the North. It was considered indicative of a possible combatant role, adding an additional layer of vulnerability. This presumed societal stigma manifested itself in a reluctance to engage in conversation on their lived experiences of post-war disability. Samararatne et al (2018), in their study on war-affected women
with disabilities, uncovered stigmatisation of war-related disability for women in particular. For women combatants of the war, the disability is said to be a permanent scar of shame within and outside the community, denoting their involvement in the war (Samararatne et al, 2018). It would be useful to explore this further, given the potential socio-cultural and human rights implications of such presumed stigma. In this post-war context, wider in-depth research may capture the intersectionality of disability, gender, and ethnicity (Samararatne et al, 2018), offering deeper insights.

The overall lack of awareness about available products and the need for professional guidance in identifying individual assistive products for children also emerged as key concerns. A similar lack of awareness of assistive technology related to lower limb disabilities, as well as financial barriers, was found by Weerasinghe and colleagues (2015). In India, an economically and culturally comparable country to Sri Lanka, limited awareness among users and professionals has hampered the widespread and equitable use of assistive technology (Kumar et al, 2009). This is said to be particularly evident among potential users living in rural communities and among older adults (Marasinghe et al, 2015), even within a welfare state like Sri Lanka in which some assistive products are offered free-of-charge.

Awareness of the benefits of using assistive technology is of paramount importance. As Marasinghe and colleagues (2015) argue, assistive technology will not be of benefit even when offered free or at a subsidised rate if users and professionals are unaware (and/or unconvinced) of its use. This reiterates the importance of increasing knowledge and awareness through training on assistive technology and how to use it, in order to improve the uptake of assistive technology. The inadequacy in the number of trained healthcare professionals in countries of the Global South has been raised as a concern (Marasinghe et al, 2015), which must be addressed as a matter of priority (World Health Organisation, 2011a). MacLachlan and colleagues (2018) note a lack of awareness among prospective users and healthcare-social care professionals on how assistive products can mitigate or surmount functional impairments. This, they argue, is relevant to both resource-rich and resource-poor countries, with the latter a specifically challenging context. The need for trained personnel, well-versed in assessing, prescribing, fitting, monitoring and offering maintenance facilities, and training of users has been raised within the literature (WHO, 2016b).

This was linked to affordability, which deterred easy access, with a heavy reliance on the NGO sector in procuring products within the local context. Enshrined
within the concept of universal health coverage is a relief from the financial burden of accessing health issues (WHO, 2017a). Financial constraints have been uncovered as a major deterrent to the access and use of assistive technology in Sri Lanka, albeit specifically in relation to lower limb disabilities (Weerasinghe et al, 2015). Within a similar resource-poor South African context, the need for available and affordable assistive products has been emphasised (Visagie et al, 2017). The systematic review by Marasinghe et al (2015) found low-cost assistive technology initiatives in some low- and middle-income countries, which may be more affordable to local populations. These ‘at risk’ populations appear to be dependent on the NGO sector for donations in the face of arguably limited government support. One critique of this reliance on donations or ‘charitable services’ is the quality of the assistive products offered, which are often used second-hand devices (WHO, 2016b). It is conceivable that this ‘dependence’ on the NGO sector is inadvertently reiterating (rather than challenging) the currently prevalent charity model of disability, perpetuating notions of a lack of autonomy and agency. Given the range of assistive products that may be required by individuals and the very limited support from the government as reported at present, a list of priority assistive products required by the community would be an important start.

Limitations

As these findings are only trends observed from a pilot study, caution is required in interpreting their relevance. The key limitations of the study include the relatively small sample size from a specific geographical area that was chosen for the study, indicating a possible selection bias. The purpose of this pilot phase was only to gain some preliminary insights into the access and use of assistive products in Sri Lanka; it is anticipated that the findings could inform a broader study to be conducted in the future.

CONCLUSION

The first-hand information gathered from end-users (persons with disabilities and older adults without disabilities) could inform the process of developing a Standard List of Assistive Products for Sri Lanka that acknowledges and accounts for local realities. This includes information garnered on the assistive devices currently used, assistive devices required but not currently used, explanations of the challenges faced in securing the devices needed, and how these assistive products...
devices have the potential to transform the lives of people to lead a life of dignity and independence, with better access to education, employment and community participation.

In terms of the lessons learnt, there appears to be stigma associated with disability, particularly with war-related disability, and sensitivity is required when interviewing participants. Postal surveys may not be an effective or efficient method to collect data as it places too much responsibility to return the completed survey on the participant. Given that the majority of participants are persons with disabilities, access to transport and the post office too may be a challenge. This must be kept in mind during the next phase of the study.

Future studies must be sensitive to the stigma associated with war-related disabilities, as in who approaches the participants and in how questions are framed, posed, and interpreted without judgement. In addition, the interviews could be carried out by a combination of researchers with and without disabilities, which may offer the participants a ‘safe space’ to speak. Also, future studies must include a better representation of persons with intellectual disabilities and persons experiencing psycho-social/mental health difficulties.

Follow-up studies should also include representation from the South and from other areas of the country, as the findings from the North may reflect war-related injuries and the need for assistive devices connected to these disabilities, which may not be the case in other parts of the country. The survey questionnaire should include a question on any long-term medical diagnoses, such as diabetes, that may generate valuable information for service providers and policy-makers. A door-to-door and face-to-face survey study of a small geographical area must follow, in order to gain information from a sample of participants, representing the complexity of the local population. This will also enable the participants to view the pictures of the 50 target items and to engage in more in-depth leisurely conversations. Finally, in-depth interviews with select participants from across the country may offer a better understanding of the intersectionality of disability, age, gender, and poverty, which will help to inform future policies and programmes on assistive devices.

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REFERENCES

Attanayaka S, Gunawardena N (2016). Buddhist Karmic Narratives of Disability: A Reading
Against the Grain. Oral presentation at the Sixth International Buddhist Conference, 1st - 3rd
July 2016, Buddhist and Pali University of Sri Lanka, Homagama, Sri Lanka.

Borg J, Larsson S, Ostergren P-O (2011). The Right to Assistive Technology: For Whom, for

Bangladesh: awareness, providers, costs and barriers. Disability and Rehabilitation: Assistive
Technology, 12, 705-712.

Macmillan: UK.

from https://www.cosl.lk/vision_2020.html

Disability Federation of Ireland (2016). Assistive Technology for People with Disabilities and

Khasnabis C, Mirza Z, MacLachlan M (2015). Opening the GATE to inclusion for people with

Kumar P, Dixit U, Goyal V C (2009). Assistive and enabling technology needs of elderly people
in India: issues and initial results.In S. Bhatia & V.C. Goyal (Eds.), Assistive technologies –
towards home-based elder care (pp. 978-993). Ambala Cantt: Associated Book Service.

MacLachlan M, Banes D, Bell D, Borg J, Donnelly B, Fembek M, Ghosh R, Gowran RJ, Hannay
E, Hiscock D, Hoogerwerf E-J, Howe T, Kohler F, Layton N, Long S, Mannan H, Gubela M,
Ongolo T O, Perry K, Pettersson C, Power J, Ramos V D, Slepičková L, Smith E M., Tay-Teo K,
research, innovation, and education on assistive technology (GREAT) summit. Disability and
Rehabilitation: Assistive Technology, 13(5), 454-466. DOI: 10.1080/17483107.2018.1468496

in six low-income and middle-income countries: a systematic review. British Medical Journal
Innov, 1, 182-195.

Nicolson A, Moir L, Millstedt J (2012). Impact of assistive technology on family caregivers
of children with physical disabilities: a systematic review, Disability and Rehabilitation:


## APPENDIX

### Demographic Details of the Participants

<table>
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<th>No.</th>
<th>Age</th>
<th>Gender</th>
<th>District</th>
<th>Diagnosis, if available</th>
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<td>28</td>
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<td>Lost both legs in the war</td>
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<td>P2</td>
<td>43</td>
<td>Female</td>
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<td>Male</td>
<td>Vavuniya</td>
<td>Spinal-cord injury due to a war injury</td>
</tr>
<tr>
<td>P6</td>
<td>38</td>
<td>Male</td>
<td>Jaffna</td>
<td>Spinal-cord injury due to a war injury</td>
</tr>
<tr>
<td>P7</td>
<td>25</td>
<td>Male</td>
<td>Jaffna</td>
<td>Lower limb difficulties from birth</td>
</tr>
<tr>
<td>P8</td>
<td>69</td>
<td>Male</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P9</td>
<td>65</td>
<td>Female</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P10</td>
<td>26</td>
<td>Female</td>
<td>Mullaitivu</td>
<td>Visual difficulties (retinal detachment)</td>
</tr>
<tr>
<td>P11</td>
<td>68</td>
<td>Female</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P12</td>
<td>78</td>
<td>Male</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P13</td>
<td>72</td>
<td>Male</td>
<td>Vavuniya</td>
<td>Visual difficulties (registered blind)</td>
</tr>
<tr>
<td>P14</td>
<td>89</td>
<td>Male</td>
<td>Jaffna</td>
<td>Parkinson's disease</td>
</tr>
<tr>
<td>P15</td>
<td>75</td>
<td>Female</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P16</td>
<td>77</td>
<td>Male</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P17</td>
<td>66</td>
<td>Female</td>
<td>Jaffna</td>
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</tr>
<tr>
<td>P18</td>
<td>74</td>
<td>Female</td>
<td>Jaffna</td>
<td>No diagnosis of a disability</td>
</tr>
<tr>
<td>P19</td>
<td>66</td>
<td>Male</td>
<td>Jaffna</td>
<td>Mobility difficulties</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>P20</td>
<td>79</td>
<td>Female</td>
<td>Jaffna</td>
<td>Mobility difficulties</td>
</tr>
<tr>
<td>P21</td>
<td>21</td>
<td>Male</td>
<td>Jaffna</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P22</td>
<td>24</td>
<td>Female</td>
<td>Jaffna</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P23</td>
<td>74</td>
<td>Female</td>
<td>Jaffna</td>
<td>Mobility difficulties due to an accident</td>
</tr>
<tr>
<td>P24</td>
<td>65</td>
<td>Male</td>
<td>Mannar</td>
<td>No diagnosis though had a recent injury due to an elephant attack</td>
</tr>
<tr>
<td>P25</td>
<td>24</td>
<td>Female</td>
<td>Jaffna</td>
<td>Spinal-cord injury</td>
</tr>
<tr>
<td>P26</td>
<td>78</td>
<td>Female</td>
<td>Mannar</td>
<td>No diagnosis</td>
</tr>
<tr>
<td>P27</td>
<td>72</td>
<td>Male</td>
<td>Vavuniya</td>
<td>No diagnosis</td>
</tr>
<tr>
<td>P28</td>
<td>74</td>
<td>Male</td>
<td>Vavuniya</td>
<td>No diagnosis</td>
</tr>
<tr>
<td>P29</td>
<td>81</td>
<td>Male</td>
<td>Vavuniya</td>
<td>No diagnosis</td>
</tr>
<tr>
<td>P30</td>
<td>36</td>
<td>Female</td>
<td>Mullaitivu</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P31</td>
<td>28</td>
<td>Female</td>
<td>Jaffna</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P32</td>
<td>32</td>
<td>Female</td>
<td>Jaffna</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P33</td>
<td>29</td>
<td>Female</td>
<td>Jaffna</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P34</td>
<td></td>
<td>Child: 8 Parent: 30</td>
<td>Parent: Female Child: Female</td>
<td>Mannar</td>
</tr>
<tr>
<td>P36</td>
<td>33</td>
<td>Female</td>
<td>Mannar</td>
<td>Hearing loss</td>
</tr>
<tr>
<td>P37</td>
<td>42</td>
<td>Female</td>
<td>Mannar</td>
<td>Lost leg due to a road traffic accident</td>
</tr>
<tr>
<td>P38</td>
<td></td>
<td>Child: 6 Parent: 29</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
</tr>
<tr>
<td>P39</td>
<td>44</td>
<td>Male</td>
<td>Mannar</td>
<td>Both legs affected due to a war-injury</td>
</tr>
<tr>
<td>P40</td>
<td></td>
<td>Adolescent: 17 Parent: 45</td>
<td>Parent: Female Child: Female</td>
<td>Mannar</td>
</tr>
<tr>
<td>P41</td>
<td>68</td>
<td>Male</td>
<td>Mannar</td>
<td>Stroke</td>
</tr>
<tr>
<td>P42</td>
<td>56</td>
<td>Male</td>
<td>Jaffna</td>
<td>Total Laryngectomy</td>
</tr>
<tr>
<td>P43</td>
<td>69</td>
<td>Female</td>
<td>Mannar</td>
<td>Visual difficulties</td>
</tr>
<tr>
<td>P44</td>
<td>33</td>
<td>Male</td>
<td>Mannar</td>
<td>Lower limb weakness</td>
</tr>
<tr>
<td>P45</td>
<td></td>
<td>Child: 7 Parent: 32</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
</tr>
<tr>
<td>N</td>
<td>Age</td>
<td>Sex</td>
<td>Location</td>
<td>Diagnosis</td>
</tr>
<tr>
<td>----</td>
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<td>------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>P46</td>
<td>33</td>
<td>Male</td>
<td>Mannar</td>
<td>Lost one leg to a war-injury</td>
</tr>
<tr>
<td>P47</td>
<td>34</td>
<td>Female</td>
<td>Mullaitivu</td>
<td>Lost legs due to a war-injury</td>
</tr>
<tr>
<td>P48</td>
<td>Child: 9 Parent: 35</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Hearing loss</td>
</tr>
<tr>
<td>P49</td>
<td>82</td>
<td>Male</td>
<td>Mullaitivu</td>
<td>No diagnosis</td>
</tr>
<tr>
<td>P50</td>
<td>76</td>
<td>Female</td>
<td>Mullaitivu</td>
<td>No diagnosis</td>
</tr>
<tr>
<td>P51</td>
<td>Child: 8 Parent: 37</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P52</td>
<td>Adolescent: 17 Parent: 38</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P53</td>
<td>Adolescent: 13 Parent: 48</td>
<td>Parent: Female Child: Female</td>
<td>Mannar</td>
<td>Hydrocephalus</td>
</tr>
<tr>
<td>P54</td>
<td>Child: 9 Parent: 49</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P55</td>
<td>Adolescent: 15 Parent: 46</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P56</td>
<td>Child: 10 Parent: 32</td>
<td>Parent: Female Child: Male</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P57</td>
<td>Adolescent: 15 Adult: 40</td>
<td>Parent: Female Child: Male</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P58</td>
<td>Adolescent: 16 Parent: 44</td>
<td>Parent: Female Child: Male</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P59</td>
<td>Child: 8 Parent: 36</td>
<td>Parent: Female Child: Female</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P60</td>
<td>Adolescent: 18 Adult: 48</td>
<td>Parent: Female Child: Male</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P61</td>
<td>Adolescent: 16 Parent: 46</td>
<td>Parent: Female Child: Female</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P62</td>
<td>Child: 10 Parent: 32</td>
<td>Parent: Female Child: Male</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P63</td>
<td>Child: 8 Parent: 27</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P64</td>
<td>Adolescent: 14 Parent: 31</td>
<td>Parent: Female Child: Male</td>
<td>Mannar</td>
<td>Muscular Dystrophy</td>
</tr>
<tr>
<td>P65</td>
<td>Child: 9 Parent: 34</td>
<td>Parent: Female Child: Male</td>
<td>Vavuniya</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>ID</td>
<td>Age</td>
<td>Sex</td>
<td>Location</td>
<td>Diagnosis</td>
</tr>
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</tr>
<tr>
<td>P66</td>
<td>57</td>
<td>Male</td>
<td>Mannar</td>
<td>Transtibial amputation</td>
</tr>
<tr>
<td>P67</td>
<td>53</td>
<td>Male</td>
<td>Mannar</td>
<td>Transtibial amputation</td>
</tr>
<tr>
<td>P68</td>
<td>61</td>
<td>Male</td>
<td>Mannar</td>
<td>Partial foot</td>
</tr>
<tr>
<td>P69</td>
<td>13</td>
<td>Male</td>
<td>Mullaitivu</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P70</td>
<td>63</td>
<td>Female</td>
<td>Mannar</td>
<td>Polio</td>
</tr>
<tr>
<td>P71</td>
<td>27</td>
<td>Male</td>
<td>Vavuniya</td>
<td>Cerebral Palsy</td>
</tr>
<tr>
<td>P72</td>
<td>38</td>
<td>Male</td>
<td>Vavuniya</td>
<td>Transfemoral amputation</td>
</tr>
<tr>
<td>P73</td>
<td>77</td>
<td>Male</td>
<td>Mannar</td>
<td>Diabetes</td>
</tr>
<tr>
<td>P74</td>
<td>46</td>
<td>Male</td>
<td>Vavuniya</td>
<td>Transfemoral amputation</td>
</tr>
<tr>
<td>P75</td>
<td>73</td>
<td>Female</td>
<td>Mannar</td>
<td>No diagnosis but defines herself as a ‘person with a disability’</td>
</tr>
<tr>
<td>P76</td>
<td>Child: 9</td>
<td>Parent: 28</td>
<td>Mannar</td>
<td>Hearing loss</td>
</tr>
</tbody>
</table>
Happiness and Resilience among Young Physically Disadvantaged Employees in India: A Pilot Study

Nishi Sinha¹*, Santhosh Kareepadath Rajan¹

¹. Department of Psychology, CHRIST (Deemed to be) University, Bangalore 560029, India

ABSTRACT

**Purpose:** The study aimed to examine and compare the happiness and resilience of disadvantaged employees and non-disadvantaged employees.

**Method:** The study sample included 37 young employees, between 20 and 30 years of age. Among them, 17 were with physical disadvantages of one type or the other, and 20 had no physical disadvantages.

**Results:** Mann-Whitney U test showed that there is no difference in resilience and happiness between disadvantaged and non-disadvantaged employees. Among the non-disadvantaged employees, there is a relationship between happiness and resilience. However, among the disadvantaged employees, this relationship is not there.

**Conclusions:** Disadvantaged employees in the present sample do not differ from the non-disadvantaged in their happiness and resilience. However, it cannot be assumed that happiness is a contributing factor to the resilience of the disadvantaged employees. Also, it is not possible to generalise the results of the study due to the small sample size.

**Key words:** Happiness, resilience, disadvantaged, employees.

INTRODUCTION

Happiness involves the experience of frequent positive affect, high life satisfaction, and sporadic negative affect (Diener et al, 1999; Lyubomirsky & Lepper, 1999; Diener et al, 2009). Physical disability can have psychological consequences involving various symptoms of depression and behavioural issues (Elliott &
Frank, 1996; Lawrence et al, 2006; Turner et al, 2006). However, according to the disability paradox (Albrecht & Devlieger, 1999), many individuals with disability have an excellent quality of life, even if they seem to experience an undesirable daily existence. For instance, Hartoonian et al (2014) identified that quality of life had not been affected by the degree of functional impairment among individuals with spinal cord injury. Resilience is the capacity for a successful adaptation with the environment despite challenging or threatening circumstances (Masten et al, 1990). Physically disadvantaged employees who feel adequate happiness and resilience would continue in their profession despite the adversities within the organisations.

In the business sector, happiness studies have been of great importance. According to Pryce-Jones and Lindsay (2014), happiness at the workplace is the mentality that allows people to achieve better performance and potential. Happiness in the workplace is also the worker’s feeling of safety and health in the work environment. It includes good leadership, competency and change management (Päättalo et al, 2011). Happy individuals typically enjoy success (Lyubomirsky et al, 2005). Happiness contributes to positive emotions, which will broaden the thought-action repertoires of the employees, making them excel in social, physical, and intellectual resources (Isen, 1999; Fredrickson et al, 2000; Fredrickson, 2001; Bahari et al, 2016). Employee happiness leads to better productivity for the organisations as well as for the individuals (Flynn & MacLeod, 2015; Guzi & Gracia, 2015). A higher level of distress in the physically disadvantaged employees is linked with a lower level of happiness (Terrill et al, 2015). Happiness imparts meaning to life and thus mediates the link between distress and age (Terrill et al, 2015).

Observations of Diener and Diener (1996) based on cross-national data indicated that individuals are generally happy, regardless of the fact that they are disadvantaged or non-disadvantaged. However, according to Albrecht and Devlieger (1999) physically disadvantaged individuals are not as happy as the non-disadvantaged. For instance, individuals with spinal cord injury have a lower level of happiness and life satisfaction than the normal individuals (Mehnert et al, 1990). Quoting Lipowski (1975), Thurer and Rogers (1984) note that they are more prone to psychological issues, experience emotions of giving up, and anxiety. As Dunn and Brody (2008) observed, they have a higher level of depression than non-disadvantaged individuals. Based on the 1991 Health and Activity Limitation Survey, Uppal (2006) stated that individuals who are physically disadvantaged by birth have a higher level of happiness than those
who become disadvantaged due to mishaps. However, it is the attitude that plays an important role, more than any predetermined set of physical attributes, in experiencing happiness (Brickman et al, 1978; Bizer et al, 2002).

Physically disadvantaged employees would have limitations in their sensory or motor skills. They may be prevented from taking an active part in the organisation due to the unfavourable attitudinal, socio-cultural, economic and environmental forces. If their work attitude involves commitment, control and ability to meet the challenges, then it would make them resilient (Garmezy, 1991). A physically disadvantaged employee who possesses these work attitudes will be productive even in adverse situations and will try to make a success out of the adversity. However, the literature lacks appropriate information to show that happiness is a factor that would lead to the resilience of physically disadvantaged employees. At the same time, the link between resilience and happiness can be speculated on by examining factors and sources of happiness, including coping ability, self-regulation, life satisfaction and social support (Fujikawa et al, 2013; Cheung et al, 2014; Ngamaba, 2016). These are the characteristics of resilient individuals who effectively bounce back from suffering, establish strong social connections, and possess the capacity to manage their emotions, behaviour, and impulses (Connor & Davidson, 2003; Reivich & Shatte, 2003).

Resilience is the capacity to handle stress and deal with problems in a successful manner by the process of adapting to the requirement of the task (Wagnild & Young, 1993; Henderson & Milstein, 1996). In organisations, resilience shown by the employee will impact the level of job satisfaction (Ebrahim & Hasan, 2011). Resilient employees can adapt and still maintain their performance even though the situation is unfavourable (Garmezy, 1991). Studies on physically disadvantaged employees have shown their potential for resilience to be high. For instance, the study by Bonanno (2004) indicated that congenitally blind people have higher resilience in comparison to sighted people.

Studies have suggested that in spite of adverse and difficult situations, disadvantaged individuals who are high achievers and lead a successful life, would have higher levels of happiness and resilience (Garmezy & Masten, 1991; Luthar et al, 2000; Ungar, 2010; Ahmadi et al, 2015). Personal and environmental factors play a key role in developing resilience and happiness. Instead of succumbing to adverse situations, achievers who have high levels of resilience and happiness will fight back. Skills and attitudes associated with resilience can be learned and applied in dealing with challenges. Having a support system, for
example family and colleagues who encourage and reassure them, can go a long way in building the person’s resilience (Kessler et al, 1985). Taking care of one’s health helps build resilience; also, being able to care for others physically and emotionally can often build resilience. Resilience refers to the long-term positive effects – involving achievement, well-being and health (Bartley et al, 2010), sustaining positive relationships and financial freedom (Masten et al, 2009).

Objective
The present study questions whether happiness is a factor that has a relationship with resilience among physically disadvantaged individuals. The study also assesses whether physically disadvantaged and non-disadvantaged individuals differ in happiness and resilience.

METHOD

Participants
Data was collected from 37 young employees, in the age group of 20 – 31 years, from various private organisations in Bengaluru city in India. Among them, 17 were disadvantaged and 20 were non-disadvantaged. Among the disadvantaged employees, there were individuals who had problems such as blindness, hearing impairment, and motor disability. Information regarding the study and the measures to which they would have to respond were shared briefly. The consent of each participant was taken before handing over the questionnaires. After signing the informed consent form, participants were requested to fill in their questionnaires individually. They were informed that they were free to withdraw from the research, without any pressure to proceed, or could withdraw their responses even after the data had been provided.

Ethical Considerations
The study received ethics clearance from the Institutional Review Board, CHRIST (Deemed to be) University. It was ensured that participation in the study occurred with the explicit consent (obtained using consent forms) of the respondent, after explaining individually about the study, its importance, its purpose and what was required of him/her. The responses and personal details of the participants were protected, and the results were presented in a format that preserved anonymity.
It was ensured that no fear, embarrassment, anger or distress was caused to the participants, and their privacy and dignity were diligently protected.

**Measures**

A brief orientation about the measuring tools was given to the participants. The data was then collected using the Resilience scale and Happiness measure.

**Happiness** was measured using the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999). Subjective Happiness Scale (SHS) is a measure of global subjective happiness which consists of a 4-item scale. The authors felt the Scale was suited to different ages, occupations, and cultures, and had good internal reliability (Cronbach’s alpha = 0.83). The Scale showed adequate internal consistency in the current sample, with an alpha score of 0.73. The Scale had four items with response categories from 1 (less happy) to 7 (happier). In two of the four items, the respondents are asked to describe themselves by the use of ratings and absolute ratings. In the other two items, there is a brief description of both happy and unhappy individuals, and the respondents are asked to extend the characteristics that best describe them.

**Resilience** of the participants was assessed using the Resilience Scale (RS) developed by Wagnild and Young (1993). The Scale comprised 25 items, based on five essential characteristics of resilience - meaningful life, perseverance, self-reliance, equanimity, and existential awareness - assessed using two subscales, namely personal competence and acceptance of self. Each item has a 7-point Likert-type response category, ranging from 1 = strongly disagree, to 7 = strongly agree. The Resilience Scale (RS) is reliable and valid as proven from various studies (Ahern et al, 2006; Ryan & Caltabiano, 2009). In the present sample, the Scale showed good internal consistency with an alpha score of 0.91.

**Statistical Analysis**

Using the Shapiro-Wilk test, the normality of the scores of happiness and resilience was assessed. As the data was found to be not normally distributed, the differences in happiness and resilience between the disadvantaged and non-disadvantaged employees were tested using Mann-Whitney U statistics. Spearman rank order correlation analysis was used to determine the relationship between happiness and resilience among the physically disadvantaged and non-disadvantaged employees.
RESULTS

Figure 1 summarises the frequency of disadvantaged and non-disadvantaged men and women in the sample.

Figure 1: Graphical Summary of the Disadvantaged and Non-disadvantaged Men and Women in the Sample

In the sample, 4 men and 16 women were non-disadvantaged, and 11 men and 6 women were disadvantaged.

Table 1: Correlation between Resilience and Happiness among the Disadvantaged and Non-disadvantaged Participants

<table>
<thead>
<tr>
<th></th>
<th>Happiness</th>
<th>Resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disadvantaged</td>
<td></td>
<td>0.454</td>
</tr>
<tr>
<td>Non-disadvantaged</td>
<td></td>
<td>0.464*</td>
</tr>
</tbody>
</table>

*p < .05

There is a moderate correlation between happiness and resilience of the disadvantaged (r = .454), and non-disadvantaged (r = 0.464). However, there is no significance in the relationship between happiness and resilience in the disadvantaged group (Table 1). The relationship between happiness and resilience is significant in the non-disadvantaged group.
DISCUSSION

Results showed that there was no significant difference in happiness between disadvantaged and non-disadvantaged groups. As quoted by Diener and Diener (1996) from Allman (1990), a person who is fated to remain in a wheelchair his whole life is as healthy as a non-disadvantaged person. Bahari et al (2016) also had noted this lack of difference in happiness between the physically disadvantaged and non-disadvantaged individuals. As per the findings of Brickman et al (1978), individuals who had acquired spinal cord injuries and those who could walk were both equal in happiness. However, this contradicts the findings of Mehnert et al (1990) that life satisfaction is lower and adaptation incomplete among the physically disadvantaged.

There is no significant difference in resilience between disadvantaged and non-disadvantaged groups. This shows that physically disadvantaged employees are equally as able as the non-disadvantaged in navigating and negotiating protective resources and making the employment experiences meaningful (Ungar, 2010). This finding seems to be a contribution to the literature, as there is a lack of information regarding the difference in resilience between the disadvantaged and non-disadvantaged employees. A study by Ahmadi et al (2015) has designated the similarity of resilience between the individuals who were disadvantaged in hearing and the non-disadvantaged. Support groups such as family members, society and culture and so on were assumed to be the factors that helped in maintaining the resilience of the non-disadvantaged (Ahmadi et al, 2015). In the present sample, support groups from the organisations may also be contributing to the resilience of the disadvantaged. Apart from the support groups, a stable environment where the disadvantaged could interact well, disregarding the

Table 2: Difference between Disadvantaged and Non-disadvantaged in Resilience and Happiness

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean ranks</th>
<th>U</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-disadvantaged (n = 20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>20.18</td>
<td>17.62</td>
<td>146.5</td>
</tr>
<tr>
<td>Happiness</td>
<td>18.68</td>
<td>19.38</td>
<td>163.5</td>
</tr>
</tbody>
</table>

Not significant
disadvantages, also might have added to resilience (Ahmadi et al, 2015), as it would help them overcome the feelings of isolation.

The relationship between happiness and resilience is different among the disadvantaged and non-disadvantaged employees. Among the non-disadvantaged, resilience and happiness have a significant relationship. At the same time, there is no relationship between happiness and resilience among the disadvantaged. This finding is intriguing, as it contradicts the observations of Fujikawa et al (2013) that life satisfaction of the people with spinal cord injuries correlates with resilience. Happiness is one of the major components of life satisfaction (Ngamaba, 2016). However, even if happiness is not a significant factor, the disadvantaged employees are as resilient as the non-disadvantaged and, like the non-disadvantaged, will also be contributing to the organisation, with job satisfaction (Rahmawati, 2013), flexibility (Siu et al, 2010) organisational citizenship behaviour (Toor & Ofori, 2010), performance and effectiveness, motivation (Youssef & Luthans, 2007), self-efficacy (Rees et al, 2015), work happiness and well-being (Wilson & Ferch, 2005; Youssef & Luthans, 2007).

CONCLUSION

Young physically disadvantaged and non-disadvantaged employees in the present sample did not differ in happiness and resilience. Speculatively, disadvantaged employees experience independence, acceptance, social support, and self-efficacy (Furnham & Cheng, 2000) like the non-disadvantaged in their organisation. Despite their disadvantage, they might feel equal among peers in achievement and support from the organisation. Stability in employment also might have contributed to their happiness and resilience. Hence, there will be no difference between the disadvantaged and non-disadvantaged employees in their positive growth within the organisation. However, happiness in the disadvantaged group did not show a significant correlation with resilience. On the other hand, among the non-disadvantaged group, there is a significant positive correlation between happiness and resilience. According to Abbe et al. (2003), happy individuals tend to engage in positive self-reflection, which support them to rebound faster from the adversity. Self-reflection of the physically disadvantaged, even if they are happy, need not be positive as the non-disadvantaged. More studies are recommended to expand the information on the probable resources that may contribute to the resilience of the physically disadvantaged employees. The present research has been a pilot attempt with a minimal sample size. Future studies, with a larger
sample, could focus on the numerous protective factors that may be shielding young disadvantaged employees.

REFERENCES


Bahari F, Halik M, Ismail R (2016). Utilising mixed research to develop a subjective happiness instrument for people with physical disabilities (SHI-PwPDs) in Malaysia. https://doi.org/10.13140/RG.2.1.4807.8965


Barriers Faced by Persons with Disabilities in Formal Employment in India

Bharat Joshi*, Bigi Thomas
1. Manager-Resource Mobilisation and CBR, Blind People’s Association, Ahmedabad, India
2. Reader, Department of Social Work, Sardar Patel University, Gujarat, India

ABSTRACT

Purpose: According to the World Report on Disability, prepared by the World Health Organisation and the World Bank (2011), people with disabilities still face substantive discrimination in the world of work. An ILO report (2014) on “Disability and corporate social responsibility” identified some serious issues why employees with disability throughout the world still face discrimination and human rights violation. This study attempts to examine the severity of the multiple barriers faced by employees with disability in the course of their employment.

Method: Descriptive research design was used. By stratified random sampling, 100 persons with disabilities (mainly visual, hearing and physical impairments) were contacted and interviewed.

Results: Most of the respondents were between 20-30 years of age and 70% were males. Around 41.2% were graduates, yet most of them had low earnings. A large proportion (87.5%) was employed in the private sector. While most of the respondents (65%) reported facing a high level of physical barriers, a large proportion (52.5%) reported high levels of psychological and information, communication and technological (ICT) barriers.

Conclusion: Employees with disability mentioned several barriers and limitations with regard to transport, the attitudes of employers or colleagues, anxiety or lack of confidence, and issues relating to access and support. To ensure inclusive involvement in an organisation, employers must be sensitised on disability issues. A non-discriminative recruitment policy, an accessibility audit to minimise barriers, role-mapping of suitable positions, and adaptation of equipment to suit employees, are recommended.

Key words: Employees with disability, barriers, employment.

* Corresponding Author: Bharat Joshi, Manager - Resource Mobilisation and CBR, Blind People’s Association, Vejalpur, Ahmedabad, India. Email: cbrrollout@gmail.com, jinaljoshi12@gmail.com
INTRODUCTION

In India, for a long time, disability has been understood to be a result of past ‘karma’ or sins of people (Ghai, 2002). Dalal and Pande (1999) found in their study that persons with disability, their families and other community members believe that disability is a result of God’s will and a consequence of bad karma of past births. Therefore if a child with a disability is born into a family or the child acquires a disability, it tends to be viewed by society as a result of sins done in the past and people accept it unhesitatingly as they feel that they deserve it.

Persons with disabilities are those who have any kind of mental or physical impairment. This impairment, either in the organs or in the senses, restricts the functioning of an individual. It does not allow the individual to fulfil the roles that society expects of him. It is obvious that the nature and extent of the impairment can vary in individuals. It is very important for society, and especially for employers, to understand “what disability is and the problems of people with disability”, in order to create a disability-friendly environment in their workplaces so that people will be able to function with dignity. Unfortunately this is not the current scenario in India.

Employment and Persons with Disabilities

Decent work for everyone is the fundamental objective of the International Labour Organisation (ILO) and that includes people with a disability.

An ILO report (2014) on “Disability and corporate social responsibility” identified some serious issues, namely outdated vision of CSR linked with voluntarism that has not yet integrated the human rights impact-approach; the failure to identify disability as a relevant issue in reporting; lack of expertise on disability and knowledge on how to manage disability from an employment perspective; the absence of information systems in place to gather accurate and comprehensive information and data on disability; and why disabled employees throughout the world still face discriminations and human rights violations.

There is now well-established literature on the negative attitude that attaches to disability in the employment sphere. Barnes (1991) has detailed how discriminatory attitudes and institutionalised practices tend to disproportionately disadvantage disabled people in employment in Britain.

Persons with disability face a number of barriers and difficulties at work. Often they do not get enough opportunities to work. The following data suggests the...
status of persons with disability in the formal employment sector. In 2003, within the European Union (EU), 40% of persons with disability of working age were in a job, compared to 64.2% of people without disability. In addition, 52% of persons with disability of working age were economically inactive, compared to 28% of the population as a whole.

In the United Kingdom, around 75% of people with an intellectual impairment and of working age are unemployed. In Switzerland, intellectual impairment has become the main reason for claiming social security benefits, accounting for 40% of the total (Handicap International, 2011).

Barriers Faced by Persons with Disability in Employment

Persons with disability face a wide range of barriers to access employment. These can be physiological (health conditions), or educational (poor levels of schooling or lack of vocational skills). The challenges can range from their lack of education and training to lack of financial resources which limit access to labour markets. Other reasons include the nature of the workplace or occupation, and employer-perceptions of persons with disability. Attitudes of employers, family and the society at large create hurdles for linking persons with disability to employment.

According to Kulkarni and Valk (2011), many employers also assume that co-workers may react negatively if people with disabilities are hired by the organisation. People with disabilities often shy away from applying for certain jobs, fearing social stigma and adverse reactions from potential co-workers. This is more likely when people with disabilities are treated differently post entry into the organisation. In the absence of an effective integration process, people with disabilities often feel shunned by their co-workers.

People with disabilities in India have often been neglected and have faced discrimination on the grounds that they have disabilities. They not only lack opportunities to participate equally in education, social, and economic activities, but also the programmes designed for economic empowerment, education and social welfare are not inclusive, and do not take their needs into consideration. However, there are many organisations in the country which offer need-based services to people with disabilities. Due to the proactive efforts of such organisations, people with disabilities have proven that they are equally competent to work in banks, industries, and many other sectors in India. However, they cannot perform efficiently in inaccessible job environments, and this often leads them to quit their jobs.
This study aimed to document the types of barriers faced by persons with disabilities in their day-to-day work, and the level of difficulties they face. The findings could help organisations understand how to ensure inclusive employment opportunities and growth of employees with disabilities in their ranks. It would enable them to make necessary policy changes and strategic planning towards achievement of sustainable livelihood of their employees with different disabilities.

**Objectives of the Study**

1. To identify the barriers - physical, psychological, information, communication, technological - faced by the persons with disabilities in the course of employment.

2. To suggest relevant policies and programmes towards inclusive, sustainable livelihood opportunities for persons with disabilities in organisations.

**METHOD**

**Study Design**

Descriptive research design was used, as the primary objective of this study was to describe the level of barriers and difficulties faced by persons with disabilities.

**Sample**

Stratified random sampling method was used in this study. The study sample consisted of 100 people with disabilities (mainly people with visual impairment and low vision, hearing impairment and physical impairment) who had been supported in obtaining employment by Blind People’s Association, in Ahmedabad city in India.

**Data Collection**

A structured interview schedule was used for data collection. Prior appointments were made for the interviews. The purpose of the study was clearly explained and the respondents gave their consent to participate. The researcher took the help of a sign language interpreter to conduct interviews of respondents with hearing impairment.
RESULTS and DISCUSSION

Most of the respondents (65%) belonged to the age group of 20-30 years and the majority of them (around 70%) were males. The highest representation of female respondents was from the physical impairment category. Based on the type of disability, 40% of the respondents had physical impairment, 30% had visual impairment, 23.8% had hearing impairment, and 6.2% had low vision. Around 41.2% of the respondents were graduates. While 51.2% were earning only between Rs 5001-8000, a meagre 12.5% earned more than Rs 20,000. A large proportion (87.5%) of respondents was employed in the private sector.

Table 1: Level of Barriers faced by Respondents

<table>
<thead>
<tr>
<th>Type of Barriers</th>
<th>High Level</th>
<th>Low Level</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Barriers</td>
<td>52(65)</td>
<td>28(35)</td>
<td>80(100)</td>
</tr>
<tr>
<td>Psychological Barriers</td>
<td>42(52.5)</td>
<td>38(47.5)</td>
<td>80(100)</td>
</tr>
<tr>
<td>Information, Communication and Technological Barriers</td>
<td>42(52.5)</td>
<td>38947.5)</td>
<td>80(100)</td>
</tr>
</tbody>
</table>

It is obvious from Table 1 that a high level of physical, psychological and ICT barriers are faced by the majority of respondents. While the highest proportion of respondents (65%) reported high level of physical barriers, a large proportion of respondents (52.5%) reported high level of psychological and ICT barriers.

Physical barriers faced by respondents were: access to appear at examination centres and interview boardrooms, travel from home to office by public transport / in office vehicle / private vehicle, access to workstation/department from main gate, access to attendance system/ notice board, access to other important departments of the organisation, access to canteen facilities and to lavatory facilities of the organisation, access to fire exit area of the organisation, and, access to equipment, tools, and machinery required to perform their job.

The psychological barriers identified by the respondents included: difficulty in working with colleagues without disability or with other colleagues with disability in the organisation, communicating disability-specific needs to the management or to lower level staff in the organisation, travelling with colleagues for office work or on tour, working with the opposite sex in the organisation,
participation in office events conducted by the organisation, maintaining interpersonal relationship with colleagues/higher level management/lower level staff, adjusting to a newly assigned job or role in the organisation, transfer to another place or another department, proving one’s abilities in a sympathetic environment wherein people with disabilities are treated charitably, handling work pressure and meeting work deadlines, getting support from colleagues to complete an assignment, and, maintaining a balance in personal and professional life.

Barriers in ICT as reported by the respondents were: filling up offline or online job application forms, access to information shared in training and meetings, communication in training and meetings, communication with colleagues without disability, communication with customers/clients, communication with higher level management / lower level staff / staff of other departments, handling desktop, laptops and other computer-related equipment, handling web-based internet, intranet and applications, and, handling video-audio and multimedia products.

If access to the important facilities in an organisation is difficult, life of employees with disability can be miserable and it is a violation of their basic rights. Very often this would be a significant reason for them to remain absent or leave their jobs, or be perpetually unhappy and stressed in the workplace. Similarly, psychological barriers may prevent them from considering their workplace as a pleasant environment, and ICT barriers can block their development opportunities by their inability to gain maximum benefit from ICT training and workshops organised for the growth and upgradation of employees.

Coleman et al (2013) also found that there are more and varied obstacles to employment that affect people with disability as compared to people without disability. People limited by a health condition or disability mentioned several barriers and limitations with regard to transport, the attitudes of employers or colleagues, anxiety or lack of confidence, and issues relating to access and support.

According to Hagner et al (2002), respondents with disability are also more likely than respondents without disability to have experienced a negative outcome from a workplace problem, such as a negative impact on physical or psychological health or well-being, on financial well-being or on personal relationships. This has been confirmed by the findings of the current study.
CONCLUSION

The main purpose of this study was to identify the types and severity of physical, psychological and ICT barriers faced by persons with disabilities in the course of their employment. Findings of this study prove that persons with disabilities certainly face all types of barriers. The majority of the respondents reported that these barriers caused high level of difficulties.

Suggestions

To ensure inclusive involvement of employees with disability in an organisation, first of all there should be a non-discrimination policy for recruitment as well as in behaviour and attitude towards persons with disabilities. An accessibility audit should be undertaken by the employer to identify barriers in the work environment and make it disability friendly. The corporate social responsibility wing of an organisation can take the initiative and do much towards promoting the inclusive growth and development of its differently abled employees.

The Government should promote policies for accessible environments and reasonable accommodations for persons with disabilities. The employers and non-government organisations should be sensitised on disability issues. Role-mapping exercises can be undertaken to identify potential posts for persons with disabilities. At the same time, access audit should be made mandatory, and there should be emphasis on equal opportunity policy. The transportation system should be made accessible for persons with disabilities, and machines, tools, and technology should be adapted for them. A detailed research on accessible work environment for persons with disability in India needs to be carried out.

REFERENCES


Netherlands Leprosy Relief (NLR) is a Dutch non-profit organization committed to a world without leprosy and its consequences. It tries to achieve this by supporting health authorities in countries where leprosy is prevalent. NLR promotes the independent social and economic functioning of leprosy patients and their families. By supporting scientific research NLR wants to improve the effectiveness of leprosy control.

Netherlands Leprosy Relief is a member of the International Federation of Anti Leprosy Associations (ILEP). NLR supports national health authorities in over twenty countries with endemic leprosy problems, collaborates with international partners in leprosy control, and works professionally and efficiently.

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The Liliane Foundation contributes to a world that is open to everyone and in which poor children with disabilities can develop and use their talents. The foundation collaborates with local partners in Africa, Asia and Latin America to raise awareness of the 'exclusion' of these children and to remove the barriers that they suffer because their environment is not set up to allow their participation.