Assistive Technology awareness and utilization of its potential among lower limb amputees of Delhi, India

Chitra Chander Shekhar, Consultant- Disability & Health, Delhi, India
Srinivasan Kannan PhD, Associate Professor, Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, India

INTRODUCTION

- Assistive technology, an umbrella term about the systems and services associated with the assistive products and services.
- Assistive products maintain and improve the user's functioning and independence to promote well-being.
- The facts on the Assistive Technology, that only one in 10 persons in need access the assistive technologies [1]
- The reasons associated with poor access are poor awareness about the technologies, accessibility and availability of such technologies, non-availability of personnel for training and finance and so on. It is also heartening to note the low and middle income countries are far below in access to assistive technologies. [2]
- There issues associated with the uneven distribution of such technologies among such countries due to insufficient resources and existence of large gaps between haves and have-nots.[3]
- Other reasons for poor diffusion of the technology are, ineffective promotional campaigns, service provider characteristics and attitude, higher cost for the product, non-availability of timely information, and others. [4,5,6]
- In the present scenario, the awareness among the users on AT is dependent on the type of AT they use. This could reflect upon the knowledge gap in the AT available.
- Effective IEC determines the uptake and success of any intervention.
- There is also dire lack of health promotion activities in regard to persons with disabilities.
- Studies are limited in the field of disability that entirely focuses on the element of awareness as a determining factor in the utilization of the intervention.

The present paper is an effort to address the gap in awareness on the assistive technologies for the persons with disabilities, with the specific reference to lower limb amputees.

METHOD

- Study Design- Exploratory research design
- Ethics- Following ethical practices which included obtaining ethical clearance to conduct the study, all participants were consented to participate and the participation was voluntary.
- Tool- questionnaire with questions on awareness about the assistive technologies, on utilization of such technologies, problems faced if any, and the availability and accessibility of such technology were asked.
- Data Collection- The first author conducted data collection and the interviews were recorded.

Participants	24 Lower Limb Amputees
Study Area	Delhi, India
No. of Institutions	14 Rehabilitation centres • 6 Private • 4 Government • 4 NGOs
Data Collection Time	June-August -2018
Age Group	18-49 years, 18-60* *mean 35
Sex	Male 70%
Marital status	Unmarried 50%
Cause of Amputation	Accident
Participant's' residence's States	Delhi, Haryana, Jammu& Kashmir, Rajasthan, UP and Bihar

Table1 : Participants' Profile

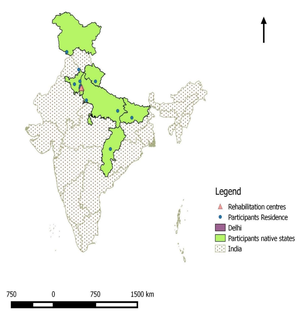

Image 1: Map showing the location from where the amputees came to seek the services

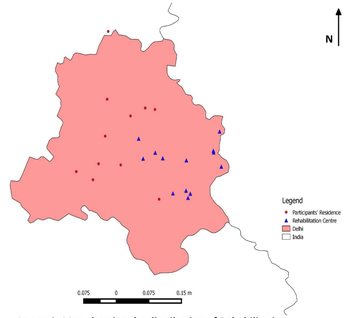

Image 2: Map showing the distribution of Rehabilitation centres in Delhi

ANALYSIS

- The recorded interviews and field notes were analyzed, using Weft QDA software (1.0.1) after transcription and translation.
- Then codes were generated following patterns We followed axial coding following lumping and splitting.
- Side by side, we were also writing memos for each of the quotes.
- Based the codes we grouped them in to different themes. Validation of the codes were done by sharing the codes between the authors. [7] The codes were not shared with the participants for the purpose of validation. This helped us theorizing the problem.

MEANS OF ASSESSMENT OF TECHNOLOGY AWARENESS AND UTILIZATION

Duration to seek ambulatory care (in months)	
Minimum	2
Maximum	180
*Mean	18.7

Table 2: Duration to seek ambulatory care

Source of financial support for ambulatory care	No. of participants
Family-savings	14 (58.3%)
Family-sold property	3 (12.5%)
Loan (informal)	4 (16.6%)
Self	5 (20.8%)
Others	4 (16.6%)
Total	24

Table 3: Source of financial support for ambulatory care of the participants

Expenditure (INR)	No. of participants
≤100000 1500	5 (16.6%)
100001-200000	3 (12.5%)
200001-300000	2(8.3%)
300001-400000	4(16.6%)
400001-500000	2(8.3%)
500001-600000	6(24%)
>600001	2(8.3%)
Total	24

Table 4: Expenditure for ambulatory care by the participants

FINDINGS

- The Assistive Technology used by the participants include, prosthesis, wheelchair, tricycle, crutches and cane sticks. However, there are instances that some used multiple assistive technologies in different circumstances.
- The prostheses used were in the forms of modular prosthesis, ALIMCO (Artificial Limbs Manufacturing Corporation Of India) prosthesis [8]and Jaipur foot [9].
- Based on the definition by the user in- local context, modular prosthesis is availed from a private center and has support higher activity levels, ALIMCO is the prosthesis that is produced and distributed under a national scheme which is deemed to provide moderate to high level activity support, and Jaipur foot is produced and distributed by a faith based non-governmental organization and has limited mobility and activity support.
- The reason for the delay was lack of financial assistance. The sources of financing for the users are, family saving, property mortgage, loans from unorganized money lender, personal savings. It was found that exorbitant prices and no funding resources for such high cost were the reason for most of the participants to prefer the aids that support restricted mobility.
- For the question on the sources of information on the Assistive Technology providers, respondents majorly identified
  a) friends
  b) acquaintances
  c) other AT users
- No participant reported receiving any information either from the rehabilitative care provider or the general health care provider providing treatment. This finding indicates poor health information sharing by the healthcare providers.

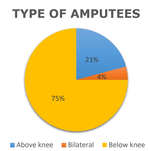

Figure 1: AMPUTATION TYPE AMONG PARTICIAPNTS

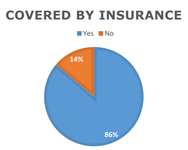

Figure 2: INSURED PARTICIPANTS

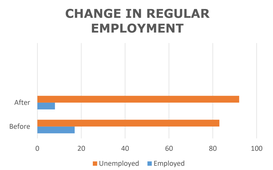

FIGURE 3:CHANGE IN REGULAR EMPLOYMENT STATUS

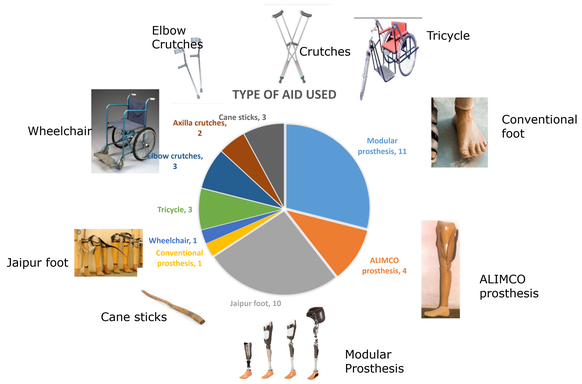

Image 4: Types of Aids used by the Participants in the study

DISCUSSION

- According to the science of sustainable consumptions, public awareness plays an important role. It is important to note that the awareness about the number of interventions available are shared and awareness created among the potential users will address the problem as well as achieve the purpose of developing such technology.
- The success of any assistive technology will depend on the effort put on creating awareness and knowledge among the users. [10]
- Even though on paper evidences suggest there are more number of high mobility supporting interventions or assistive technologies for people in need, the number of people using them are still not been documented.

AFFORDABILITY AND ACCESSIBILITY

- This study found a majority of people with lower limb amputation are using lower mobility supporting assistive technologies and it is an important topic that needs to be addressed.
- It is also important to note that the technology options that are available for lower limb amputee with better functionalities are either unaffordable to many or if they are affordable then are not found to be appropriate.
- The cost, availability, knowledge about the features of assistive technologies with higher features still needs to be addressed.
- Important issue emerged from the study was the assistive technologies are not locally available and people have to travel larger distances for availing them

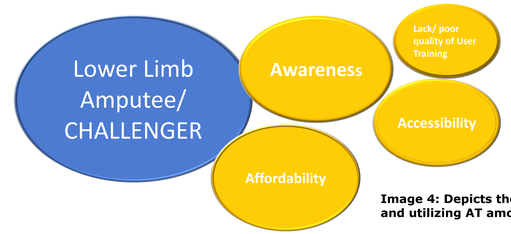

Image 4: Depicts the barriers in accessing and utilizing AT among LLA/ Challengers

Awareness

- The sources of information on the assistive technology providers are mostly through informal communication channels.
- The healthcare providers who were engaged in ambulatory care did not inform the appropriate aids to be used by the users.
- Outcomes of the assistive technology use could be best described by the uptake and utilization quantitatively but the performance improvement is a qualitative aspect which is not studied vigorously and could be important in accessing the success point of an intervention when used to its fullest potential.
- Participants appear not to be aware of the basic uses of the prosthesis in terms of, the duration- how long is it advisable to use the prosthesis, what could be the cause of pain in daily use of prosthesis and does it need to be attended, what are the activities that can be performed while one uses the prosthesis.
- The change in the trend of the employment status of the user from being employed to unemployed or under employed after the amputation even after using assistive technology is an important scenario suggesting the lack of utilization of the technology to its fullest potential.
- The development of an intervention is supposed to be user centric but the data presented in this study indicates that there are system failures system is failing in providing the awareness, knowledge about the product to the user which is resulting in the under-utilization of the intervention.

Lack or poor quality of User Training

- Participants who were using the prosthesis with higher mobility support mentioned not being able to carry out day to day activities such as, climbing up the stairs, sitting while using prosthesis for longer duration, walking without a support and so on Completely making the activities such as physical exercise, cycling, jogging, brisk walking all out of reach and context for users.
- Though the investigator identified that the prosthesis had a potential to support all activities, the users were not aware of it. They were not provided with any proper training to carry out those activities and also there was a lack of motivation to do so.
- This clearly reflects to the social and economic outcome. People even after having the best service in terms of the assistive technology they owner, were not utilizing it and were compromising on their comfort and their capabilities.
- This could be a reason that there is still a stigma attached to the persons with disabilities.
- Though a person with amputation can go back to normal life when fitted with a good prosthesis but when the person fails to use it, they fail in being a complete member of the society.
- It is still a wonder for people in lower middle income countries to see a person wearing a prosthesis and carrying out the daily life independently. This is indicative of the dire need of awareness raising and making the intervention more useful.

Recommendations

- It is necessary to work with the users to find a way to raise awareness on increasing the uptake, awareness and utilization of the intervention.
- Success stories would set out positive examples.
- Involving a user throughout the process of ideation, development, launch, strategizing, awareness building, and rehabilitation through an intervention is necessary.
- Paying vigorous attention towards bridging the knowledge gap between what is available and known is as important as developing new technologies.
- Making the existing technologies available and accessible for anyone who need it would fill in a lot of void in the field of assistive technology and rehabilitation.
- Mapping the points of intervening for knowledge transfer and channeling the information through a systematic process is essential.
- Mass communication along with targeted, clear, concise, correct, coherent, complete and courteous communication is the key along with other approaches.

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