Baseline Survey in Pakistan

Rapid Assistive Technology Assessment (rATA)

Health Services Academy (HSA), Ministry of National Health Services, Regulations & Coordination in Collaboration with World Health Organization (WHO)
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Honorable President of Pakistan Dr Arif Alvi chairing the first meeting of National Steering Committee on Assistive Technology at the Presidency

Dr Palitha Mahipala Head of Mission WHO Pakistan briefing the honorable President of Pakistan on improving access to Assistive Technology
Executive summary

Pakistan is the Champion country to introduce World Health Assembly Resolution (71.8) on improving access to assistive technology (AT). This resolution urged the World Health Organization (WHO) to develop the Global Report on Access to Assistive Technology. Towards this, WHO developed the rapid Assistive Technology Assessment (rATA) questionnaire to assess the need, unmet need of and barriers to access AT.

Pakistan is the first country to implement the rATA to assess the national AT access scenario. With active support from the WHO and Health Services Academy (HSA), Ministry of National Health Services Regulation and Coordination carried out a national survey in 2019 using a two-stage cluster sampling including over 9000 households and nearly 63000 individuals.

Main results:

- A total of 23.5% of the population (nearly 1 out of 4) reported at least some difficulty in one functional domain. A total of 8.5% of the population reported a lot of difficulty in at least one functional domain. Among the different functional difficulties, 14.3% had at least some difficulty with seeing, 12.4% with sitting/standing/walking/climbing, 5.9% with self-care, 4.8% with remembering/concentrating, 4.8% with hearing, and 3.1% with speaking/communicating.
- Current use of at least one AP was reported by 7.2%, while 13.1% reported that they need at least one AP they do not have (unmet need). The need of AP is estimated to be 16.8% with only 22.3% of the need has been met.
- Among persons reported at least some difficulty, 30% use at least one assistive product (AP) and 53% reported unmet need of at least one AP. Among persons with a lot of difficulty or cannot do at all in one or more functional domains, the use and unmet need of AP are 33% and 70% respectively.
- The most common AP in use are spectacles, canes/sticks and magnifiers. Yet, spectacles, canes/sticks and toilet chairs are also among the most reported unmet needs of APs.
- About 53% of APs in use are obtained from the private sector and 43% are either self-made or from family and friends, while public sector is marginal as a source of AP.
- A large majority of APs in use (94%) are paid out-of-pocket.
- Most AP users are either quite satisfied or very satisfied with their products (86%), services (82%) and maintenance (78%).
- For most users (86%), APs have assisted them to do what they want to do to a great deal or completely.

The survey has revealed a substantial unmet need for AP. It is assumed, and indicated by the level of functional difficulties, that the real need may be substantially larger than the self-reported unmet need expressed in the survey, due to limited exposure to AP, lack of awareness, and limited supply. Current use of AP is limited in range while the need is much more diverse. While accessing APs is almost entirely through private sources, users are largely satisfied with their APs and related services.
1. Introduction

Access to assistive technology (AT), a subset of health technology, refers to assistive product (AP) and related systems and services developed for people to maintain or improve functioning and thereby promote well-being. Access to AT is essential for a substantial number of people to maintain and improve functioning, health and wellbeing, to participate in education, work and social activities.

APs include any external product whose primary purpose is to maintain or improve an individual’s functioning and independence and thereby promote his or her well-being. They include wheelchairs, hearing aids, walking frames, spectacles, pill organizers and prosthetic legs, as well as assistive information and communication technology such as memory aids, specialized computer hardware and software, augmentative and alternative communication, and customized telephones. APs are essential tools to compensate for an impairment/a loss of intrinsic capacity, to reduce the consequences of gradual functional decline, to reduce the need for carers, for primary and secondary prevention, and to help to rationalize health and welfare costs.

World Health Organization (WHO) estimates that more than 1 billion people would benefit from one or more APs.1 With populations ageing and the prevalence of noncommunicable diseases rising across the world, this number is likely to rise above 2 billion by 2050, with many older people needing two or more products as they age. Those who mostly need AT include, among others, people with disabilities, older people, people with noncommunicable diseases, people with mental health conditions including dementia and autism, and people with gradual functional decline.

Access to AT varies substantially between countries, and access is dramatically low in many low- and middle-income countries. On this background, the resolution on improving access to assistive technology was adopted at the 71st World Health Assembly (WHA 71.8) in 2018. 2 The resolution mandates the WHO to develop the Global Report on Assistive Technology by 2021 and to provide necessary technical support to the Member States to develop national AT policies and programmes to include AT in Universal Health Coverage (UHC) and realize the aspirations of the UN Convention on the Rights for People with Disabilities (CRPD).

Supply of AT in Pakistan is limited to few producers and imports for a market that is unattainable for large parts of the population with diverse socio-economic capacity. There is further very limited data on met and unmet need, demand, supply and use of AP in the population. Knowledge about current AT use, needs and services is crucial for several reasons, including building awareness and as a basis for developing strategies and to design and plan international and national AT programmes to ensure access to AT for all. It is a major problem in developing AT services for all that little data has been systematically collected in countries to demonstrate the

2 Resolution on improving access to assistive technology was adopted by Member States in the 71st World Health Assembly. Available at: https://www.who.int/phi/implementation/assistive_technology/71stWHA-adopts-resolution-on-assistive-technology/en/
need and demand of AT in the population. On this background, WHO has developed the rapid Assistive Technology Assessment (rATA), a household survey questionnaire, to support countries in obtaining data to understand the met and unmet need, the demand, the supply and the barriers to access AT in the population. A digital version of the rATA questionnaire is developed for field data collection using mobile devices, such as smart phones and tablets. Data collected using the mobile devices will be automatically uploaded to the WHO secured backend server.

Pakistan is the first country to implement the rATA. This report presents results from the survey that was implemented across Pakistan in 2019. The study implementation was led by the Ministry of National Health Services Regulation and Coordination (MNHSRC) with support from the Health Services Academy (HSA) and the WHO.

Rapid Assistive Technology Assessment (rATA) ¹

The rATA is an interviewer-administered household survey tool, designed for rapid assessment of the need, demand, supply of AT and satisfaction of AT users. The rATA is designed as a stand-alone survey. The tool is simple to administer and non-technical, so it can be used by enumerators from varied backgrounds and experiences and across cultures and contexts. The rATA aims to 1) obtain data on access to AT in the population of the country; 2) support in planning, developing and strengthening national AT programme or interventions; and 3) advocate and raise awareness among policy makers, service providers, civil societies including organizations of disabled or older people and society at large about the need for and benefit of AT. Obtaining data on need and unmet need of AT in the population of the country, through a national representative sample, is a prerequisite for developing a national AT programme, benefitting everyone, everywhere.

¹ https://www.who.int/publications/i/item/WHO-MHP-HPS-ATM-2021.1

2. Objectives of rATA in Pakistan

rATA was implemented in a nationwide and representative survey in Pakistan in 2019. The objectives of the study were to assess the need and unmet need of AT in the population of Pakistan, and to identify the barriers to access AT in the country.
3. Methodology

Survey context

The survey context included all the provinces and territories of Pakistan. The geographical span of the survey included districts (sub-regions) from all four provinces: Punjab, Sindh, Khyber-Pakhtunkhwa, Baluchistan. While one district was selected from each territory of Gilgit-Baltistan, Azad Jammu and Kashmir and Islamabad Capital Territory (ICT). In total, 16 districts were selected.

Sample size

Based on the assumption of a probability of the need for AT to be 50% in the population of each district, to measure the probability with the confidence level of 95% and the precision at 10%, the sample size for a simple random sample was estimated at 196, rounded off to 200 households, per district. However, given the study was planned as a two-stage cluster sampling, a design effect of 3 was applied. Based on this approach, 600 households in each district and 9600 households in total in 16 districts were selected. As the average household size in Pakistan is 6.7 persons per household, the total number of study participants was anticipated to be around 64,320 individuals for the whole survey.

Sample design

Primary Sampling Units (PSUs): In order to achieve the required sample size of 600 households, each district was divided into 20 PSUs, which were randomly selected using the district population map and enumeration blocks available with statistics division. The blocks in urban areas and villages in the rural areas constituted a PSU and were considered as a cluster. From the list of total PSUs in the district, 20 PSUs were selected randomly. The villages having a population of less than 500 were excluded from the list of PSUs.

Secondary Sampling Unit (SSU): Within each randomly selected cluster, households were selected to serve as SSU. Union Council maps and population of the selected PSU were used to randomly select 30 households per cluster, using proper household selection technique. The first house of the selected PSU was selected with a random start from the first five houses. Then based on the sampling interval, the next house was selected. The teams started from one side of the village or enumeration block and kept on moving to the next house until 30 houses were completed. In case the house was closed or refusal for the survey, the immediate next house was selected. There was thus sampling with replacement and 30 households from each cluster were supposed to be completed.

Tertiary Sampling Unit: all the members, who are permanent residents of the household, were considered as tertiary sampling units and included in the survey.

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3 District is the smallest unit in the country set aside or grouped together as one specific area for political or administrative purposes.
4. Survey planning and data collection process

Enumerator selection, training and field testing

The criteria for enumerators selection include a minimum qualification of bachelor's degree, previous experience of conducting population-based surveys and expertise of computer-assisted personal interviewing (CAPI) using mobile devices.

Two enumerator training workshops including field testing were conducted by HSA and WHO Pakistan in Islamabad and Karachi. In total, 55 enumerators participated in the training.

The in-depth enumerator training was covering a global as well as a national perspective on AT. A technical session was provided to the enumerators, with the assistance of written product descriptions and images, for the purposes of better understanding various APs, their functions and typical users. Furthermore, a detailed account of the WHO Global Cooperation on Assistive Technology (GATE) initiative and the Priority Assistive Products List 4 was also presented. The importance of the survey and its linkage with the Global Report on Assistive Technology were emphasized as Pakistan was taking the lead and was the first country to implement the survey globally. The conclusion of the technical session was followed by a documentary which highlighted the positive impact of use of AT in the daily life.

An interactive session provided orientation and hands-on training to the enumerators. The session included detailed explanation of the rATA questionnaire, the method for proper selection of the households in the field, the consent process and the process of interviewing. Under the supervision of the workshop facilitators (master trainers), all enumerators were requested to complete the exercise of simulated interviews with their fellow enumerators at the workshop so that they could get a better understanding of the challenges they might face in the field data collection. As part of the exercise, all the enumerators were asked to fill in the rATA questionnaire in Urdu (on hard copy) and record any questions for later feedback/discussions. Ample time was given to enumerators to practice the interview by role-playing (as an enumerator and a respondent) and identify any challenges or mistakes in the process. All enumerators were given the opportunity to raise any question or concern regarding the survey methods or processes at the end of the exercise. Facilitators responded to all queries. The session continued with the instructions given to enumerators on installation and use of the digital survey questionnaire on their mobile devices. The same exercise of simulated interviews was conducted among fellow enumerators to practice the data collection process with the mobile devices5. Any difficulty encountered during this exercise was addressed by the facilitators.

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4 The WHO priority assistive products list published in 2016 in multiple languages is accessible via https://www.who.int/phi/implemention/assistive_technology/global_survey-apL/len/

5 The digital rATA questionnaire accessed on the mobile devices was in English.
As part of the training, all enumerators were requested to complete a field test to consolidate the training results. The test included data collection from at least three households in the neighborhood of the training venue. To be practical for visualization of the products in the rATA questionnaire, an optimal size folded banner with printed product images accompanied by brief descriptions in Urdu was provided to the enumerators to show to the respondent during the interview. A feedback session was conducted, and problems were discussed and resolved by the facilitators. Based on the feedback, some language corrections in the rATA questionnaire in Urdu were made to better reflect the local context.

**Field data collection and monitoring**

The following is a step-by-step description of activities carried out in the preparations and implementation of the field data collection:

1. A formal letter from the Director General Health was issued to all the district administrations in charge of the relevant district health departments with information to the head of the provincial health departments. For reference, a copy of the letter was also given to each enumerator so that they could show it to any relevant official and it also helped in gaining confidence of the security agencies and in seeking their support if needed.
2. A photo ID was issued to each enumerator mentioning the national ID card number and survey title to gain the confidence of the community and in case if any law enforcement agency should inquire about their presence in the field.
3. All enumerators were issued a data collection bag to keep all the data collection materials / items in during their field activities.
4. Data collection in all 16 districts started simultaneously as each district had their own data collection team. Within each district there were two teams, and each team comprised of one female and one male enumerator.
5. Data collection was undertaken by using the digital survey pre-installed on enumerators’ mobile phones.
6. Real-time data entry and upload through the mobile phones were carried out as per the instructions and guidance. In case of poor or no internet connectivity, the data was temporarily stored on the mobile phone and uploaded automatically once the internet connectivity was available. In case of technical issue with the digital survey on the mobile phone, the enumerator collected data on hard-copy questionnaire and data were entered into the digital survey on mobile phone later when issue was resolved.
7. Each enumerator was provided with an optimal size folded banner for displaying product images with brief descriptions for the convenience of the respondents.
8. To ensure smooth functionality, each enumerator was given a power bank to deal with battery issues, if any.
9. Each enumerator was issued prepaid Internet cards to ensure sufficient mobile data in the field.
10. To ensure proper mobility during the data collection process, a lump sum amount for transportation or fuel was also given at each district level.
As part the monitoring and quality control process, the following mechanisms were taken in the field to ensure the data collection was carried out according to the plan.

1. The survey manager and HSA Focal Person continuously undertook random visits to ensure and monitor the data collection activities in the field.
2. A WhatsApp group of enumerators, manager, the national team leader and the WHO focal persons in Geneva and Islamabad was created for monitoring as well as interaction among the group members in case anyone needed support or had a query in the field. This was found helpful in supporting the enumerators in real time manner. Also, the national team leader was able to track the activity of each district and province.
3. A personal call system where teams were called randomly during the day to ask about their progress and work done so far was also used to monitor.
4. As part of the monitoring, about 10% of randomly selected respondents were called by the survey manager to verify the data collected by the enumerators.
5. The uploaded data was continuously monitored at the WHO Pakistan and HQ. Corrective measures were advised accordingly.

5. Data analysis

To meet the objectives of the survey, the following indicators were extracted from the data.

1. The current use of AP in the population;
2. The need, met and unmet need of AP in the population;
3. The rank of APs in use and with unmet need;
4. The source and funding to obtain APs in the country;
5. Users’ satisfaction about their products and related services.

The data analyses estimated percentages of respondents that reported functional difficulties, and of respondents that reported currently using APs and that reported unmet need of APs among all the respondents and among the respondents that reported having functional difficulties.6 The need of AP was the sum of the met and unmet need of AP. The met need of AP was estimated by the percentage of respondents reporting use of at least one AP and not reporting unmet need of any AP. Whereas, the unmet need of AP was estimated by the percentage of respondents reporting unmet need of any AP. Further analyses investigated the current use and unmet need of AP per age group, gender and living environment. The analyses also presented the rank of APs in use and with unmet need by the respondents; the distribution of providers and funding sources of APs; the distribution of reasons for not having the APs needed and the distribution of satisfaction of products and services reported by the respondents that currently use APs.

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6 The data analysis included summary statistics of the responses to the nATA questions. Percentages were calculated based on all samples included in the survey without weighting.
6. Results

In total, 63061 respondents were interviewed, out of which, 62723 respondents' data are included in the data analysis. The largest group of respondents are children between 5 and 17 years and the number of respondents is reduced with increasing age from the age group of 30 to 49 years. Respondents are evenly distributed between rural and urban areas, and gender. The numbers of respondents are comparable across different districts, except for Mastung, Sukkur and Haripur, where there are fewer respondents. Figure 1 summarizes the demographic information of the respondents in the survey.

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**Fig. 1 Demographics of the respondents.**

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7 Duplicated data entries (with identical entry ID), with unidentified districted names or with incomplete data fields were excluded from analysis.
While this survey is about need and unmet need of APs in the general population, most users of APs have some form and degree of functional difficulty. Some individuals use APs due to frailty or a chronic health condition, while many need an AP for shorter periods due to a temporary functional or health problem. The survey includes a measure that is drawn from well-established measure instruments: Washington Group Short Set 8 and WHO Model Disability Survey 9. This measure is used for analyzing use of APs among individuals with different levels of functional difficulties. Figure 2 shows the distribution along the six different functional domains. The proportion of some difficulty or more is highest for difficulty with seeing (14.3 %), followed by difficulty in sitting, standing, walking or climbing stairs (12.4 %), difficulty with self-care (5.9 %), difficulty with hearing (4.8 %), difficulty in remembering or concentrating (4.8 %), and lastly difficulty with speaking or communicating (3.1 %). For all domains, most reported are in the some difficulty level. The percentage of respondents who reported A lot of difficulty ranges from 3.7 % (sitting, standing, walking or climbing stairs) to 0.7 % (speaking), while cannot do at all is reported by 1.1 % (sitting, standing, walking or climbing stairs) or less.

![Difficulty distribution chart]

**Fig. 2 Distribution of level of functional difficulties reported by the respondents.**

Of all respondents, 4498 (7.2%) currently use at least one AP. However, 8192 respondents (13.1%) reported that they need at least one AP they don’t have. The need of AP is 16.8%, with 3.7% met need and 13.1% unmet need, which means only 22.3% (3.7%/16.8%) of the need of AP has been met. Among respondents with at least some difficulty in one domain, 53.2 % confirm that they need at least one AP they don’t have, while 30.2 % currently use at least one. Among respondents with at least a lot of difficulty in one domain, the figures of unmet need and use of APs increase to 70.5 % and 33.2 %, respectively. Figure 3 reveals that the pattern of use and unmet need of APs is similar in urban and rural areas.

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9 The MDS survey is developed to assess the prevalence of disability in the population. The survey can be accessed via [https://www.who.int/disabilities/data/mds/en/](https://www.who.int/disabilities/data/mds/en/)
Fig 3. Reported use and unmet need of AP in respondents with functional difficulties and from different living environments.

Figure 4 (a) shows that the proportion of population who use and have unmet need of APs increases in older age, and Figure 4 (b) that more males than females report using AP and unmet needs among females is higher than among males.

Fig. 4 (a) Use and unmet need of APs by age groups (b) Use and unmet need of APs by gender.
In total, 5237 APs are reported in use by the respondents. Among which, 3157 are spectacles. Products to support mobility such as cane/sticks, crutches, wheelchairs, and rollators are among the top of the list. Magnifiers, toilet chairs and hearing aids are also among the top 10 products reported in use. There are 189 respondents reported using other APs that are not on included in the product list in the rATA questionnaire. Figure 5a shows the rank of products in use reported by the respondents. Meanwhile, 16989 products are reported under unmet need by the respondents (Figure 5b). Among the products, spectacles and cane/sticks/tripod/quadripod rank the top two mostly reported APs with unmet need. Toilet chairs, chairs for shower/bath and hearing aids are also high with unmet need. Comparing Figures 5a and 5b shows that the unmet need of APs is more diversely distributed than APs in use.

**Fig.5 (a) APs in use reported by the respondents.**
Fig. 5 (b) APs with unmet need reported by the respondents.

For more than half of the APs (53.5 %), private sector (private facility, private hospital, private clinic) is reported as the source (Figure 6a). Other sources are in rank order: self-made (24.7 %), friends or family (18.2 %), public sector (3.7 %), NGO sector (1.5 %), and online (0.1 %). Thus, public sector is hardly involved in supplying AP to individuals in need in Pakistan. The private sector dominates while a substantial proportion (42.9 %) meet their need through efforts of themselves and/or immediate social network.

According to Figure 6b, the large majority (93.7%) of AP users paid out-of-pocket, assumedly also including friends and family. The remaining 6.3% got their products paid by the government, employer/school, NGO/charity or insurance.
Fig. 6 (a) Sources of APs reported by the respondents. (b) Funding sources of APs reported by the respondents.

The travel distance to obtain the AP in Figure 7 shows that the largest group (40.3%) have to travel between 5 – 25 km, while 30.5% travel less than 5 km. The remaining 29.3% need to travel more than 25 km. Comparing urban and rural locations, more urban respondents report shorter and more rural respondents report longer travel distances to obtain their APs.
Fig. 7 Distance traveled to obtain the APs in different living environments.

Regarding the level of satisfaction with the product, the quality of services and the quality of repair/maintenance, for all three, most respondents are very satisfied (44.7 % - 46.2 %) and many are somewhat satisfied (33.5 % - 39.7 %). A much smaller proportion are either somewhat dissatisfied (6.1 % - 10.2 %) or very dissatisfied (1.8 % - 2.9 %). Somewhat more are satisfied with their AP, less so with services and least with maintenance/repair (Figure 8(a)). More than half of the respondents with an AP report that their AP is completely suitable for their home and surroundings (Figure 8(b)). Another 28.3 % respond to the same question with a great deal. For a smaller proportion (1.4 %), the AP is not suitable at all or not much (5.8 %). With small deviations, a similar distribution of responses concerns whether the AP helps the respondents to do what they want (Figure 8(b)).

Fig. 8 (a) Reported satisfaction with the products, services and maintenance.
Fig. 8 (b) Reported usability of the products.

Among the reasons for not having the needed products, 67.5% respondents report that they cannot afford, followed by 24.7% who report that they are not aware of the products and 15.1% state that products are not available as summarized in Figure 9.

Fig. 9 Reasons for not having the needed APs reported by the respondents.
7. Limitations

There are some limitations in the presented data analyses that require attention before interpretation of the outcomes. The presented results summarize the sample-based survey data and provide basic descriptive outcomes. The sample in the survey is not weighted and the sampling errors for the estimates are not calculated. In the survey, the older age groups (≥65 years) are smaller compared to the younger age groups, which may introduce bias in the overall estimate of the use and unmet need of APs.
8. Recommendations

Key messages
The data provides some useful insights into the current situation of access to assistive technology in Pakistan.

» There is a substantial unmet need of APs. The top APs with unmet need are spectacles, canes, toilet chairs, shower/bath chairs, and hearing aids.
» The majority of the funding sources are private, and private sector such as private facility, private hospital and private clinic, is the most common source of products.
» The large majority of AP users are either very satisfied or somewhat satisfied with their APs.
» For the large majority of AP users, the AP helps them completely or a great deal to do what they want.

- A dialogue should be initiated among responsible authorities and key stakeholders including people with disabilities, older people, people with chronic conditions and their families to utilise the results of this survey to establish a common understanding of the situation regarding need, demand and supply of AT in Pakistan.
- A joint understanding shaped by this survey should be the point of departure for developing a concrete and prioritised plan of action with the objective to improve access to AT for everyone, everywhere – leaving no one behind.
- The capacity to assess needs and supply of AT to those in need and develop a service delivery system and adequate financing policy should be key targets for MNHSRC and allied ministries and service providers.
- A more diverse supply of AT, trained personnel and decentralized service provision system should be developed based on Pakistan’s Priority Assistive Product List.