

SURVEY OF NEEDS FOR ASSISTIVE AND MEDICAL DEVICES FOR OLDER PEOPLE IN SIX COUNTRIES OF THE WHO WESTERN PACIFIC REGION

**China, Japan, Malaysia, the Philippines,
the Republic of Korea and Viet Nam**



Commissioned to Motivation Australia and the Royal Australasian College of Surgeons
by the World Health Organization (WHO)

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WHO gratefully acknowledges the financial support it has received from the Japanese Ministry of Health, Labour and Welfare for the overall project. This survey for WHO is part of a broader WHO initiative to document the needs of ageing populations (over 60 years of age) for assistive and medical devices, the availability of these health technologies, and remaining gaps. Initially conducted in countries in the WHO Western Pacific Region, the development and implementation of the survey serves as a template for all countries in all regions.

The survey and report were developed by Kylie Mines and Lloyd Walker, Motivation Australia; and Wendy Babidge and David Hailey, RACS. They were produced under the direction of Alex Ross, Jostacio M. Lapitan and Loic Garçon of the WHO Centre for Health Development or WHO Kobe Centre (WKC); and Chapal Khasnabis, Francis Moussy, Adriana Velazquez and Yukiko Nakatani, WHO Department of Essential Medicines, Geneva, Switzerland. WHO is grateful to all colleagues in WHO headquarters, the WHO Kobe Centre

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Table of contents

Abbreviations	v
Executive summaryvi
1. Rationale for the survey	1
2. Background	2
3. Discussion of results of the survey	5
3.1 Assistive devices	6
3.2 Medical devices	9
4. Methodology	11
4.1 Research questions	11
4.2 Survey approach	11
4.3 Survey development process	12
4.4 Building the survey tool – demographic questions	12
4.5 Building the survey tool – assistive device questions	12
4.6 Building the survey tool – medical device questions	17
4.7 Implementing the survey	18
4.8 Survey analysis	19
4.9 Limitations of the survey	19
4.10 Recommendations for further surveys	20
5. Survey results	22
5.1 Respondents	22
5.2 Assistive devices	27
5.3 Medical devices	35
6. Conclusions	51
7. References	52
Appendix A:	
Survey tool	54
Appendix B:	
Linking specific assistive devices (from ISO 9999) to the table of 22 Activities/Functions	100
Appendix C:	
Final survey assistive device subclasses	101
Appendix D:	
Assistive device lists in the respondents' rank order with average rating for each function/activity	103
Appendix E:	
Rating of available assistive device groups for accessibility, acceptability, adaptability, affordability, availability and quality	109

Abbreviations

AD	assistive devices
ASERNIP-S	Australian Safety and Efficacy Register of New Interventional Procedures – Surgical
HIC	high-income countries (in this survey: Japan and the Republic of Korea)
ICF	International Classification of Functioning, Disability and Health
ISO	International Organization for Standardization
MD	medical devices
MIC	middle-income countries (in this survey: China, Malaysia, the Philippines and Viet Nam)
RACS	Royal Australasian College of Surgeons
WHO	World Health Organization
WKC	WHO Kobe Centre

Executive summary

Background

The increase in life expectancy globally is leading to an upsurge in ageing populations, especially in the World Health Organization (WHO) Western Pacific Region. As a result, enabling ageing populations to remain healthy, active, productive and autonomous for as long as possible is a priority of the WHO. Achieving this means increasing the accessibility, acceptability, adaptability, affordability and availability of high quality (safe and effective) assistive devices (AD) and medical devices (MD). To ensure this, a key first step is to assess the needs and contexts of older populations through action research that seeks to capture the baseline situation at the country level, and subsequently at the regional level.

This AD-MD survey was based on an earlier WHO-commissioned systematic review on MD and a study on AD for older populations, in addition to a consultation on this theme and the first WHO Global Forum on Innovation for Ageing Populations convened and organized by the WHO Centre for Health Development (also known as WHO Kobe Centre (WKC)) in Kobe, Japan in 2013.

Objectives

WHO, with support from the Ministry of Health, Labour and Welfare, Japan commissioned the development of this survey for older people in six countries (China, Malaysia, Japan, the Philippines, the Republic of Korea and Viet Nam) of the WHO Western Pacific Region. The survey had three core objectives:

1. Identify priority AD and MD that need to be available for older people (over 60 years of age) in the six focus countries of the survey.
2. Understand the contributing factors for AD and MD availability or unavailability.
3. Identify possible approaches to improve access to high quality AD and MD at an affordable cost, especially in low- and middle-income countries.

Results

The survey was successful in obtaining basic overall information from a relatively small sample of survey participants (n=100) on priority needs for AD and MD, as well as the availability of a range of AD and MD in six countries comprising four middle-income countries (MICs; China (n=19), Malaysia (n=7), the Philippines (n=26) and Viet Nam (n=3)); and two high-income countries (HICs; Japan (n=21) and the Republic of Korea (n=24)). Useful information was also obtained on perceptions regarding factors that may affect the availability of AD and MD, and of approaches that could improve the current situation.

Priorities for AD and MD. For AD, the respondents identified four functional activities that were priorities for older populations: 1) eating and drinking as independently as possible; 2) transferring to or from bed or chair; 3) being able to be clean and hygienic; and 4) being able to hear and communicate. For each functional activity, specific examples of assistive devices were enumerated (e.g. for “eat and drink as independently as possible” there were special cups, modified utensils, feeders, adapted knives, stove guards and microwave ovens). A remarkable consistency in the expectations for AD was demonstrated in the six countries surveyed. This may be the result of the target responders being professionals working or associated with the AD sector. The survey produced a reasonably consistent prioritized list of AD for a range of activities.

For MD, four main disease categories (cardiovascular diseases, malignant neoplasms, sense organ diseases, respiratory diseases) and four supporting clinical service categories (basic diagnostics, clinical laboratory equipment, point of care in vitro devices, and imaging and medical equipment for surgery and intensive care) were identified as priorities.

Ensuring availability. Results showed that the availability of necessary services and support for AD provision depended heavily on location, even in HICs,

with Malaysia and the Republic of Korea showing the highest rating. Mobility related AD and prosthetics had higher availability; however, respondents in China and Viet Nam reported little or no availability for AD support, particularly for household access, hygiene related AD and cognitive AD. There was consensus on the key causes of both successes and failures in making AD available. For “ageing in place” to be efficacious, making AD available at an affordable cost near the older person (or their family) was perceived by the respondents to be critical to AD success. Respondents also affirmed the importance of embedding AD provision (including its service delivery and support requirements) within other health and/or community services. Governments were seen to play a key role in facilitating both the procurement and affordability of AD throughout the WHO Western Pacific Region.

The current availability of MD in public and private hospitals was found to be more than 71% for the disease groups and more than 91% for the supporting clinical services groups. Overall, more MD were believed to be currently available in private than public hospitals for the four disease groups, while their availability in private and public hospitals was equal for supporting clinical service categories. Respondents were of the opinion that more MD need to be available in public hospitals than private hospitals or health centres for both the disease and supporting clinical service groups. The largest disparity between availability and need was in health centres for sense organ diseases where 39% of all respondents thought these devices were “currently available”, and 73% thought they “should be available”.

In the majority of cases, especially for public and private hospitals, respondents indicated that devices that were “currently available” also “should be available” in MICs rather than in HICs. This was more prominent for the disease device groups than for the supporting clinical service devices groups, which was an unexpected finding. This may be attributed to respondents not answering “should be available” if they have identified that the device is “currently available”.

The term “community or health centre” (abbreviated to “health centre” for the purpose of this survey report) may have confused the respondents, as the number of responses was generally higher for public and private hospitals compared to responses for health centres.

For laboratory and point of care in vitro diagnostics the levels of current availability of MD were lowest in health centres. This was an unexpected finding as health centres do not contain laboratories and thus would be expected to have higher availability of point of care devices. Furthermore, for laboratory and point of care in vitro diagnostic devices, the levels were higher for current availability compared with what ‘should be available’ in public and private hospitals.

Improving access The most highly ranked approaches to improving access to high quality AD and MD at an affordable cost were “decreasing the cost of available AD and MD” and “improving governance and policy”.

All survey participants in the survey, representing numerous sectors, clearly prioritized the need for government assistance to acquire AD for older people, followed closely by a need for increase in community awareness and training.

Next steps

Further information and modifications on AD and MD are required to inform future initiatives by WHO in association with appropriate stakeholders in the six countries and beyond. Such additional information would be best obtained by using a targeted version of this survey and face-to-face discussions with appropriate experts and users of AD and MD in the six countries surveyed, as well as from surveys in other countries around the world. There is also a need to validate the assertions made by the respondents on the rating of functional activities. This could be achieved by reusing the same question format, preferably translated into local languages, to seek responses from older people (end-users) themselves.

In summary, the survey provided a good introduction to the thinking of a limited number of stakeholders in these six countries on AD and MD. The survey was effective in achieving a balance between the sophistication and flexibility needed to deliver results – identifying priority AD and MD for older people; understanding contributing factors for their availability or unavailability; and identifying possible approaches to improve access to

high-quality AD and MD at an affordable cost. A particular value of the survey was to apply a methodological approach to understanding the needs and contributing enabling factors for such health technologies. Further research and actions are needed to ensure improved access, quality and use of medical products and technologies in the concerned countries and globally.



Jostacio M Lapitan



1. Rationale for the survey

The global population is rapidly ageing, especially in the Asian region. As a result, enabling ageing populations to remain healthy, active, productive and autonomous for as long as possible is a priority of the World Health Organization (WHO). Achieving this means increasing the availability, acceptability, and affordability of safe and effective assistive and medical devices (AD and MD). A key first step is to assess the needs and contexts of older populations, especially in low- and middle-income countries.

To ensure increased access, WHO, with support from the Japanese Ministry of Health, Labour and Welfare commissioned the development

of a survey by the WHO Centre for Health Development (the Kobe Centre). The survey was designed to map the needs for key AD and MD as an initial step in identifying priority needs, actions and possible solutions to better meet the needs of ageing populations. The results of the analytical work undertaken thus far will help WHO establish evidence-based initiatives and programmatic efforts to facilitate access to AD and MD at an affordable cost for ageing populations. The data from this study could be used for the development of devices and facilitation of technology to produce more affordable devices.



2. Background

Throughout the world, and particularly in Asia, a number of demographic and epidemiological transitions are posing unprecedented opportunities and challenges for maintaining positive health outcomes for populations. These are often complex, requiring an understanding of the public health and medical dimensions, the needs and preferences of affected populations, design and use of technologies, and reliance on community and national health systems.

WHO plays a unique role in assisting countries to develop the evidence base, norms and standards for a variety of health issues, as well as to nurture technological and social

innovations. Among the most pressing needs is to address and respond to the rapid growth in ageing populations, which is particularly relevant to the WHO Western Pacific Region, where approximately 1.8 billion people or more than a quarter of the world's population resides. Key to maintaining the health, quality of life, productivity and autonomy of older people is the need for AD and MD. To meet this emerging demand, it is important to make AD and MD more accessible, acceptable, adaptable, affordable and available for the populations in need.

Studies on assistive and medical devices for ageing populations

In 2013, the WHO Kobe Centre, in coordination and cooperation with other offices at WHO headquarters working on issues relating to innovation and ageing, began the operationalization of a new workstream promoting “innovation for healthy ageing” (WHO, 2013). With support from the Japanese Ministry of Health, Labour and Welfare, WHO commissioned two studies in eight countries of the Western Pacific Region that were finalized in mid-2013:

- **A systematic review of medical devices (MD) for diseases relevant to ageing populations** was conducted by the Australian Safety and Efficacy Register of New Interventional Procedures – Surgical (ASERNIP-S), Royal Australasian College of Surgeons (RACS). Each MD was analysed as to whether it was preventative, diagnostic or therapeutic; its specific mode of action; as well as status at an international level. Disease categories included cardiovascular diseases, malignant neoplasms, respiratory diseases, sense organ diseases and neuropsychiatric conditions.
- **A study of the needs, availability and affordability of assistive devices (AD) for older people** was conducted by the CBM–Nossal Partnership for Disability Inclusive Development. This included five categories of barriers to access across a range of disease categories (sense organ diseases, neuropsychiatric conditions, cardiovascular diseases, respiratory diseases, musculoskeletal diseases and diabetes).

WHO Consultation on Advancing Technological Innovation for Older Populations in Asia

(20–21 February 2013, Kobe, Japan)

In February 2013, the WHO Kobe Centre convened a Consultation on Advancing Technological Innovation for Older Populations in Asia, in Kobe, Japan. The consultation was attended by experts from government, industry, academia and non-governmental organizations, as well as from WHO headquarters, the WHO Regional Office for the Western Pacific, and the WHO Kobe Centre.

The objectives of the Consultation were to identify the priority needs of older populations for AD and MD; to identify needs for technological solutions for medical and assistive equipment; to find core gaps in information; and to prioritize actions to advance the availability of affordable AD and MD. Preliminary findings from the two commissioned studies noted above helped inform the Consultation, as well as helping to determine the next steps for WHO to consider for advancing the initiative on “Innovation for Healthy Ageing”.

Both the consultation and preliminary findings of each review undertaken thus far highlighted the importance of actions to enable greater availability of and access to devices, as well as to promote technological innovation in available, appropriate and acceptable devices, and encourage social innovations and health system approaches to increase uptake.

Participants in the Consultation identified a number of priority next steps. These included additional in-country surveys of the needs and availability of health technologies; identifying parameters for innovative technologies relevant to lower resource environments; and encouraging industry to transform complex high technology products into simple-to-use alternatives suitable for specific markets. Other

strategies mentioned included promoting development of appropriate and cost-effective strategies, tools, products and approaches to support innovation for devices; as well as exploration of leadership and governance, human resource development and service delivery strategies.

Following the Consultation, WHO commissioned Motivation Australia and RACS to carry out a further analytical project to assess the availability, need and gaps for AD and MD in six countries (China, Japan, Malaysia, the Philippines, the Republic of Korea and Viet Nam) located in the Western Pacific Region. The two organizations jointly developed an online survey tool (with Motivation Australia taking the lead on AD and RACS leading on MD).

An initial draft of the survey tool was, in part, refined during the first WHO Global Forum on Innovation for Ageing Populations held in December 2013 in Kobe, Japan.

Specifically, the objectives of this commissioned project were to:

- identify priority AD and MD that need to be available for older people (over 60 years) in the six focus countries of the survey;
- understand the contributing factors for their availability or unavailability; and
- identify possible approaches to improve access to high quality AD and MD at an affordable cost, especially in low- and middle-income countries.



Jostacio M. Lapitan

3. Discussion of results of the survey

To better guide the reader, the research team decided to place the discussion of the results of the survey at the beginning of this publication.

In developing the methodology for the survey tool, the research team drew on evidence from around the world on the place of AD and MD in the lives of older populations, while seeking to contextualize the survey tool so that it would identify relevant issues and technology factors in settings as diverse as rural Viet Nam and central Tokyo. Through this process, issues of relevance to AD taxonomies for middle- and low-resource settings were highlighted, as

was the challenge of linking choices in AD and MD to consumer need and device and service availability. The AD survey included the six principles for the provision of AD, as part of characterising the AD sector in each setting. Both the AD and MD sections included three questions calling on respondents to interpret what was hindering, and what were the most likely factors to advance, effective use of AD and MD for older populations. Taken as a whole, the results provide a good introduction to the thinking of a number of stakeholders in the Western Pacific Region on both AD and

MD, and the basis for follow up micro and macro studies on different populations and stakeholders.

Despite the best efforts of the survey project team, and substantial follow-up by staff at the WHO Kobe Centre, only 100 (51%) of those directly contacted (196) completed the survey. Many visited the survey website, but decided the topic of the survey was not of direct interest, or lacked the time to work through the document in English. Of those who responded and supplied demographic data, more than 70% provided useful survey data. About 15 respondents abandoned the survey part way through the AD or MD questions; however, the information they provided was captured for use in analysis. The result is an uneven distribution of responses by country, notably with relatively few completions for Japan (10) and Viet Nam (2). The fact that the Philippines had the highest completion rate (17 out of 100 or 17%) probably reflects the absence of a language barrier that others may have faced, but also highlighted the importance of local AD and MD champions to promote the survey (the survey was made known to a list of 22 more contacts by one listed expert in the Philippines).

3.1 Assistive devices

This survey demonstrated a remarkable consistency in the expectations for AD from the six countries surveyed. In part, this may be the result of the target responders being professionals, working or associated with the AD sector. It was clear that some responses reflected the professional roles and expertise that the respondents held. The survey collected information on four key areas: 1) functional activity needs requiring support, 2) priority AD to meet these needs, 3) current use of AD and respondents perceptions surrounding these devices, and 4) factors related to successfully providing AD.

3.1.1 Understanding functional activity needs requiring support

Most respondents placed a high priority on basic functional activity needs. In several cases, however, they ranked as low priorities, or even as being irrelevant for older populations, those functional activities related to social participation. There is a need to validate the assertions of the rating of functional activities made by respondents and this is best achieved by reusing the same question format in the survey, preferably translated into local languages, to seek responses from older people themselves (which were under-represented in this survey). Assuming reasonable internet access, the cost of this exercise would be low (because much of the survey is already written and coded), if translation costs are covered. While rights and inclusion-based frameworks champion full participation in all life domains (as defined by the International Classification of Functioning, Disability and Health (ICF)), it is important to hear first-hand the expectations of the older populations who need AD and MD.

Recommendation:

A subset of the questions on AD (particularly the question on activities and tasks) could be translated and administered to older people to validate the responses to those questions in this survey.

3.1.2 Developing a priority list of assistive devices

This survey produced a reasonably consistent prioritized list of AD for a range of activities, as well as an overall priority list of AD, admittedly only within the context of the six countries surveyed. It is interesting to note that while the need for a range of AD was rated as important or vital, when ranking AD under specific functional activities, there were numerous examples where the priority changed. The lists of AD provided in this report were ordered based on these rankings, as they involve subjective opinions on whether a certain AD

is more or less important in the context of all other AD on the list.

The overall ranked AD list includes basic items (for seeing, transfer and turning, handrails, etc.) high in the list. “AD for cognitive assistance” was among the top four, probably reflecting growing awareness of the needs of elders with cognitive degeneration. Surprisingly, several items for mobility (e.g. wheelchairs and lower limb prosthetics and orthotics) while deemed very important (rating) by respondents, were placed toward the bottom (ranking) of the AD list. This is most likely the result of other AD being a priority for each specific task, ahead of mobility AD, which has its own ICF domain. This serves as a warning to ensure any priority AD list makes appropriate provision for foundational AD, such as mobility or sensory AD, without which other tasks cannot be completed. The fact that “AD for seeing” heads the list is testament to its centrality to many other tasks, yet devices like a walking cane or wheelchair may be overlooked because they are almost routinely available for many people in our communities (especially AD providers).

In general, the lists are consistent between settings and respondents but there are some variations, particularly between high-income countries (HICs) and middle-income countries (MICs). In particular, for less resourced settings, AD for communication, reading, personal care, and washing and bathing were rated higher; while adapted beds, accessible computers, AD for managing continence and toileting, and doing housework were rated lower.

Recommendation:

Further work should be carried out to identify a priority AD list, noting that the list of ranked (prioritized) and rated (perceived importance) AD identified through this survey could form the basis of discussion, but must be considered holistically so that critical foundational AD (for example, mobility devices) are not overlooked. This work should include direct consultation with older people themselves.

3.1.3 Current use of assistive devices and respondents' perceptions

Not surprisingly, the most widely used AD were walking aids (including canes), but communication AD featured second, ahead of other mobility devices (such as wheelchairs). Although it ranked high in the priority lists, current use of AD for cognitive support was relatively low, and AD for both recreation and gardening featured at the bottom of these ratings. It is likely that these findings reflect the high profile of mobility disabilities and AD solutions for visual and hearing impairment. Although there were some settings where AD were available in the household or for recreation, generally they were marked as not available, possibly reflecting both cultural expectations and the availability of other people for such tasks. Only in rural areas did AD related to gardening (the only ISO 9999 subcategory that covers a home food garden) gain a slightly higher rating. It is telling that many classification structures (ISO 9999 in particular) assume affluent urban lifestyles. For example, in many developing countries, older people must work in agriculture and in other settings to survive.

In order to evaluate respondent perception of current use of AD (and gaps therein), the survey tool used six principles (parameters) of provision of AD that were based on the framework of the *Joint position paper on the provision of mobility devices in less resourced settings* (WHO and USAID, 2011):

Accessibility. AD and related services are accessible to everyone with an identified need. The survey found that respondents' ratings of accessibility tended to mirror their reported use of AD, with Japan and the Republic of Korea having the highest awareness and availability of most items, while most other countries had limited access to cognitive and household aids, but reasonable access to prosthetics and mobility aids.

Acceptability. People with disabilities are actively involved in all stages of AD provision, having choice and control over the decisions

that affect them. For most AD this was rated highly in Malaysia and the Republic of Korea, but low in China and Viet Nam. AD for cognitive support rated the lowest and walking aids the highest, although both had high variation between countries, as did AD for house changes and/or modification.

Adaptability. AD and related services are adapted and modified to ensure they are appropriate to the requirements of the individual. Again this was rated highly for mobility devices and prosthetics (3.0–3.8 out of 6), but lower for most other AD, indicating little or no adaptation. Adaptation was highest in Japan and the Republic of Korea, and lowest in Viet Nam.

Affordability. AD and related services must be affordable for people with disabilities and their families, particularly in low-resource settings. Affordability was rated highest in the higher income countries (Japan and the Republic of Korea) and poorest in Viet Nam. Only walking aids were regarded as being offered at a reasonable cost to most, with all other AD typically at a significant cost. AD for cognitive support, communication and house change were unaffordable by most in lower resource settings.

Availability. All relevant resources required for the provision of AD are available in sufficient quantity for the needs of the population and are provided as close as possible to people's own communities. Availability of necessary services and support for effective AD provision were quite variable, yet rated surprisingly low even in the Republic of Korea and Malaysia, which reported the highest ratings. Again mobility AD and prosthetics had higher availability, but respondents in China and Viet Nam reported little or no availability of AD support, particularly around the house and in cognitive AD.

Quality. All relevant resources are of an appropriate quality. This was generally rated quite highly for most categories but was poor for cognitive AD. Generally China, Japan and the Republic of Korea reported higher quality

than others, but Japan reported the lowest quality for walking aids.

In addition to these principles or parameters, the Consultation on Advancing Technological Innovation for Older Populations in Asia, identified four others: appropriateness of the AD (linked to acceptability); safety and effectiveness of the AD (linked to quality); and a more general one – that of sustainability. These were not used in this survey.

The survey identified variation in the current use of AD among the six countries, and that in general AD provision is far from ideal. The assessment supported some widely held perceptions, as well as highlighting some unexpected aspects of current use:

- Higher and new technology solutions were more widely known and available in HICs.
- Older people had the least involvement in making AD choices in China and Viet Nam.
- Apart from prosthetics and mobility devices most AD were not considered very adaptable.
- Affordability of AD tended to follow socioeconomic factors (more affordable in HICs), with only walking aids perceived to be of reasonable cost to most across the region.
- Both availability of support services and quality of products were surprisingly varied across all settings. Mobility and prosthetics appeared to be the most consistent (quality and service provision) in all settings.

Recommendation:

The needs of rural and lower income communities for AD, particularly in relation to producing food, need to be reflected in classifications of AD (notably ISO and ICF). Similarly, although rated and ranked highly, the provision of AD for cognitive support is very poor in most settings. In order to improve this, the six principles of AD provision must be addressed. Barriers related to availability of support services should also be further explored.

3.1.4 Factors associated with successfully providing assistive devices for older people

There was consensus from respondents on the key causes of both success and failure in providing AD. Making affordable AD available as close as possible to older people's own communities is critical if the intent is to facilitate "ageing in place". In addition, respondents affirm the importance of embedding AD provision within other services and government commitments to older people, particularly in lower resource settings.

Initiatives to improve future success appear to hinge on government and/or agency AD procurement support or subsidization to address some of the costs. For those settings with a reduced range of options, it is clear that ensuring items are suitable for local needs and requirements is key to their successful uptake. Interestingly, both reducing regulation and enhanced quality checks remained at the bottom of the ranking lists suggesting that they are not significantly affecting AD outcomes.

Recommendation:

Governments remain a key driver and foundation for successful implementation of AD service provision within ageing populations, and can play a big part in ensuring affordable and locally appropriate AD is made available in the communities where older people reside. Such programs should be embedded within other support and health programs for older people.

3.2 Medical devices

The survey provided a general overview of the requirements for and availability of a range of MD in the six countries. There are indications of differences between MD being used or required in health centre settings compared to hospitals. The term "community or health

centre" was used in the survey, but for the purpose of this report, the term "health centre" is used henceforth.

Survey responses indicated that the "should be available" and "currently available" MD for the disease groups were unexpectedly higher in MIC than in HIC for the majority of public and private hospitals. There were higher numbers of overall responses for cardiovascular, sense organ and respiratory diseases compared with responses for malignant neoplasms for public and private hospitals. The difference in response numbers may be related to the number of patients affected by each disease.

The "current availability" and what "should be available" for MD in health centres were equal for all the disease groups except malignant neoplasms, where the need was greater than the availability.

The responses suggested generally good current availability (>91%) for all supporting clinical services devices in public and private hospitals, but lower availability in health centres.

For several categories of MD, availability was apparently good, but demand was also substantial, most often in public hospitals and sometimes in health centre. It would be interesting to explore possible reasons for this, considering factors such as changes in caseload and/or case mix and the age and frequency of operation of devices.

For MD, the availability and needs in different settings are shown for the different disease conditions, and for those devices that have broader applications. Survey responses indicated greater availability of devices in HICs in many but not in all cases. For several categories of MD, availability was good but demand was also substantial, most often in public hospitals.

Appropriateness in terms of current practice, acceptability to health care personnel and affordability of reimbursable MD were seen as the most significant factors influencing the availability MD. Factors perceived to have influenced the unavailability of MD were unavailability of medical devices in the market, cost of devices and lack of funding. Decrease in the cost of available devices and/or services and improvement in governance and policy were the most highly ranked approaches to improve the availability of MD.

The survey results suggest that HICs have greater availability of MD and are looking for care delivery models that increase use of outpatient settings, and thus the need for certain types of MD. However, MICs do not have the same level of resources and thus their need is to increase hospital-based MD. A future considerations is whether MICs will leapfrog into new care delivery models with consequent changes of MD needs. It is also important to note that the survey reported on clinical use of MD rather than MD in home settings.

Recommendations:

- The additional insights regarding the availability and use of MD provided by respondents suggests that further details are needed for the development of future initiatives. These may be usefully obtained from direct consultation with appropriate stakeholders in the six countries, taking into account their level of health system development and resources.

- It would be useful to explore possible reasons for the substantial demand for some MD that have high availability, considering factors such as change in caseload and/or case mix, and the age and operation of devices.
- It would also be useful to inquire as to the need for and availability of MD in home use. This can be achieved in further discussions with older people themselves and health care planners and providers.



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4. Methodology

4.1 Research questions

The following questions were developed in order to achieve the survey goals (see Section 2. Background):

- What are the priority AD and MD for older people that need to be available in each of the six survey countries?
- Which of the priority AD and MD are currently available in each of the six countries?
- What are the factors that contribute to their availability?
- Which of the priority AD and MD are unavailable or have limited availability in each of the six countries?

- What are the factors that contribute to the unavailability of AD and MD?
- What are possible approaches to improve access to priority AD and MD at an affordable cost?

4.2 Survey approach

A framework was built around an online survey tool, created in three parts: demographic questions, AD questions and MD questions. After completion of the demographic questions, respondents could choose to answer the AD questions only, the MD questions only, or both.

Both the AD and MD sections of the survey had a broadly similar structure focused on the respondent's setting (country, location and work context):

- availability and priorities for specific devices for older people (drawn from developed lists);
- questions relating to the access, systems and ancillary aspects of device success;
- rating possible factors affecting device availability and separately, unavailability;
- rating potential approaches that might improve access to priority devices in their setting.

Throughout the survey, space was provided for narrative comment, and the survey finished with space to allow respondents to identify any other devices that were needed but not affordable or accessible in their settings.

4.3 Survey development process

Initial sets of proposed priority devices were developed (see sections 4.4–4.7 on building and implementing the survey tool) and these, along with questions, were circulated through key staff working within the assistive and medical device areas of WHO. A draft survey was also prepared and circulated to garner feedback at the WHO Global Forum on Innovation for Ageing Populations, through a stakeholder discussion session. The survey content was finalized after further feedback from WHO.

4.4 Building the survey tool – demographic questions

The team agreed on a series of demographic questions to characterize the respondents. As the survey tool (**Appendix A**) was offered online, the IP address, and date and time of completion for each respondent was

automatically collected, which enabled identification of repeat visitors to the survey. After an initial introduction to the survey, respondents were asked a series of mandatory questions about their:

- location and setting including: country, type of organization (based on 13 categories), distance from the national capital (in three bands, contextualized for country size), and per cent of their annual funding that came from the government (in quartiles);
- personal attributes including: profession or work title (based on 11 categories + other), name, contact details (email and telephone), and whether they provided services locally, regionally or nationally, and to urban, rural and/or transient clients;
- level of knowledge and/or experience in AD, and separately MD, graded as follows: none or very little, less than a year, 1–5 years, or more than 5 years.

Respondents who indicated they had little or no experience in the area or left this question blank did not answer any further questions relating to that category (i.e. AD or MD).

4.5 Building the survey tool – assistive device questions

The AD aspect of this project was largely built on the survey of AD commissioned by WHO and conducted by the CBM–Nossal Partnership for Disability Inclusive Development in 2013.¹

4.5.1 Assistive device survey approach

In line with the ICF and numerous studies on its use, it was decided to guide survey respondents in their selection of priority

¹ The needs, availability and affordability of assistive devices for older people in 8 countries in the Western Pacific Region: Australia, China, Fiji, Japan, Malaysia, the Philippines, the Republic of Korea and Viet Nam; submitted to WHO in March 2013.

devices by framing questions around functions (or activities) deemed most important for older people in maintaining their independence. These functions were then each associated with a number of related AD commonly used in maintaining or enhancing outcomes in each area. After rating each of the functional areas, respondents were asked to rate and rank the AD list associated with each area.

In order to evaluate the success in use (or not) of a select range of AD, as well as the facilitators and barriers to such AD use, Motivation Australia utilized the framework from the WHO/USAID *Joint position paper on provision of mobility devices in less resourced settings* (2011). Finally, respondents were asked to rank the top five barriers and facilitators to AD use, and prioritize approaches that may enhance AD success for older people.

4.5.2 Determining assistive device priorities

Developing the functional questions

Motivation Australia drew from the AD lists generated through the CBM-Nossal survey; as well as taking into account a number of relevant studies. Studies by Verbrugge et al. (1997) and Mann et al. (2004, 2008) explored and developed related activities and functions associated with successful functioning and activity in older people. These items were primarily about activities of daily living (ADL) or mobility. A study by Rejeski et al. (2008) complemented this work with Instrumental Activities of Daily Living (iADL), which helped to ensure nearly all domains of the ICF were considered. Recreation and employment activity continue to be areas that are poorly evaluated for older adults, and so these two items were explicitly added. The result was 22 function statements (see **Appendix B**).

Identifying the linked assistive devices for older people

The listed functions were then linked to every relevant AD drawn from ISO 9999 *Assistive products for persons with disability – classification and terminology* (ISO 2011)² at the level of subclass (e.g. 06 18 upper limb prostheses) with appropriate examples for each subclass. ISO 9999 is a nomenclature system for assistive technology based on 12 primary classes, and numerous subclasses. At the second level, there are over 150 different categories of device. Current ISO work is focused on linking ISO 9999 more clearly with the ICF, but for the purposes of the survey, it was decided to continue to use the ISO 9999 (2011) at the second level as the basis for building the priority AD list. The initial AD list developed was reviewed against applied evidence of use by older people from peer reviewed journals and other literature to reduce the list size.

The work of Mann et al. (1999) remains a key study identifying the value of a wide range of AD for older Americans. Their randomized controlled trial enabled the provision of almost ideal options based on clinical experience and user demand. It sought to determine the effectiveness of this ideal AD against more basic solutions. Thus, the list of provided AD (including built environment modification) was substantial.

Reviews by Connell et al. (2008) and Löfqvist et al. (2005) helped to identify the range of AD that was in use by older people in a variety of developed settings around the world. Ongoing work led by Bauer and Elsaesser is focused on closely linking a more detailed taxonomy that will blend and perhaps adapt ISO 9999 to link directly with the ICF (Bauer et al., 2011; Bauer and Elsaesser, 2012). This work helped to confirm the general focus of the proposed

² Note that ISO 9999 uses the term “assistive products”, which for the purposes of the survey and this report was substituted with “assistive devices”.

draft priority list (based on the other studies); however, the distinction between AD and prosthetics and orthotics, and the inclusion of service provision was not incorporated into this study.

For the purpose of this survey, categories from ISO 9999 at the second level were utilized, and edited based on the studies noted above, forming a draft priority AD list. Example devices were identified for every ISO 9999 second level item to assist respondents in both recognition and selection.

While the above process saw some AD removed, which had not been reported in studies, some items were specifically added back into the list, including AD for cognitive skills, AD for sexual activities and AD for gardening and lawn care. Care was taken to ensure emerging issues for older people (such as cognitive decline and loneliness) as well as AD for more rural environments (such as gardening or hunting and fishing where home food supply is essential) were incorporated, to ensure coverage of all the ICF domains where possible.

Refining the lists to achieve survey questions

The result of the above process was a detailed list of 22 functions and slightly over 70 AD subclasses from ISO 9999. The project team agreed this was too lengthy for a survey and therefore the list of AD was grouped to create new pseudo-AD subclasses that contained a range of items (e.g. “AD for personal grooming” included items for manicure, hair care, facial care and dental care). The result was a list of 49 individual AD subclasses described in **Appendix C**.

Each of the 22 functions had appropriate AD from the final survey list assigned. The resulting table was reviewed to identify where different activities or functions utilized very similar sets

of AD. As a result, it was possible to reduce the number of distinct functions while still permitting coverage across most of the ICF domains (Table 1). This final list provided 12 functional areas that sought to identify life areas considered important for full well-being for older people.

Question 1 therefore presented respondents with the above 12 functional areas, and requested that they rate these from “not relevant” through to “vital task” on a five point scale. For each functional area (except those marked “not relevant”) the related AD list was then presented in question 2 in random order (with the category “Non AD: Personal assistance” at the end), and required respondents to:

- rate at least five items from “useless” to “essential” on a five point scale;
- rank those items rated in priority order.

4.5.3 Extent of assistive device use

The next section (question 3) required respondents to rate a list of AD categories according to how widely and effectively they are used by older people in their context. The 11 AD categories offered were:

- communication and information
- cognitive support
- prosthetics/orthotics
- walking aid
- other mobility
- personal care and dressing
- hygiene and toileting
- house access/furniture
- food preparation/eating/drinking
- household tasks (including garden work)
- recreation

The rating was a five point scale beginning at “not used/available” and ending with “used very well in nearly all cases”, with an option to select “I don't know”.

Table 1. Final list of function areas for assistive devices – development process

Functions identified through analysis of ISO 9999 and research	Refined final survey list of 12 functional areas
1. Get dressed including tying shoes, working zippers and doing buttons	1. Able to dress
2. Have a bath or shower, including getting in out of the bath or shower	2. Able to be clean and hygienic
3. Go to the toilet including getting on and off the toilet	
4. Reach and lift down a 2 kg object (bag of flour) from just above your head	3. Grip or pick up items and do housework
5. Carry out light housework	
6. Grip with your hands ^a	
7. Get into and out of bed	4. Transfer to or from bed or chair
8. Move in and out of a chair	
9. Walk from one room to another on the same level	5. Move about and use transport
10. Walk up one flight of stairs	
11. Walk 500 m (two or three blocks)	
12. Get in and out of a vehicle	
13. Eat and drink as independently as possible	6. Eat and drink as independently as possible
14. Hear and understand others	7. Able to hear and communicate
15. Communicate effectively with another person	
16. See writing/symbols at a reading distance	8. Able to see and understand writing
17. Manage health care including follow health advice	9. Manage health care and fatigue including following health advice
18. Manage the energy needed for daily tasks	
19. Undertake employment (paid or unpaid)	10. Participate in community activities (can include employment) and visiting others
20. Participating in community activities including visiting with relatives or friends	
21. Taking care of a family member	11. Take care of a family member
22. Experience intimate/sexual relations	12. Experience intimate/sexual relations

^a“Grip with your hands” also has cross over aspects for dressing.

4.5.4 Determining accessibility, acceptability, adaptability, affordability, availability and quality of prioritized assistive devices

The next section (question 4) required respondents to rate the accessibility, acceptability, adaptability, affordability, availability and quality of the following selected priority device categories (with examples for each category provided):

- communication
- cognitive support
- walking aid
- prosthetics/orthotics
- other mobility
- hygiene and toileting
- house changes
- AD to eat/drink

If respondents indicated that a category was not accessible or available, then none of the further aspects were queried (but were automatically marked as “not available” for that aspect). Each aspect was rated on a five point contextual scale appropriate to that aspect (e.g. adaptability had the highest response as “tailored to each person”).

4.5.5 Identifying strategies to enhance access to assistive devices

The final section (questions 5–7) of the AD survey required respondents to rank separately in order of importance the main reasons (presented randomly) for the successful use and for non-use of AD in their context (Table 2). Finally, respondents ranked a list of strategies (Table 3) that they believed would have the greatest impact in enhancing access to priority AD for older people in their community. Respondents were required to rank at least five items for each question.

Table 2. Reasons for assistive device success or failure

Possible reasons that ensure certain AD are widely used by older people	Possible reasons why other AD don't get used by older people
Functionally very effective	The device is poorly designed or is unworkable in usual environment
Culturally appropriate and acceptable	The device is culturally inappropriate
There is good community education and awareness of such devices	There is stigma or resistance from family or community around using this device
The device was created and/or is readily available locally	There is poor community education and awareness of such devices
The device is available for an affordable cost to older person and/or their family	The device is not readily available locally
The device is adjustable; or there is a choice of type to properly suit the individual	The device is not available at an affordable cost to older person and or their family
The device looks good	The device is not sufficiently adjustable or there is no choice of type – so it cannot be properly made to suit the individual
The device is a part of other supports/therapy	The device looks bad or dangerous
There is research evidence of the benefits the device offers	The device is not part of other support/therapy
The device is routinely provided for those with identified need	There is no widely accessible service in place to assess individual user's needs and prescribe the device
There is a well-functioning and accessible service in place to assess individual user's needs and prescribe the device	There is no government commitment or action to increase access to the device
There is government commitment and action to ensure access to AD	The quality of the device is too poor/variable for safe issue

AD = assistive device.

Table 3. Strategies to impact on improving access to assistive devices

Possible strategies that may impact on improving access to priority AD for older people in your community
Creating devices that are more suitable for local need
Funding support for agencies/companies to develop new appropriate products
Improving local capacity to manufacture devices
Better training of health professionals on the value of assistive devices
More community awareness and education on the devices and their uses/benefits
Improving logistics to get devices to end users
Locally available services to assist with assessment, fitting and adjustment
Better product support (repairs, parts, adjustment, maintenance)
Training older people and families in how to use and maintain their device
Government/agency assistive device procurement support or subsidy
Better quality checks on devices offered for sale
Less regulation that hinders market competition

AD = assistive device.

4.6 Building the survey tool – medical device questions

An initial set of proposed priority MD was developed by RACS ASERNIP-S. This was guided by the systematic review of MD for diseases relevant to ageing populations (ASERNIP-S et al., 2013) and a draft list of MD extracted from WHO publications (WHO, 2010; 2011; 2014a; 2014b) that had been formulated by WHO. Technologies were selected from each of four disease categories considered by the ASERNIP-S systematic review: cardiovascular diseases, malignant neoplasms, sense organ diseases and respiratory diseases. Technologies from the WHO list that were relevant to older people were also selected.

For the purposes of the survey, the technologies were grouped by the four disease groups, and by broader clinical application.

The selected technologies were considered in the discussions at the WHO Global Forum on Innovation for Ageing Populations, and finalized after feedback from WHO. In all, 72 technologies were included in the survey.

4.6.1 Medical device survey approach

Respondents were first asked to indicate the availability of the listed MD in their countries, both the current situation and what would be desirable. For each technology, desirable and current availability could be specified for three settings: community or health centre level, public hospital, and private hospital. Respondents were also given the option of indicating that a technology was not necessary.

Then respondents were asked questions on factors affecting MD availability in their countries. First, they were to rank what factors had contributed to the current availability of MD. At least 5 of 8 factors were to be selected.

There was then a similar question in which factors that contributed to the unavailability of non-available MD in their countries were to be ranked.

Respondents were then to indicate which, in a list of possible approaches, might improve access to priority MD in their countries. Each approach was to be rated as “very important”, “important” or “not important”.

Finally, respondents were asked if there were any other devices that were needed but not affordable or accessible in their setting.

4.7 Implementing the survey

4.7.1 Development of the online tool

The desire of both WHO and the project team was to utilize an online survey approach, backed up by printed survey forms when needed. After a significant review by Motivation Australia, a proposal to prepare the survey using Limesurvey was accepted by the project team. Limesurvey,³ an open source server-based survey software offered several positive attributes, as listed in the box below.

The first draft of the online survey was trialed by members of the team and WHO personnel in early 2014, and the structure and branching aspects were verified. The survey was hosted on an Australian server, and access to the respondent's interface (to complete the questionnaire) was not restricted (no password or key was required).

Rationale for choosing the online survey tool Limesurvey

- Appropriate security controls
- Able to be implemented on either the World Health Organization or project team server
- Meets some measure of accessibility requirements (only partially utilized in this project)
- Allows a range of question types including dynamic ranking (via drag and drop), and response validation (checking answers are in the correct format, e.g. numbers)
- Substantial conditional branching and an ability to pipe responses forward into subsequent questions, enabling focusing of users on questions that, where possible, are adapted/selected based on earlier responses
- An ability to support multiple languages (not utilized in this project)
- Automatic “save as you go” system to assist users with poor internet connections, as well as a “save for completion later” feature
- Very open systems to enable analysis of data by other programs

4.7.2 Survey respondents

A list of potential respondents from the six countries was compiled by WHO and the project team. The WHO list included management and technical experts identified by WHO, the ministry of health in respective countries, and/or through participation in AD and MD related meetings convened or supported by WHO. Letters of invitation with web links were distributed by the WHO Kobe Centre (Innovation for Healthy Ageing) at the end of January 2014. In addition, project members and WHO staff circulated the invitation through their networks to encourage participation from respondents in the six countries.

The survey was open from 28 January, initially until 14 February but then extended to 28

³ See www.limesurvey.org

February 2014. During this time, follow-up emails were circulated to potential respondents.

In total, 196 people were invited to complete the survey through a direct email request; and others may have joined the survey through the in-direct methods noted above.

Limesurvey has built-in language support for its operation, which was turned on a week into the survey, and many respondents used this. It was noted that respondents (from China, Japan, the Republic of Korea and Viet Nam) for whom English was a second (or third) language took 20%–30% longer to complete the survey than those where English is an official language (Malaysia and the Philippines). It was encouraging that there did not appear to be obvious examples of questions that confused respondents.

The survey team monitored the survey closely throughout the period, addressing any difficulties raised by respondents in completing the survey and contacting respondents to verify the intent behind some responses. Two requests were received for printable versions of the survey (for internet access reasons), and one respondent subsequently scanned a completed printed survey and returned it for entry by the project team. No other printed survey was received.

The survey results database was downloaded in full on 3 March 2014 for analysis. Duplicate records were removed and two respondents appeared to have entered surveys on behalf of people in their institution (two each) which were retained as individual records.

4.8 Survey analysis

The raw data was downloaded from the Limesurvey database at the end of the survey period and analysed using a range of software tools for descriptive statistics (Stata and Microsoft Excel) and visualization (Microsoft Excel and Tableau Software). Most items fell

along a five point Likert scale and the average value is generally reported for the sample. Ranking questions were analysed using “rank order centre of weighing” techniques based on seven ranks for the AD questions (seven being the smallest list of AD under a task) and six ranks for other questions (since five was the minimum number of responses required, yet many provided six). The resulting value was normalized to 100.

4.9 Limitations of the survey

The survey had a number of limitations that should be considered for interpreting the findings, as well as for planning of future surveys.

- **Pilot opportunity.** A pilot survey could not be conducted due to time constraints. A pilot would have provided an opportunity to test and potentially revise the instructions and formulation of questions. However, the survey as it was conducted could be viewed as a pilot, providing an opportunity to further refine the survey tool for future application.
- **Language.** Due to the short timeframes involved, the survey was administered only in English and not translated into the languages of the six respondent countries. Use of local language(s) in the survey form may have increased the response rate, particularly for those countries where English is not commonly used.
- **Length and complexity.** The need to gather information about availability, priority, factors and approaches that may affect availability of both AD and MD made it a complex survey, with a large number of devices to be covered and questions to be addressed. This may have deterred some potential respondents and impacted the accuracy of responses.
- **Make-up of respondents.** Although there was a good range of respondents from across the professional community, there

were very few (perhaps no) end-users of AD. Consequently, respondents were reflecting their perceptions of end-user beliefs for some questions.

- **Number and geographical distribution of respondents.** While useful information was obtained from a 51% response rate,⁴ the number of respondents who completed the survey (AD=46 and MD=42) was limited. As the number of practitioners and agencies working in the AD and MD sectors in the six countries was not known it was difficult to assess whether the response rate and numbers were adequate. If the relevant sample population is 2500, Sivo et al. (2006) suggested that 49 responses would be acceptable for a 5-point Likert scale question with an error of 1-scale point. The only sampling used was emailing individuals who were thought to be key figures in the field, making it difficult to generalize the findings to all stakeholders in the AD and MD sectors in the six countries. There was evidence of non-response error from Japan, where those disinclined or unable to complete the online English survey were excluded from the results (Sivo et al., 2006). Although a printed version was available, it was still in English and few chose this option. There was also an uneven distribution of responses by country, notably relatively low for Malaysia (7) and Viet Nam (3).
- **Wording of the questions.** 1) Very few respondents answered the question on what devices were “not necessary” and therefore those data are not included in this report. Poor response may be attributed to the “not necessary” including all medical organizations grouped together, with no separate options for private hospitals, public hospitals and health centres. 2) Respondents may not have thought to answer the question of “should be available” if they had already noted that the device is “currently available”. 3) The description of

“community or health centre” may have confused the survey respondents as this received fewer responses than private or public hospitals.

4.10 Recommendations for further surveys

In general, the online survey system was effective and achieved the balance of sophistication and flexibility needed to deliver the project. Some respondents had difficulties accessing the survey, and while this was resolvable for most, there were a few cases where presumably local proxy servers or firewalls were hindering access to the site. Of the two people who had requested printable versions of the survey (which naturally lacked the conditional support the online system offered), one returned it successfully.

The survey proved that this successful pilot and framework on which it was developed provides a sound basis for future work. As an initial method of validation, it would be helpful to request older people themselves to complete question 1 on functional areas. The results could then be compared with those in this report to see if the respondents to this broader survey truly had an understanding of the consumer (end-user) viewpoint.

- The following recommendations should be considered if a larger survey is planned.
- Simplify the survey language where possible, and translate into local languages and validate to maximize engagement by respondents for whom English is a second language.
- Retain and refine the demographic data collected, and include a suggestion for the respondent’s age band.
- Base discussions around a list of ranked and rated AD, but consider it holistically, so that critical foundational AD (e.g. mobility devices) are not overlooked.

⁴ In this case, the response rate was based on the WHO email list that was used, so $100/196 = 51\%$.

- Gather more details on the availability and use of AD and MD for the development of future initiatives. These may be obtained from face-to-face contact with appropriate stakeholders in the six countries and from older people who use or require AD.
- Translate (if required) and administer a subset of the questions on AD (particularly the question on activities and tasks) to older people to validate the responses to the questions in this survey.
- Amend the wording of the question for MD to “currently available” and “if not should it be available”, to specify that if the device is available, the respondent need not answer whether it should be (this is ambiguous in the current wording).
- Use the term “health centre” rather than “community or health centre”, which appeared to confuse respondents.
- Allow the option for a device being “not necessary” for the private hospital, public hospital and health centre to be marked separately, rather than being grouped together.
- Have an option to respond “I do not possess the required knowledge of this device”.
- Seek to understand the population to be surveyed to appropriately establish a sample size and technique (Sivo et al. (2006) provides some good background on these aspects, as do other authors reflecting on the use of both mail- and internet-based survey systems).
- Include questions on the need and availability for MD used in home and non-clinical settings.



5. Survey results

5.1 Respondents

Survey response statistics

As shown in Table 4, a total of 196 people visited the survey.⁵ Of those, 100 people completed the first section of the survey, providing demographic data; 23 people concluded the survey at that point, having either indicated they had no AD or MD experience, or having not answered that question.

⁵ Identified through the presence of a unique IP address automatically recorded by the survey tool.

Table 4. Individual survey response totals

Initial respondents – identified by unique IP address ^a and provision of country information	Provided demographic data (email address and name)	Indicated no expertise in AD or MD (16) or did not answer (7) ^c	Indicated expertise in AD or MD		
			AD only	MD only	Both AD and MD
196	100 (51%) ^b	23 (12%) ^b	13 (7%) ^b	6 (3%) ^b	58 (30%) ^b

AD = assistive device, MD = medical device.

^a If multiple people used the same IP address (but provided their names), each person was considered a respondent.

^b Percentage of initial respondents

^c This group did not complete the survey of AD or MD

Seventy-seven (77) people continued through the survey. Nineteen (19) answered only AD or MD questions, while the majority (58) answered both AD and MD questions. Not all respondents completed the full survey. Overall, a total of 71 people answered some or all of the AD questions, and 64 answered some or

all of the MD questions. The greatest number of respondents who completed the survey for both AD and MD were from the Philippines (17). Table 5 shows the number of people who completed each section of the AD and/or MD survey.

Table 5. Breakdown of survey sections completed

AD (Part A)	MD (Part B)		
Indicated experience in this area	71	Indicated experience in this area	64
Completed up to and including section:		Completed up to and including section:	
Demographic data	71	Demographic data	64
Q1 Functional area rating	67	Q1 Indicated specialist knowledge	43
Q2 Priority devices	66	Q2 (part 1) Completed specialist MD	31
Q3 Extent of use	49	Q2 (part 2) Completed general MD	40
Q4 Rating of accessibility, acceptability, adaptability, affordability, availability & quality of devices			
Q5–6 Reasons for (un)successful use	46	Q3–4 Reasons for MD (un)availability Q5	42
Q7 Strategies to enhance access		Strategies to improve access	

AD = assistive device, MD = medical device.

A comparatively large number of people from Japan (94) visited the survey but did not go on to provide demographic data or complete the survey. The greatest number of respondents who fully completed the survey were from the Philippines (17), followed by China (13) (Table 6).

Table 6. Number of respondents by country

Country	Initial respondents	Provided demographic data	People who indicated some expertise in:		People who fully completed the survey from each country	
			AD	MD	AD	MD
China	24	19	14	10	13	7
Japan	94	21	8	12	4	9
Malaysia	8	7	4	3	4	3
Philippines	29	26	23	21	17	15
Republic of Korea	31	24	19	16	6	6
Viet Nam	10	3	3	2	2	2
TOTAL	196	100	71	64	46	42

Email addresses

Of the 196 people sent direct email invitations, only a small percentage (20%) took the survey citing their original email address. Others may have responded under a different email.

Demographic data

One hundred individuals answered the demographic data section, providing useful information regarding their level of experience in AD or MD, profession (Table 7), organization and sector, the communities they served (Table 8), and the level of government funding received by their organizations.

- Of the initial respondents, 13% indicated that they had no or very little experience or knowledge in either AD or MD for older people. When some of these individuals were contacted by the survey team, they verified that this was in fact the case due to either their recent transfer into the role or because they hold more of an administrative role and therefore did not feel competent to comment on individual technologies.
- The spread of experience of respondents who went on to complete the survey was generally consistent across all six countries, with the majority having more than 5 years knowledge or experience. Fewer than five

indicated that they had less than 1 year experience in either AD or MD work.

- Respondents worked for a variety of organizations (Table 9, Figure 1). Five respondents did not identify with the categories provided and indicated they were either in private practice or were a public professional.
- Slightly more than half of respondents from China indicated they were within 200 km of Beijing, with the remainder over 1000 km away. In nearly all other countries, the great majority were near the capital. The exception was the Philippines, where less than 40% were near metropolitan Manila, with most over 500 km away and a small proportion in between.
- All organizations in China received government funding, while in all other countries the government contribution to organizations and business (not including government) was relatively low, with the great majority receiving less than 25% of funding from government (Figure 2).

Table 7. Number of respondents by profession

Profession	China	Japan	Malaysia	Philippines	Republic of Korea	Viet Nam	TOTAL
Allied health/rehabilitation professional	0	1	1	8	1	1	12
Consumer advocate/counsellor	0	1	0	1	1	0	3
Government/agency official	1	2	3	4	2	2	14
Medical doctor	5	1		19	14	1	40
Nurse, nurse practitioner	0	1	0	2	0	0	3
Organization manager/director	2	4	1	6	1	0	14
Other health professional (e.g. social work, rehab therapist)	2	7	1	1	6	0	17
Other health technical officer (e.g. lab scientist, service tech)	0	2	0	1	1	0	3
Researcher	11	6	0	3	5	2	27
Teaching professional	3	4	1	7	1		16
Technical professional (e.g. engineer, designer)	2	9	1	1	1	0	14
Other (community development worker, administrator)	2	1	0	2	0	0	5

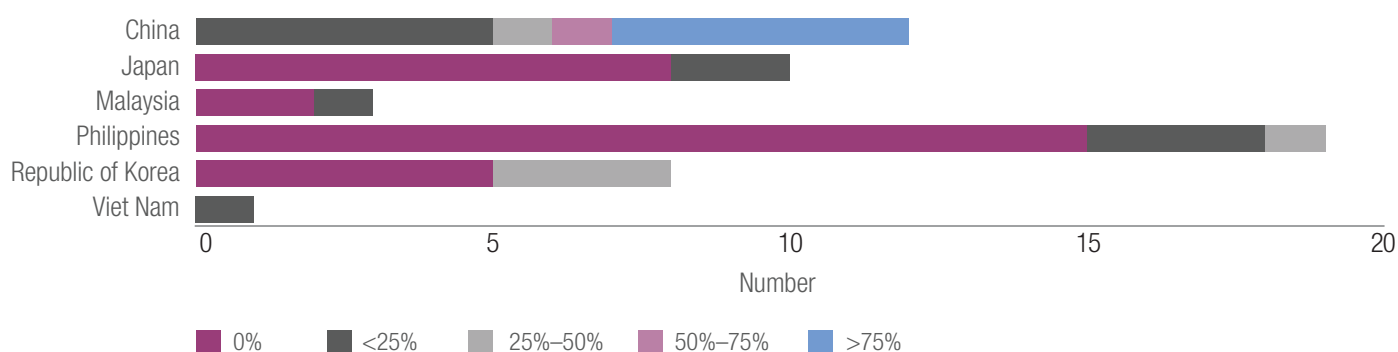
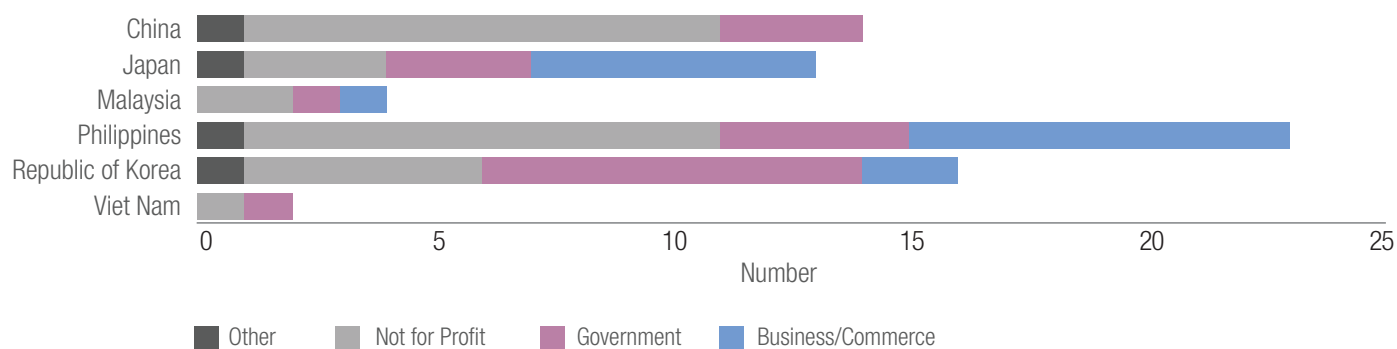
Table 8. Types of community serviced by respondents (some served multiple community groups)

Community serviced	China	Japan	Malaysia	Philippines	Republic of Korea	Viet Nam	TOTAL
Urban	18	15	5	22	20	3	83
Rural	8	13	5	14	6	2	48
Transient	1	2	1	2	1	0	7

Table 9. Types of organizations worked for by respondents

Profession	China	Japan	Malaysia	Philippines	Republic of Korea	Viet Nam	TOTAL
Aged person's group/association	0	0	0	1	3	0	4
AD advocacy/advice organization	0	2	0	0	0	0	2
Commercial supplier of equipment	0	2	1	0	0	0	3
Consumer health organization	0	0	0	1	0	1	2
Disabled persons group/association	1	1	1	3	0	0	6
Governmental agency	2	1	3	1	2	2	11
Manufacturer	0	1	0	0	0	0	1
MD industry association	0	2	0	0	0	0	2
Professional association/college	1	2	0	2	3	0	8
Service provider (hospital, clinic etc.)	7	8	1	13	13	0	42
University/research institution	8	2	1	5	3	0	19

AD = assistive device, MD = medical device.

Figure 1. Organization sector by country**Figure 2. Level of government funding for organizations (government organizations excluded)****Table 10. Order of priorities for functional activities**

Functional activity	Average rating (1–5)	Range (across countries)
Eat and drink as independently as possible	4.3	3.6–4.4
Transfer to or from bed or chair	4.2	3.5–4.5
Able to be clean and hygienic	4.2	3.5–4.6
Able to hear and communicate	4.1	3.5–4.8
Able to dress	3.9	3.1–4.4
Able to see and understand writing	3.9	3.4–4.5
Move about and use transport	3.9	3.4–4.2
Grip or pick up items and do housework	3.7	3.0–4.0
Manage health care and fatigue including following health advice	3.7	3.4–4.0
Participate in community activities (can include employment) and visiting others	3.4	3.1–3.9
Take care of a family member	3.2	2.5–3.4
Experience intimate/sexual relations	2.7	1.8–3.1

5.2 Assistive devices

A total of 71 people began answering the AD questions from China (14), Japan (8), Malaysia (4), the Philippines (23), the Republic of Korea (16) and Viet Nam (2)⁶. Care is required in interpreting results due to the small number of respondents from each country.

5.2.1 Functional activities

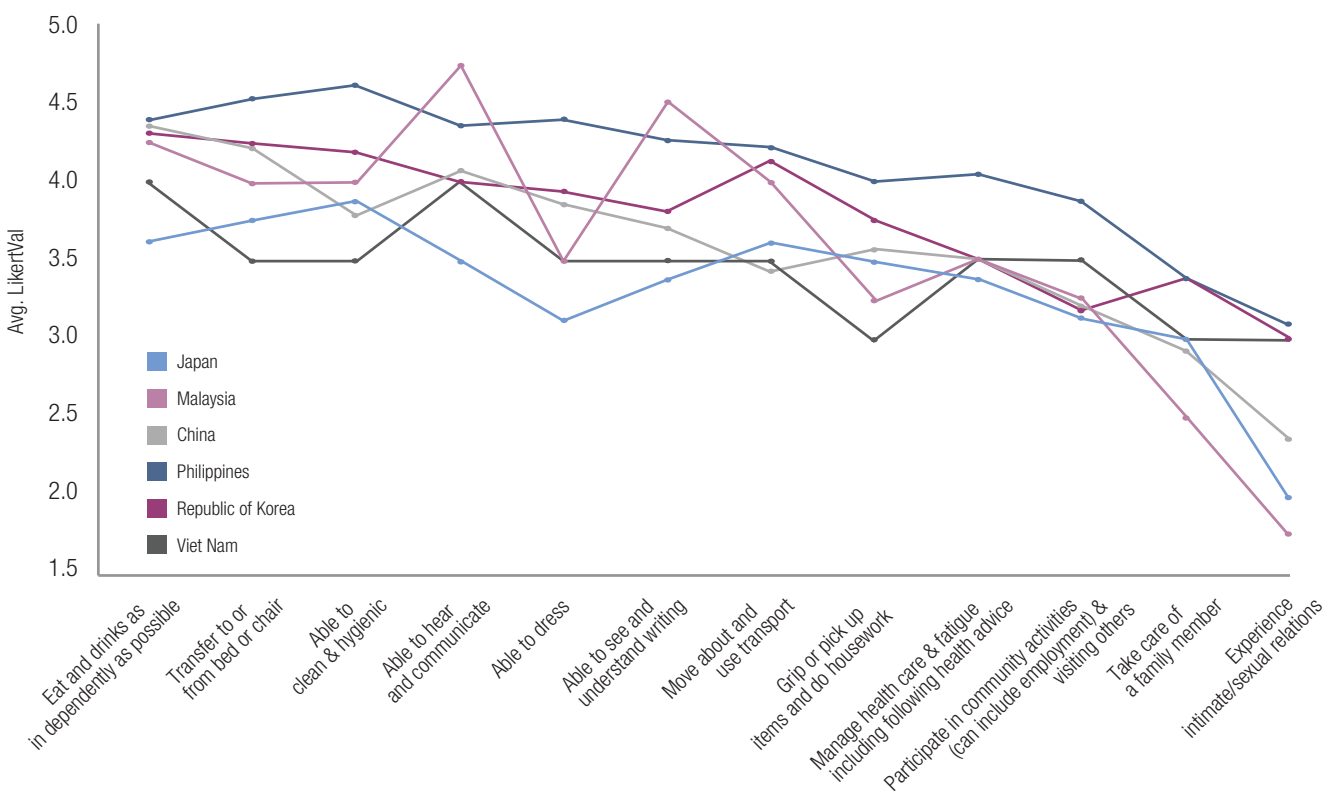
Since AD should always be considered a part of the solution to enhancing a person's participation, the survey began by seeking the respondent's rating of the importance of 12 functional areas (not randomized) in meeting the needs of older people (over 60 years). Table 10 shows the order of priority for tasks based

⁶ Note that three respondents from the Republic of Korea and one from Viet Nam did not begin completing the AD section despite indicating they had expertise in the field.

on the average rating for each task. In general terms, functional daily living activities were rated as more important than social activities – such as participating in community activities, caring for a family member, or experiencing intimate or sexual relations. A score of 5 represents a vital need; a score of 1 suggests that function is not necessary.

Figure 3 clearly shows that respondents in all countries tended to rate functional daily living activities as more important than social activities. There was no evidence of significant difference between HICs and MICs, except that MICs rated “grip or pick up items and do housework” lower. Japan had the lowest rating average (3.3) and strong left skew (skew = -1.9); however, nearly all countries tended to favour higher ratings for most items. Notable outliers were dressing (3.1) in Japan, hearing (4.8) and seeing (4.5) in Malaysia, and picking up and doing housework (3.0) in Viet Nam.

Figure 3. Average ratings for each assistive device, by country



An interesting and important result was that respondents with more experience in AD provided higher ratings for each activity/task than those with less experience. When correlated with the professional category of the respondents the following was noted:

- Allied health professionals rated eating and drinking, and hygiene as their top items, and overall provided higher than average ratings for all items.
- Single consumers focused on participation roles including movement and community participation.
- Medical doctors were consistent with the order of priorities in Table 10; however, they rated most items higher than average (especially sexual intimacy).
- Nursing professionals gave lower than average ratings for eating and drinking, dressing, participating in community activities, taking care of a family member, and intimate or sexual relations.
- Other health professionals rated activities in a similar order to Table 10, however generally gave a higher than average rating.
- Other health technical officers provided high ratings, at 4 or above.
- Organization managers and directors tended to be about 0.5 lower than average on all points, with administrators slightly higher than average. Teachers matched the overall order of ratings, however had much higher than average ratings for hygiene and participation in the community.
- Researchers also matched the overall order ratings, with the exception of dressing, which was rated much lower than average. By contrast, technical professionals (for example, engineers and designers) rated most things between “useful” and “important” (3–4) except for sexuality, which they rated the lowest of all respondents at 1.4.

5.2.2 Priority assistive devices under each relevant functional area

For each functional area (unless the respondent rated it “not relevant”) a list of relevant AD was offered in random order, with “Non AD: Personal assistance” at the end of the list. Respondents were required to rate at least five AD. All AD that were rated then populated a list of chosen AD that the respondent was asked to rank from highest priority to lowest. The results of each AD are shown in **Appendix D**. The lists are ordered in accordance with the average for each item based on its weighted ranking calculated by:

$$W_i = \left(\frac{1}{K}\right) \sum_{n=i}^K \frac{1}{n}$$

where K is the number of items ranked and W_i is the weight for the i^{th} item.⁷ These were normalized to 100 to avoid fractions. For example, if there were five items ranked (the minimum required of respondents), when an item was ranked 1, it would score $100 \times (1 + 1/2 + 1/3 + 1/4 + 1/5) / 5 = 46$; while the item ranked 5 would score only $100 \times (1/5) / 5 = 4$. This means items consistently ranked 1 have a much higher average weighted rank than items that appear frequently but at lower ranks.

5.2.3 Overall priority assistive device list

When all the lists of AD were collated, an average rating and a weighted rank value (overall) was determined for each AD (Table 11). Surprisingly respondents ranked items in quite a different order to their rating of AD importance.

⁷ This is the Rank Order Centroid (ROC) method, details of which can be found in Appendix 2 of *Multi-criteria clinical decision support: A primer on the use of multiple criteria decision making methods to promote evidence-based, patient-centered healthcare* (Dolan 2010).

The variations (of more than 6 positions) between the rankings of the MICs (China, Malaysia, the Philippines and Viet Nam) and HICs (Japan, the Republic of Korea) are noted in Table 11, with yellow indicating items that ranked higher in MICs and the blue those ranked higher in HICs. Two items were ranked significantly higher in MICs (highlighted in orange):

- “AD for reading” was 13 levels higher (28.6 ranking in MICs versus 14.8 in HICs) – also related to the high “AD for seeing” in these countries.
- “AD for environmental improvement” such as air-conditioner, light dimmer or sound insulation was 17 levels higher (16.7 vs. 8.2). This is possibly a reflection that the four MICs are more tropical.

Table 11. Ranking of assistive devices by respondents

Serial rank	Weighted rank	AD	Average rating
1	77.8	AD for seeing	4.2
2	57.1	AD for transfer and turning	3.9
3	53.6	AD for cognitive assistance	3.9
4	42.2	Non AD: Personal assistance	3.7
5	39.7	AD for personal care	4.0
6	37.5	Supporting handrails and grab bars	4.1
7	36.1	Adapted furniture and accessories	3.7
8	35.0	AD for preparing food and drink	3.9
9	33.2	Adapted beds	3.8
10	31.4	AD for hearing	4.3
11	31.3	Modification or AD for building access	3.7
12	27.7	Safety equipment for home and other places	4.2
13	24.3	AD for managing continence	3.9
14	23.0	AD for holding, opening or manipulating objects	3.8
15	21.7	Upper limb orthotics	3.6
16	21.3	AD for alarming, indicating, reminding and signalling	3.9
17	21.3	AD for telephone and messaging	4.0
18	21.0	AD for reading	4.0
19	20.4	Adapted clothing and AD for dressing	4.0
20	18.8	AD for washing, bathing and showering	4.0
21	18.5	AD for operating and controlling devices	3.6
22	16.7	AD for eating and drinking	4.5
23	16.6	Accessible computer (hardware and software)	3.9
24	15.1	AD for doing housework	4.0
25	15.1	Upper limb prosthetic	3.6
26	15.0	Equipment for movement, strength and balance training	3.9

Serial rank	Weighted rank	AD	Average rating
27	14.7	AD for walking, manipulated by one arm	4.1
28	13.5	AD for extended reach	3.5
29	13.1	AD for lifting persons	3.6
30	12.0	AD for environmental improvement	3.9
31	11.0	AD for sexual activities	3.8
32	10.9	AD for toileting	4.4
33	10.6	AD for walking, manipulated by both arms	4.0
34	10.4	AD for drawing and writing	3.9
35	10.2	AD for carrying and transporting	4.0
36	9.4	Manual wheelchairs	4.3
37	8.8	AD for controlling from a distance	3.6
38	6.6	AD for face-to-face communication	4.0
39	6.4	Powered wheelchairs	3.9
40	6.1	AD for voice production	4.1
41	5.9	AD that record, play and display audio/visual information	3.9
42	4.8	Lower limb orthotic/prosthetic	3.8
43	1.3	Other prosthetics	3.5
44	0.4	AD for gardening and lawn care	2.9
45	0.0	AD for care of animals (pet care)	2.9

AD = assistive device.

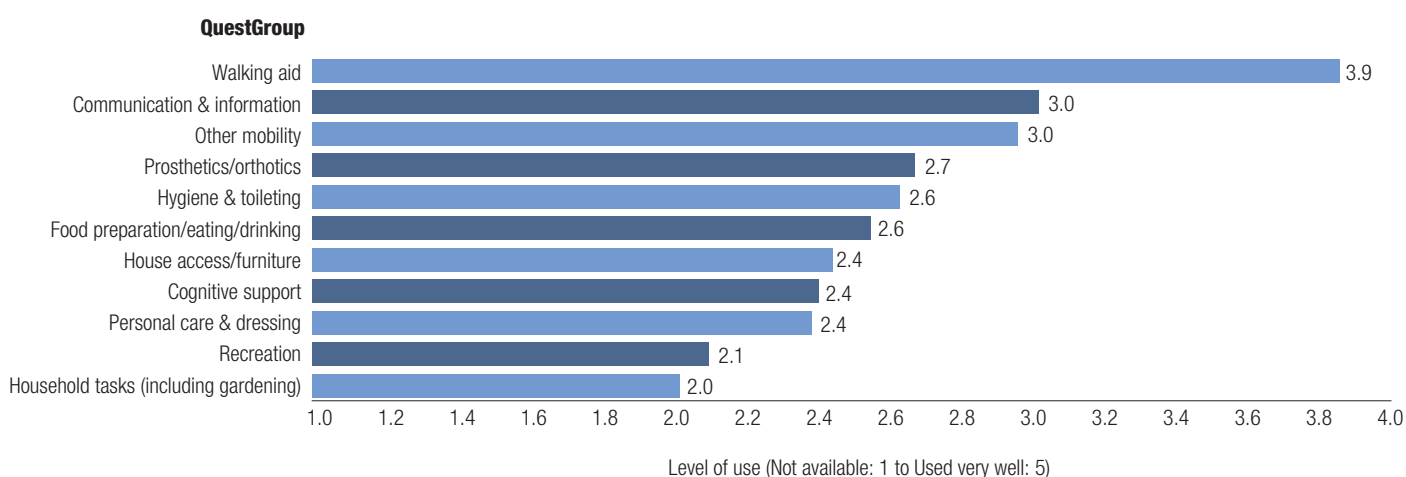
Note: Yellow indicates items that ranked higher in middle-income countries; blue, those ranked higher in high-income countries; and orange, items ranked significantly higher in middle-income countries.

5.2.4 The use of assistive devices

In general, respondents reported satisfactory use of most AD (Figure 4), with walking aids rated higher than AD for use in domestic tasks or recreation. About

10% of respondents indicated that they didn't know the current level of use of more than half of the AD categories. The patterns of use appeared consistent across most countries with the Republic of Korea having the highest level of use, and Japan the lowest.

Figure 4. Level of use of assistive devices



5.2.5 The accessibility, acceptability, adaptability, affordability, availability and quality of assistive devices

The six questions in this section of the survey were based on six principles related to effective assistive technology provision, defined in the WHO/USAID *Joint position paper on provision of mobility in less resourced settings* (2011) and aligned with the Convention on the Rights of Persons with Disabilities.

These six aspects are considered the prime factors that influence whether AD will be successfully used in a setting, since they take account of both the environmental and cultural factors, but also aspects of support, financial cost and user preference. Table 12 provides a summary of responses to questions related to each of these six principles. **Appendix E** provides details of the ratings provided by respondents against each question.

Table 12. Summary of responses to questions related to each of these six principles

Principles	Survey questions	Results from respondents
Accessibility AD and related services are accessible to everyone with an identified need.	How many older people who need this device know about it and are able to get it?	Accessibility ratings tended to mirror the reported use of AD (see Figure 4), with the Republic of Korea having the highest awareness and availability of most items. Other countries had limited access to cognitive and household aids, but reasonable access to prosthetics and mobility aids.
Acceptability People with disabilities are actively involved in all stages of AD provision, having choice and control over the decisions that affect them.	Do older people find the following devices appropriate, useful and helpful in their lives?	Acceptability of most AD was rated as satisfactory or better in Malaysia and the Republic of Korea; and rated as occasionally in China and Viet Nam. AD for cognitive support was rated the lowest, and walking aids was rated the highest, although both had large variations between countries, as did AD for house changes (e.g. ramps, handrails).
Adaptability AD and related services are adapted and modified to ensure they are appropriate to the requirements of the individual	Are the following devices adaptable/adjustable enough to meet each individual's needs, in your context?	Adaptability was rated high for mobility devices and prosthetics (3.0–3.8 out of 6), but low for most other AD, indicating little or no adaptation. Adaptation was rated highest in Japan and the Republic of Korea, and lowest in Viet Nam.
Affordability AD and related services must be affordable for people with disabilities and their families, particularly in low-resource settings.	Are the following devices available to people/families at a cost they can afford?	Affordability was rated the highest in all the HICs, followed closely by China; and rated lowest in Viet Nam. Overall, most who needed walking aids could afford them; the remainder depended on a subsidy or incurred significant cost for other AD. AD for cognitive support, communication and house changes were unaffordable to most in low-resource settings.
Availability All relevant resources required for the provision of AD are available in sufficient quantity for the needs of the population and are provided as close as possible to people's own communities.	Are the necessary services and trained personnel to assess and prescribe the following devices readily available to older people?	Availability of necessary services and support for effective AD provision depended heavily on location even in HICs, with Malaysia and the Republic of Korea showing the highest ratings. Mobility AD and prosthetics were rated higher for availability; however respondents in China and Viet Nam reported little or no availability of AD support, particularly for home AD and cognitive AD.
Quality All relevant resources are of an appropriate quality	Are the following devices of sufficient quality for their intended purpose?	Quality was rated as poor to variable (depending on source) for most categories, and rated poor for cognitive AD. China, Japan and the Republic of Korea reported higher quality of devices than others; but Japan also reported the lowest quality (variable) for walking aids.

AD = assistive device, HIC = high-income country.

5.2.6 Causes of success and failure in assistive device provision

Survey results indicate that the availability and cost of AD, as well as their integration into other services are key factors for AD success in MICs. Functional performance is important for wide success. Tables 13 and 14 present the respondents' reported reasons

for the success (Table 13) and failure (Table 14) of AD, ranked highest to lowest in order of importance. While cost and availability are the prominent barriers, appropriate training and education (for practitioners and the community) also feature ahead of design and cultural factors. Design and suitability for local conditions is clearly more of an issue in MICs as indicated in Table 14.

Table 13. Reasons for assistive device success

Middle-income countries		High-income countries	
Reason for success	Weight ranks ^a	Reason for success	Weight ranks
The device is available for an affordable cost to older person and/or their family	19 (89%)	Functionally very effective	20 (80%)
The device is a part of other supports/therapy	12 (58%)	There is a well-functioning and accessible service in place to assess individual user's needs and prescribe the device	18 (80%)
Functionally very effective	12 (61%)	There is government commitment and action to ensure access to assistive devices	14 (60%)
There is government commitment and action to ensure access to assistive devices	11 (69%)	The device is available for an affordable cost to older person and/or their family	12 (80%)
There is a well-functioning and accessible service in place to assess individual user's needs and prescribe the device	9 (53%)	The device is adjustable; or there is a choice of type to properly suit the individual	11 (60%)
There is good community education and awareness of such devices	8 (47%)	The device is routinely provided for those with identified need	9 (40%)
The device is adjustable; or there is a choice of type to properly suit the individual	7 (47%)	The device is a part of other supports/therapy	8 (70%)
The device was created and/or is readily available locally	6 (36%)	There is good community education and awareness of such devices	4 (50%)
Culturally appropriate and acceptable	5 (28%)	The device looks good	2 (20%)
The device is routinely provided for those with identified need	4 (36%)	Culturally appropriate and acceptable	1 (20%)
There is research evidence of the benefits the device offers	4 (22%)	There is research evidence of the benefits the device offers	1 (30%)
The device looks good	1 (19%)	The device was created and/or is readily available locally	0.6 (10%)

^a Percentage who chose this item (any rank) of total respondents to this question from that country income level.

Two respondents made the following additional comments: “Use of assistive technology ensures continued function that is of value to the individual when done independently”; “There is government commitment, but operationalizing is more difficult”; “These [barriers to success] are all barriers and

difficult to prioritize; it’s the interaction that creates the barriers; also want to return to the issue that accepting an AD implies ‘not recover’; even for elderly this is an issue I think; it’s better to rely on family member; so here comes another issue; that families are ‘supposed’ to do things for their parents”.

Table 14. Reasons for assistive device failure

Middle-income countries		High-income countries	
Cause of failure	Weight ranks ^a	Cause of failure	Weight ranks
The device is not available at an affordable cost to older person and or their family	21 (83%)	The device is not available at an affordable cost to older person and or their family	14 (80%)
There is no widely accessible service in place to assess individual user's needs and prescribe the device	14 (52%)	The device is not sufficiently adjustable or there is no choice of type – so it cannot be properly made to suit the individual	13 (50%)
The device is not readily available locally	10 (58%)	There is poor community education and awareness of such devices	11 (70%)
There is poor community education and awareness of such devices	10 (58%)	There is stigma or resistance from family or community around using this device	11 (50%)
The device is poorly designed or is unworkable in usual environment	10 (47%)	There is no government commitment or action to increase access to the device	9 (50%)
There is no government commitment or action to increase access to the device	9 (50%)	The quality of the device is too poor/ variable for safe issue	9 (40%)
The device is not sufficiently adjustable or there is no choice of type – so it cannot be properly made to suit the individual	6 (36%)	The device is culturally inappropriate	8 (40%)
There is stigma or resistance from family or community around using this device	5 (36%)	The device is not readily available locally	7 (20%)
The device is not part of other support/ therapy	5 (28%)	There is no widely accessible service in place to assess individual user's needs and prescribe the device	6 (30%)
The quality of the device is too poor/ variable for safe issue	5 (19%)	The device is poorly designed or is unworkable in usual environment	6 (20%)
The device is culturally inappropriate	4 (19%)	The device is not part of other support/ therapy	5 (40%)
The device looks bad or dangerous	1.5 (11%)	The device looks bad or dangerous	2 (10%)

^a Percentage who chose this item (any rank) of total respondents to this question from that country income level.

5.2.7 Strategies to improve assistive device provision

Respondents were quite clear about the areas they felt would have the strongest possibility of improving AD provision (Table 15). Interestingly, all professional sectors prioritized government assistance for older people to acquire AD, followed closely by increased community awareness and training. As indicated in 5.2.6, MICs appear to require devices that are appropriate for local needs, while quality factors are a greater priority in high-income environments. Again all respondents noted the importance of locally available

support and assessment services, and better training of health professionals in AD.

The priority given to strategies to improve AD provision varied depending on the respondents' professional group. All professional groups rated government support as the highest priority strategy; health professionals tended to prioritize better training for health professionals in using AD; and technical professionals prioritized funding for creating new and better products, and improving product support. There was no significant variation in priorities based on organization sector, government funding level, remoteness or population served.

Table 15. Areas for improving assistive device provision

Middle-income countries		High-income countries	
Strategies to improve	Weight ranks ^a	Strategies to improve	Weight rank
Government/agency assistive device procurement support or subsidy	17 (61%)	Government/agency assistive device procurement support or subsidy	31 (80%)
More community awareness and education on the devices and their uses/benefits	14 (64%)	More community awareness and education on the devices and their uses/benefits	11 (40%)
Creating devices that are more suitable for local need	14 (50%)	Better quality checks on devices offered for sale	12 (40%)
Better training of health professionals on the value of assistive devices	12 (58%)	Locally available services to assist with assessment, fitting and adjustment	10 (60%)
Locally available services to assist with assessment, fitting and adjustment	10 (64%)	Funding support for agencies/companies to develop new appropriate products	10 (60%)
Funding support for agencies/companies to develop new appropriate products	7 (47%)	Better training of health professionals on the value of assistive devices	7 (50%)
Improving logistics to get devices to end users	6 (39%)	Training older people and families in how to use and maintain their device	5 (40%)
Training older people and families in how to use and maintain their device	6 (33%)	Improving logistics to get devices to end users	4 (20%)
Improving local capacity to manufacture devices	6 (25%)	Better product support (repairs, parts, adjustment, maintenance)	3 (50%)
Better product support (repairs, parts, adjustment, maintenance)	4 (28%)	Improving local capacity to manufacture devices	3 (20%)
Better quality checks on devices offered for sale	3 (17%)	Creating devices that are more suitable for local need	2 (30%)
Less regulation that hinders market competition	2 (14%)	Less regulation that hinders market competition	1 (10%)

^a Percentage who chose this item (any rank), of total respondents to this question from that country income level.

5.3 Medical devices

5.3.1 Presentation of responses

A total of 42 respondents completed the MD section of the survey. In many cases the number of responses per question were lower than 10 (especially for the questions relating to health centres and private hospitals). There were more responses to the supporting clinical services group devices (basic and clinical laboratory equipment, point of care in vitro devices, diagnostic imaging and medical equipment for surgery and intensive care) questions, than for the disease group devices (cardiovascular, sense organ and respiratory diseases, and malignant neoplasms) questions. The results of this survey should be interpreted considering these limitations. Furthermore, the results that demonstrated higher availability in MICs compared with HICs were unexpected, though only 27 respondents from MICs and 15 respondents from HICs fully completed the survey on MD.

The first question on MD asked respondents to indicate those disease areas in which they were knowledgeable about MD by answering “yes” or “no” for each. Information on the availability of MD was presented as the proportion of “yes” responses from the total responses received. For each technology, findings were given for all responses (MICs and HICs combined). Most of the responses were from Japan (HIC) and the Philippines (MIC).

The term “health centre” used in this report (in lieu of ‘community or health centre’ used in the survey), refers to outpatient clinics, where no hospitalization takes place. Each MD group was presented separately with brief comments. For several entries,

the number of responses was too small to permit comparison between MICs and HICs. In some cases the responses were unexpected. From these it can be assumed that the meaning of health centre was not fully understood. For example in Table 17 three respondents indicated “positron emission tomography–computed tomography (PET/CT)” and “linear accelerators” in health centres. Another anomaly seen in Table 20 is that not all facilities were thought to have thermometers. Such inconsistencies may be due to the length and complexity of the survey, and language issues.

It was also difficult to identify why respondents did not answer certain questions. Perhaps they did not have knowledge of that device, or they did not think they were required to answer what “should be available” if the device was “currently available”, or they did not understand the term “community or health centre” (see Section 4.9 Limitations). The survey included the option of a device being “not necessary”, but only for healthcare settings collectively, and not each setting individually. This may have caused confusion among participants and thus the “not necessary” responses were excluded from the report due to the very few responses received.

5.3.2 Responses for medical devices by disease group

Cardiovascular diseases

The responses for MD for cardiovascular diseases are shown in Table 16. These devices include electrocardiography apparatus, holter monitor, external defibrillator, implantable defibrillator, implantable pacemaker, coronary artery stent and balloon pump.

Table 16. Medical devices for cardiovascular diseases (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Electrocardiography apparatus	All	83	(10/12)	83	(10/12)	73	(8/11)	82	(9/11)	90	(18/20)	89	(17/19)
	MICs	88	(7/8)	86	(6/7)	67	(4/6)	86	(6/7)	93	(13/14)	92	(12/13)
	HICs	75	(3/4)	80	(4/5)	80	(4/5)	75	(3/4)	83	(5/6)	83	(5/6)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Holter monitor	All	67	(4/6)	86	(12/14)	75	(6/8)	33	(2/6)	88	(14/16)	87	(16/18)
	MICs	67	(2/3)	88	(7/8)	75	(3/4)	0	(0/3)	90	(9/10)	89	(16/18)
	HICs	67	(2/3)	83	(5/6)	75	(3/4)	67	(2/3)	83	(5/6)	75	(3/4)
External defibrillator	All	78	(7/9)	88	(14/16)	78	(7/9)	75	(6/8)	88	(15/17)	90	(18/20)
	MICs	75	(3/4)	91	(10/11)	75	(3/4)	67	(2/3)	91	(10/11)	93	(14/15)
	HICs	80	(4/5)	80	(4/5)	80	(4/5)	80	(4/5)	83	(5/6)	80	(4/5)
Implantable defibrillator	All	50	(2/4)	87	(13/15)	78	(7/9)	50	(2/4)	79	(11/14)	81	(13/16)
	MICs	50	(1/2)	89	(8/9)	83	(5/6)	0	(0/1)	75	(6/8)	91	(10/11)
	HICs	50	(1/2)	83	(5/6)	67	(2/3)	67	(2/3)	83	(5/6)	60	(3/5)
Implantable pacemaker	All	60	(3/5)	86	(12/14)	78	(7/9)	50	(2/4)	86	(12/14)	82	(14/17)
	MICs	67	(2/3)	88	(7/8)	80	(4/5)	0	(0/1)	88	(7/8)	92	(11/12)
	HICs	50	(1/2)	83	(5/6)	75	(3/4)	67	(2/3)	83	(5/6)	60	(3/5)
Coronary artery stent	All	60	(3/5)	85	(11/13)	71	(5/7)	60	(3/5)	86	(12/14)	88	(14/16)
	MICs	50	(1/2)	89	(8/9)	75	(3/4)	50	(1/2)	88	(7/8)	92	(11/12)
	HICs	67	(2/3)	75	(3/4)	67	(2/3)	67	(2/3)	83	(5/6)	75	(3/4)
Balloon pump	All	50	(2/4)	86	(12/14)	71	(5/7)	60	(3/5)	85	(11/13)	82	(14/17)
	MICs	50	(1/2)	89	(8/9)	75	(3/4)	50	(1/2)	86	(6/7)	92	(11/12)
	HICs	50	(1/2)	80	(4/5)	67	(2/3)	67	(2/3)	83	(5/6)	60	(3/5)

HIC = high-income country, MIC = middle-income country.

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

Electrocardiography apparatus was the most currently available device across all three settings (82%–90%) and received the most responses from the survey respondents (ranging from 11 to 20). The remaining devices that are specific for cardiovascular surgery or angioplasty such as the implantable pacemaker, stent and balloon pump, were less available. The fewer responses received for some cardiovascular devices may be attributed to fewer respondents being familiar with these technologies, and therefore this data may be less reliable.

Electrocardiography apparatus is the only cardiovascular device that is likely to be found in health centres. There was no option to select “not

applicable” in the survey for health centres alone. This may have led to the low number of respondents to all but the electrocardiography apparatus that received up to 20 responses (which was 48% of the total number of respondents to MD). The participants were not given the option of “do not know the device”, which may have caused a lower response rate.

More respondents thought these devices should be available in public hospitals (85%) rather than private hospitals (74%) or health centres (66%), which is consistent with current availability. These devices are most needed in public hospital settings as consistently reported across all cardiovascular disease devices.

Malignant neoplasms

Table 17 gives the responses for MD for malignant neoplasms. These devices include colonoscope, bronchoscope, fine needle aspiration device, mammography device, PET/CT, linear accelerator, syringe pump.

Table 17. Medical devices for malignant neoplasms (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Colonoscope	All	25	(1/4)	82	(9/11)	67	(4/6)	33	(1/3)	78	(7/9)	83	(10/12)
	MICs	0	(0/2)	88	(7/8)	67	(2/3)	0	(0/1)	83	(5/6)	89	(8/9)
	HICs	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)	67	(2/3)	67	(2/3)
Bronchoscope	All	33	(1/3)	82	(9/11)	60	(3/5)	33	(1/3)	75	(6/8)	82	(9/11)
	MICs	0	(0/1)	88	(7/8)	67	(2/3)	0	(0/1)	75	(3/4)	89	(8/9)
	HICs	50	(1/2)	67	(2/3)	50	(1/2)	50	(1/2)	75	(3/4)	50	(1/2)
Fine needle aspiration	All	50	(2/4)	82	(9/11)	50	(2/4)	50	(2/4)	80	(8/10)	80	(8/10)
	MICs	50	(1/2)	89	(8/9)	50	(1/2)	50	(1/2)	83	(5/6)	88	(7/8)
	HICs	50	(1/2)	50	(1/2)	50	(1/2)	50	(1/2)	75	(3/4)	50	(1/2)
Mammography	All	60	(3/5)	80	(8/10)	67	(4/6)	33	(1/3)	75	(6/8)	80	(8/10)
	MICs	67	(2/3)	88	(7/8)	67	(2/3)	0	(0/1)	75	(3/4)	88	(7/8)
	HICs	50	(1/2)	50	(1/2)	67	(2/3)	50	(1/2)	75	(3/4)	50	(1/2)
PET/CT	All	33	(1/3)	82	(9/11)	60	(3/5)	50	(2/4)	71	(5/7)	80	(8/10)
	MICs	0	(0/1)	89	(8/9)	67	(2/3)	0	(0/1)	75	(3/4)	88	(7/8)
	HICs	50	(1/2)	50	(1/2)	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)
Linear accelerator	All	33	(1/3)	78	(7/9)	60	(3/5)	50	(2/4)	40	(2/5)	75	(6/8)
	MICs	0	0/1)	86	(6/7)	67	(2/3)	0	(0/1)	50	(1/2)	80	(4/5)
	HICs	50	(1/2)	50	(1/2)	50	(1/2)	67	(2/3)	33	(1/3)	67	(2/3)
Syringe pump	All	60	(3/5)	82	(9/11)	60	(3/5)	50	(2/4)	78	(7/9)	78	(7/9)
	MICs	50	(1/2)	88	(7/8)	67	(2/3)	0	(0/1)	83	(5/6)	86	(6/7)
	HICs	67	(2/3)	67	(2/3)	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)

Note: As per Table 6 "Number of respondents by country", 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for 'not necessary' were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

PET – positron emission tomography, CT – computed tomography

The number of respondents in this section was about half of those that responded to the cardiology section. This could be attributed to the respondents possessing less knowledge regarding medical devices used for cancer care.

Less than five participants responded to questions concerning the use of devices for cancer care in health centres. This information may reflect that the participants did not have an option for indicating that the devices are not needed in this setting. The few that did respond may have considered a health centre to be an outpatient clinic or centre without hospital beds.

For the category “should be available”, public hospitals received the highest number of responses, which may indicate that the respondents were knowledgeable in this sector and that these devices are currently not available. The highest number of respondents for the

malignant neoplasms devices was 12, which is 29% of the total respondents.

These devices were currently more available in private hospitals (80%) than public hospitals (71%). However, more respondents said they should be available in public hospitals (81%) rather than private hospitals (61%). The colonoscope had the most availability in private hospitals.

Sense organ diseases

Table 18 gives the responses for MD for sense organ diseases. These devices (ophthalmoscope, tonometer, otoscope, audiometer, laser-ophthalmic, hearing aids, cataract extraction, intraocular lenses) were available in 88% of private hospitals and 76% of public hospitals. Responders suggested that more of these devices should be available in public hospitals (83%) as their availability is better in private hospitals.

Table 18. Medical devices for sense organ diseases (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Ophthalmoscope	All	80	(8/10)	77	(10/13)	67	(4/6)	60	(3/5)	77	(10/13)	88	(14/16)
	MICs	86	(6/7)	82	(9/11)	67	(2/3)	67	(2/3)	89	(8/9)	92	(11/12)
	HICs	67	(2/3)	50	(1/2)	67	(2/3)	50	(1/2)	50	(2/4)	75	(3/4)
Tonometer	All	67	(4/6)	77	(10/13)	67	(4/6)	33	(1/3)	71	(10/14)	87	(13/15)
	MICs	75	(3/4)	80	(8/10)	75	(3/4)	0	(0/1)	80	(8/10)	91	(10/11)
	HICs	50	(1/2)	67	(2/3)	50	(1/2)	50	(1/2)	50	(2/4)	75	(3/4)
Otoscope	All	82	(9/11)	85	(11/13)	50	(2/4)	60	(3/5)	75	(9/12)	88	(14/16)
	MICs	89	(8/9)	90	(9/10)	50	(1/2)	67	(2/3)	88	(7/8)	92	(11/12)
	HICs	50	(1/2)	67	(2/3)	50	(1/2)	50	(1/2)	50	(2/4)	75	(3/4)
Audiometer	All	78	(7/9)	85	(11/13)	60	(3/5)	25	(1/4)	82	(9/11)	87	(13/15)
	MICs	83	(5/6)	90	(9/10)	67	(2/3)	0	(0/1)	86	(6/7)	92	(11/12)
	HICs	67	(2/3)	67	(2/3)	50	(1/2)	33	(1/3)	75	(3/4)	67	(2/3)
Laser, ophthalmic	All	60	(3/5)	86	(12/14)	67	(4/6)	33	(1/3)	73	(8/11)	87	(13/15)
	MICs	67	(2/3)	91	(10/11)	67	(2/3)	0	(0/1)	83	(5/6)	92	(11/12)
	HICs	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)	60	(3/5)	67	(2/3)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Hearing aids	All	75	(6/8)	83	(10/12)	67	(4/6)	33	(1/3)	75	(6/8)	87	(13/15)
	MICs	83	(5/6)	89	(8/9)	67	(2/3)	0	(0/1)	75	(3/4)	92	(11/12)
	HICs	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)	75	(3/4)	67	(2/3)
Cataract extraction	All	71	(5/7)	85	(11/13)	60	(3/5)	33	(1/3)	79	(11/14)	88	(14/16)
	MICs	80	(4/5)	90	(9/10)	50	(1/2)	0	(0/1)	89	(8/9)	92	(12/13)
	HICs	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)	60	(3/5)	67	(2/3)
Intraocular lenses	All	67	(4/6)	85	(11/13)	60	(3/5)	33	(1/3)	75	(9/12)	88	(14/16)
	MICs	75	(3/4)	90	(9/10)	50	(1/2)	0	(0/1)	75	(6/8)	92	(12/13)
	HICs	50	(1/2)	67	(2/3)	67	(2/3)	50	(1/2)	75	(3/4)	67	(2/3)

HIC = high-income country, MIC = middle-income country.

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

Compared to devices for the other diseases, more respondents suggested that the otoscope and ophthalmoscope are needed in health centres (9 and 8, respectively).

For questions related to sense organ devices, private hospitals received the highest number of responses for what is “currently available”, but the lowest number of responses for what “should be available”. This may be attributed to respondents not answering what “should be available” if the equipment was already available. The number of responses was similar across the different devices, with the largest variation shown in what “should be available” in health centres (ranging from 5 to 11).

There were 16 respondents to this section, which is 38% of the total number of respondents. The maximum number of respondents was observed in private hospitals for current availability, however this number reduced to 4–6 responses for what should be available in private hospitals.

A low percentage of respondents (39%) deemed these devices to be “currently available” in health centres, while 73% of respondents thought that they “should be available”. Apart from the ophthalmoscope and otoscope all other sense organ disease devices were considerably less available in health centres than hospitals. Yet there was an unmet need in the hospital setting; this was more evident in public than private hospitals.

Respiratory diseases

Table 19 gives the responses for MD for respiratory diseases. On average, these devices (peak flow meter, spirometer, plethysmograph, continuous positive airway pressure (CPAP) machine, ventilator-ICU, spacers for inhalers, nebulizer, oxygen concentrators or cylinders) had similar current availability in public hospitals (87%) and private hospitals (89%). However, the respondents thought more of these should be available in public hospitals (81%) rather than private hospitals (69%) or health centres (67%) on average. These results were similar for HICs and MICs.

Table 19. Medical devices for respiratory diseases (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Peak flow meter	All	75	(9/12)	79	(11/14)	63	(5/8)	75	(6/8)	88	(15/17)	89	(16/18)
	MICs	88	(7/8)	86	(6/7)	50	(1/2)	75	(3/4)	89	(8/9)	92	(11/12)
	HICs	50	(2/4)	71	(5/7)	67	(4/6)	75	(3/4)	88	(7/8)	83	(5/6)
Spirometer	All	71	(5/7)	86	(12/14)	71	(5/7)	67	(4/6)	89	(16/18)	88	(15/17)
	MICs	75	(3/4)	88	(7/8)	50	(1/2)	50	(1/2)	90	(9/10)	91	(10/11)
	HICs	67	(2/3)	83	(5/6)	80	(4/5)	75	(3/4)	88	(7/8)	83	(5/6)
Plethysmograph	All	67	(4/6)	82	(9/11)	57	(4/7)	50	(2/4)	79	(11/14)	88	(15/17)
	MICs	67	(2/3)	83	(5/6)	50	(1/2)	0	(0/1)	75	(6/8)	92	(11/12)
	HICs	67	(2/3)	80	(4/5)	60	(3/5)	67	(2/3)	83	(5/6)	80	(4/5)
CPAP machine	All	60	(3/5)	85	(11/13)	75	(6/8)	50	(2/4)	88	(14/16)	88	(15/17)
	MICs	67	(2/3)	88	(7/8)	50	(1/2)	0	(0/1)	88	(7/8)	92	(11/12)
	HICs	50	(1/2)	80	(4/5)	83	(5/6)	67	(2/3)	88	(7/8)	80	(4/5)
Ventilator, ICU	All	50	(2/4)	85	(11/13)	67	(4/6)	40	(2/5)	85	(17/20)	89	(17/19)
	MICs	50	(1/2)	86	(6/7)	50	(1/2)	0	(0/2)	85	(11/13)	93	(13/14)
	HICs	50	(1/2)	83	(5/6)	75	(3/4)	67	(2/3)	86	(6/7)	80	(4/5)
Spacers for inhalers	All	67	(6/9)	75	(9/12)	67	(4/6)	67	(4/6)	88	(15/17)	90	(18/20)
	MICs	71	(5/7)	67	(4/6)	50	(1/2)	75	(3/4)	90	(9/10)	92	(12/13)
	HICs	50	(1/2)	83	(5/6)	75	(3/4)	50	(1/2)	86	(6/7)	86	(6/7)
Nebulizer	All	82	(9/11)	73	(8/11)	75	(6/8)	78	(7/9)	89	(17/19)	89	(17/19)
	MICs	88	(7/8)	67	(4/6)	50	(1/2)	86	(6/7)	92	(11/12)	92	(11/12)
	HICs	67	(2/3)	80	(4/5)	83	(5/6)	50	(1/2)	86	(6/7)	86	(6/7)
Oxygen concentrators or cylinders	All	63	(5/8)	83	(10/12)	75	(6/8)	75	(6/8)	88	(15/17)	90	(18/20)
	MICs	67	(4/6)	86	(6/7)	50	(1/2)	80	(4/5)	90	(9/10)	92	(12/13)
	HICs	50	(1/2)	80	(4/5)	83	(5/6)	67	(2/3)	86	(6/7)	86	(6/7)

Note: As per Table 6 "Number of respondents by country", 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for 'not necessary' were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

CPAP – continuous positive airway pressure, ICU – intensive care unit

Oxygen concentrators, nebulizers and peak flow meters were most available in health centres for respiratory diseases. However, the respondents indicated that nebulizers and peak flow meters “should be available”.

A higher number of responses were received for what “should be available” in public hospitals compared with health centres and private hospitals, whereas responses for current availability in public and private hospitals received similarly high numbers compared with health centres.

The respondents appeared to have a similar knowledge base on medical devices for respiratory diseases and cardiovascular devices, both of which received higher number of responses than sense

organ disease devices. There were 18 responses for respiratory disease devices of the 42 respondents to MD questions.

5.3.3 Responses for medical devices by function

Basic diagnostic equipment

Table 20 gives the responses for MD for basic diagnostic equipment (thermometers, examination lights, laryngoscopes, physiological monitoring systems, blood pressure measurement devices, pulse oximeters, blood gas analysers, stethoscopes, mechanical adult scales and measurement tapes), were available on average in more than 86% of public hospitals, private hospitals and health centres.

Table 20. Medical devices for basic diagnostic equipment (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Thermometers	All	79	(19/24)	76	(13/17)	67	(8/12)	94	(30/32)	92	(24/26)	93	(26/28)
	MICs	81	(13/16)	78	(7/9)	60	(3/5)	95	(18/19)	94	(15/16)	94	(15/16)
	HICs	75	(6/8)	75	(6/8)	71	(5/7)	92	(12/13)	90	(9/10)	92	(11/12)
Examination light	All	83	(15/18)	83	(15/18)	75	(7/12)	93	(25/27)	93	(26/28)	93	(26/28)
	MICs	83	(10/12)	80	(8/10)	60	(3/5)	94	(17/18)	94	(17/18)	94	(15/16)
	HICs	83	(5/6)	88	(7/8)	86	(6/7)	89	(8/9)	90	(9/10)	92	(11/12)
Laryngoscope	All	69	(9/13)	86	(18/21)	75	(9/12)	80	(16/20)	94	(30/32)	93	(27/29)
	MICs	63	(5/8)	86	(12/14)	50	(2/4)	73	(8/11)	95	(20/21)	94	(16/17)
	HICs	80	(4/5)	86	(6/7)	88	(7/8)	89	(8/9)	91	(10/11)	92	(11/12)
Physiological monitoring system	All	89	(16/18)	78	(14/18)	75	(9/12)	93	(28/30)	93	(28/30)	94	(29/31)
	MICs	92	(12/13)	73	(8/11)	60	(3/5)	95	(19/20)	95	(19/20)	94	(17/18)
	HICs	80	(4/5)	86	(6/7)	86	(6/7)	90	(9/10)	90	(9/10)	92	(12/13)
Blood pressure measurement	All	86	(18/21)	81	(13/16)	75	(9/12)	94	(31/33)	93	(25/27)	93	(28/30)
	MICs	86	(12/14)	78	(7/9)	60	(3/5)	95	(19/20)	94	(17/18)	94	(16/17)
	HICs	86	(6/7)	86	(6/7)	86	(6/7)	92	(12/13)	89	(8/9)	92	(12/13)
Pulse oximeter	All	82	(14/17)	82	(14/17)	75	(9/12)	75	(15/20)	94	(29/31)	93	(28/30)
	MICs	82	(9/11)	80	(8/10)	60	(3/5)	60	(6/10)	95	(20/21)	94	(16/17)
	HICs	83	(5/6)	86	(6/7)	86	(6/7)	90	(9/10)	90	(9/10)	92	(12/13)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Blood gas analyser	All	75	(9/12)	85	(17/20)	79	(11/14)	60	(9/15)	94	(31/33)	93	(26/28)
	MICs	83	(5/6)	85	(11/13)	67	(4/6)	63	(5/8)	95	(21/22)	94	(15/16)
	HICs	67	(4/6)	86	(6/7)	88	(7/8)	57	(4/7)	91	(10/11)	92	(11/12)
Stethoscope, mechanical	All	83	(15/18)	80	(12/15)	75	(9/12)	92	(23/25)	90	(28/31)	93	(25/27)
	MICs	83	(10/12)	75	(6/8)	60	(3/5)	93	(14/15)	95	(19/20)	93	(14/15)
	HICs	83	(5/6)	86	(6/7)	86	(6/7)	90	(9/10)	82	(9/11)	92	(11/12)
Adult scale	All	81	(17/21)	80	(12/15)	75	(9/12)	94	(30/32)	89	(24/27)	93	(27/29)
	MICs	79	(11/14)	75	(6/8)	60	(3/5)	95	(18/19)	89	(16/18)	94	(16/17)
	HICs	83	(6/7)	86	(6/7)	86	(6/7)	92	(12/13)	89	(8/9)	92	(11/12)
Measurement tape	All	81	(17/21)	80	(12/15)	73	(8/11)	94	(30/32)	88	(23/26)	93	(27/29)
	MICs	79	(11/14)	75	(6/8)	60	(3/5)	94	(17/18)	88	(15/17)	94	(16/17)
	HICs	86	(6/7)	86	(6/7)	83	(5/6)	93	(13/14)	89	(8/9)	92	(11/12)

HIC = high-income country, MIC = middle-income country.

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

The devices deemed most available in health centres were thermometers, followed by blood pressure measurement devices, adult scales and measurement tapes. The least available device was the blood gas analyser.

In public and private hospitals, the devices with the highest availability were laryngoscopes and physiological monitoring systems, whereas the least available were measuring tapes and thermometers. These results appear surprising due to the simplicity and low cost of measuring tapes and thermometers.

The supporting clinical service device section had the most responses from among all the devices. This means that the respondents knew most of these, and all these devices were considered “should be available” in the health centres, public hospitals and private hospitals.

For the most part current availability was high, especially in hospitals. On average, the responses were relatively even across HICs and MICs.

Equipment for laboratory diagnostics

Table 21 gives the responses for MD for laboratory diagnostic equipment, which includes tabletop centrifuge, tabletop microscope, urine analyser, blood gas analyser, haemoglobinometer, blood chemistry analyser, blood cholesterol analyser, lipid profile analyser and serum creatinine analyser. On average, more than 83% of respondents said these devices were “currently available” in hospitals (data not shown).

Table 21 Equipment for laboratory diagnostics (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Tabletop centrifuge	All	83	(10/12)	90	(18/20)	64	(9/14)	88	(14/16)	94	(29/31)	91	(29/32)
	MICs	86	(6/7)	92	(11/12)	67	(4/6)	88	(7/8)	95	(19/20)	95	(18/19)
	HICs	80	(4/5)	88	(7/8)	63	(5/8)	88	(7/8)	91	(10/11)	85	(11/13)
Tabletop microscope	All	86	(12/14)	86	(18/21)	73	(8/11)	88	(14/16)	94	(30/32)	93	(27/29)
	MICs	88	(7/8)	85	(11/13)	75	(3/4)	88	(7/8)	95	(20/21)	94	(17/17)
	HICs	83	(5/6)	88	(7/8)	71	(5/7)	88	(7/8)	91	(10/11)	92	(11/12)
Urine analyser	All	86	(12/14)	86	(18/21)	77	(10/13)	80	(12/15)	94	(30/32)	94	(31/33)
	MICs	89	(8/9)	85	(11/13)	83	(5/6)	71	(5/7)	94	(21/22)	95	(18/19)
	HICs	80	(4/5)	88	(7/8)	71	(5/7)	88	(7/8)	90	(9/10)	93	(13/14)
Blood gas analyser	All	64	(7/11)	85	(17/20)	75	(9/12)	82	(9/11)	94	(30/32)	94	(29/31)
	MICs	67	(4/6)	83	(10/12)	80	(4/5)	80	(4/5)	95	(21/22)	94	(16/17)
	HICs	60	(3/5)	88	(7/8)	71	(5/7)	83	(5/6)	90	(9/10)	93	(13/14)
Haemoglobinometer	All	85	(11/13)	84	(16/19)	75	(9/12)	75	(12/16)	94	(30/32)	94	(29/31)
	MICs	88	(7/8)	82	(9/11)	80	(4/5)	63	(5/8)	95	(21/22)	94	(16/17)
	HICs	80	(4/5)	88	(7/8)	71	(5/7)	88	(7/8)	90	(9/10)	93	(13/14)
Blood chemistry analyser	All	83	(10/12)	89	(17/19)	73	(11/15)	86	(12/14)	93	(28/30)	94	(30/33)
	MICs	86	(6/7)	92	(11/12)	75	(6/8)	83	(5/6)	95	(19/20)	95	(18/19)
	HICs	80	(4/5)	86	(6/7)	71	(5/7)	88	(7/8)	90	(9/10)	93	(13/14)
Blood cholesterol analyser	All	85	(11/13)	88	(15/17)	69	(9/13)	81	(13/16)	94	(29/31)	94	(29/31)
	MICs	88	(7/8)	90	(9/10)	67	(4/6)	75	(6/8)	95	(20/21)	94	(17/18)
	HICs	80	(4/5)	86	(6/7)	71	(5/7)	88	(7/8)	90	(9/10)	92	(12/13)
Lipid profile analyser	All	86	(12/14)	83	(15/18)	75	(9/12)	79	(11/14)	93	(28/30)	94	(29/31)
	MICs	89	(8/9)	82	(9/11)	80	(4/5)	67	(4/6)	95	(19/20)	94	(17/18)
	HICs	80	(4/5)	86	(6/7)	71	(5/7)	88	(7/8)	90	(9/10)	92	(12/13)
Serum creatinine analyser	All	85	(11/13)	89	(16/18)	75	(9/12)	87	(13/15)	94	(29/31)	93	(28/30)
	MICs	88	(7/8)	91	(10/11)	80	(4/5)	86	(6/7)	95	(20/21)	94	(16/17)
	HICs	80	(4/5)	86	(6/7)	71	(5/7)	88	(7/8)	90	(9/10)	93	(12/13)

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

Similar levels of availability and need of devices were seen for HICs and MICs.

The number of respondents for current availability was higher in both public and private hospitals compared with health centres, whereas the responses for what “should be available” were highest only in public hospitals. The highest number of respondents thought that tabletop microscopes, urine analysers, blood gas analysers and haemoglobinometers were currently available in public hospitals, whereas urine analysers and blood chemistry analysers were reported to be the highest available in private hospitals.

Most respondents believed that tabletop centrifuges, tabletop microscopes and urine analysers should be most available in public hospitals, whereas blood

chemistry analysers should be most available in private hospitals.

Point of care in vitro diagnostics

Table 22 gives the responses for MD for laboratory diagnostic equipment. Point of care in vitro diagnostic devices (blood glucose test strips, glucometer, urine protein test strips, ketone test strips), on average were indicated “currently available” in 83% of the responses in all settings, while the considered need, i.e. “should be available”, was lowest in private hospitals (77%) and highest in health centres (90%). The availability was consistent between HICs and MICs.

Table 22. Medical devices for point of care in vitro diagnostics (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Blood glucose test strips	All	90	(19/21)	83	(15/18)	79	(11/14)	87	(20/23)	90	(26/29)	94	(29/31)
	MICs	93	(14/15)	80	(8/10)	83	(5/6)	83	(10/12)	94	(17/18)	95	(18/19)
	HICs	83	(5/6)	88	(7/8)	75	(6/8)	91	(10/11)	82	(9/11)	92	(11/12)
Glucometer	All	84	(16/19)	83	(15/18)	77	(10/13)	75	(15/20)	86	(25/29)	93	(27/29)
	MICs	86	(12/14)	80	(8/10)	83	(5/6)	89	(8/9)	83	(15/18)	94	(16/17)
	HICs	80	(4/5)	88	(7/8)	71	(5/7)	64	(7/11)	91	(10/11)	92	(11/12)
Urine protein test strips	All	89	(17/19)	83	(15/18)	79	(11/14)	88	(15/17)	93	(26/28)	93	(28/30)
	MICs	92	(12/13)	80	(8/10)	83	(5/6)	89	(8/9)	94	(16/17)	94	(17/18)
	HICs	83	(5/6)	88	(7/8)	75	(6/8)	88	(7/8)	91	(10/11)	92	(11/12)
Ketones test strips	All	87	(13/15)	84	(16/19)	71	(10/14)	80	(12/15)	93	(28/30)	93	(26/28)
	MICs	90	(9/10)	82	(9/11)	67	(4/6)	75	(6/8)	95	(18/19)	94	(15/16)
	HICs	80	(4/5)	88	(7/8)	75	(6/8)	86	(6/7)	91	(10/11)	92	(11/12)

HIC = high-income country, MIC = middle-income country.

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

The positive response rate was over 75% for those that responded to this question, which means they were familiar/knowledgeable of what technologies were available in the three settings (health centre, private hospital and public hospital).

The highest availability in health centres and private hospitals were for blood glucose test strips, whereas ketones test strips were deemed to have the highest availability for public hospitals. The number of respondents was higher for health centres and public

hospitals compared with private hospitals for what “should be available”.

Diagnostic imaging devices

Table 23 gives the responses for MD for diagnostic imaging, including basic X-ray system, fluoroscopy

(mobile), ultrasound system, CT system, MRI system, bone densitometer and gamma camera. Current availability was higher in private and public hospitals (on average 92%) but more respondents thought they “should be available” in public rather than private hospitals, may be because these technologies are currently unavailable.

Table 23. Medical devices for diagnostic imaging devices (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Basic X-ray system	All	85	(11/13)	85	(17/20)	77	(10/13)	87	(13/15)	94	(31/33)	94	(31/33)
	MICs	86	(6/7)	83	(10/12)	83	(5/6)	88	(7/8)	96	(22/23)	95	(18/19)
	HICs	83	(5/6)	88	(7/8)	71	(5/7)	86	(6/7)	90	(9/10)	93	(13/14)
Fluoroscopy, mobile	All	75	(6/8)	89	(16/18)	71	(10/14)	78	(7/9)	94	(29/31)	90	(27/30)
	MICs	67	(2/3)	90	(9/10)	71	(5/7)	67	(2/3)	95	(19/20)	89	(16/18)
	HICs	80	(4/5)	88	(7/8)	71	(5/7)	83	(5/6)	91	(10/11)	92	(11/12)
Ultrasound system	All	82	(9/11)	86	(18/21)	77	(10/13)	83	(10/12)	94	(31/33)	93	(28/30)
	MICs	80	(4/5)	85	(11/13)	83	(5/6)	83	(5/6)	95	(21/22)	94	(17/18)
	HICs	83	(5/6)	88	(7/8)	71	(5/7)	83	(5/6)	91	(10/11)	92	(11/12)
CT system	All	67	(4/6)	86	(18/21)	75	(9/12)	57	(4/7)	94	(30/32)	93	(28/30)
	MICs	0	(0/1)	85	(11/13)	80	(4/5)	50	(2/4)	95	(18/19)	94	(17/18)
	HICs	80	(4/5)	88	(7/8)	71	(5/7)	67	(2/3)	92	(12/13)	92	(11/12)
MRI system	All	60	(3/5)	86	(18/21)	75	(9/12)	67	(4/6)	89	(25/28)	89	(24/27)
	MICs	0	(0/1)	85	(11/13)	80	(4/5)	67	(2/3)	94	(16/17)	94	(15/16)
	HICs	75	(3/4)	88	(7/8)	71	(5/7)	67	(2/3)	82	(9/11)	82	(9/11)
Bone densitometer	All	70	(7/10)	86	(19/22)	80	(8/10)	75	(6/8)	88	(23/26)	93	(26/28)
	MICs	60	(3/5)	86	(12/14)	80	(4/5)	50	(1/2)	87	(13/15)	94	(15/16)
	HICs	80	(4/5)	88	(7/8)	80	(4/5)	83	(5/6)	91	(10/11)	92	(11/12)
Gamma camera	All	60	(3/5)	90	(19/21)	82	(9/11)	60	(3/5)	91	(20/22)	92	(23/25)
	MICs	0	(0/1)	92	(12/13)	83	(5/6)	50	(1/2)	92	(12/13)	94	(15/16)
	HICs	75	(3/4)	88	(7/8)	80	(4/5)	67	(2/3)	89	(8/9)	89	(8/9)

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

CT – computed tomography, MRI – magnetic resonance imaging

There were over twice as many respondents for current availability in public and private hospitals compared with health centres, with the highest responses received for what “should be available” in public hospitals.

The number of respondents was highest for the basic X-ray system availability for public and private hospitals; whereas the number of respondents for what “should be available” was similar for all technologies in public and private hospitals.

Respondents stated lower availability and need in health centres of 72% and 71%, respectively. The current availability for HICs and MICs was similar

across settings, and all countries thought the need was greatest in public hospitals.

Equipment for surgery and intensive care

Table 24 gives the responses for MD for surgery and intensive care. These devices (anaesthesia system, laryngoscope, resuscitator, operating light, operating table, cryosurgery unit, electrosurgical unit, surgical instruments, suction system, ventilator (ICU), infusion set, physiological monitoring system) on average had high current availability in public hospitals (94%) and private hospitals (93%), and less current availability in health centres (75%).

Table 24. Medical devices for surgery and intensive care (% response)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Anaesthesia system	All	71	(5/7)	89	(16/18)	73	(8/11)	75	(6/8)	94	(33/35)	93	(27/29)
	MICs	67	(2/3)	90	(9/10)	60	(3/5)	67	(2/3)	96	(23/24)	94	(16/17)
	HICs	75	(3/4)	88	(7/8)	83	(5/6)	80	(4/5)	91	(10/11)	92	(11/12)
Laryngoscope	All	71	(5/7)	89	(16/18)	82	(9/11)	67	(6/9)	94	(32/34)	93	(28/30)
	MICs	67	(2/3)	90	(9/10)	75	(3/4)	60	(3/5)	95	(21/22)	94	(17/18)
	HICs	75	(3/4)	88	(7/8)	86	(6/7)	75	(3/4)	92	(11/12)	92	(11/12)
Resuscitator	All	85	(11/13)	89	(16/18)	82	(9/11)	87	(13/15)	94	(32/34)	93	(27/29)
	MICs	86	(6/7)	90	(9/10)	75	(3/4)	88	(7/8)	95	(21/22)	94	(16/17)
	HICs	83	(5/6)	88	(7/8)	86	(6/7)	86	(6/7)	92	(11/12)	92	(11/12)
Operating light	All	63	(5/8)	89	(16/18)	80	(8/10)	71	(5/7)	94	(33/35)	93	(27/29)
	MICs	50	(2/4)	90	(9/10)	75	(3/4)	67	(2/3)	96	(22/23)	94	(16/17)
	HICs	75	(3/4)	88	(7/8)	83	(5/6)	75	(3/4)	92	(11/12)	92	(11/12)
Operating table	All	57	(4/7)	89	(16/18)	80	(8/10)	78	(7/9)	94	(31/33)	93	(27/29)
	MICs	33	(1/3)	90	(9/10)	75	(3/4)	75	(3/4)	95	(21/22)	94	(16/17)
	HICs	75	(3/4)	88	(7/8)	83	(5/6)	80	(4/5)	91	(10/11)	92	(11/12)
Cryosurgery unit	All	60	(3/5)	89	(17/19)	83	(10/12)	57	(4/7)	90	(18/20)	92	(23/25)
	MICs	0	(0/1)	91	(10/11)	83	(5/6)	50	(2/4)	91	(10/11)	94	(15/16)
	HICs	75	(3/4)	88	(7/8)	83	(5/6)	67	(2/3)	89	(8/9)	89	(8/9)
Electrosurgical unit	All	60	(3/5)	89	(17/19)	82	(9/11)	75	(6/8)	93	(26/28)	93	(28/30)
	MICs	0	(0/1)	91	(10/11)	80	(4/5)	67	(2/3)	94	(16/17)	94	(17/18)
	HICs	75	(3/4)	88	(7/8)	83	(5/6)	80	(4/5)	91	(10/11)	92	(11/12)

Technology	Source	Should be available						Currently available					
		Health Centre		Public Hospital		Private Hospital		Health Centre		Public Hospital		Private Hospital	
		%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total	%	yes/total
Surgical instruments	All	75	(6/8)	89	(17/19)	80	8/10	78	(7/9)	94	(32/34)	93	(27/29)
	MICs	67	(2/3)	91	(10/11)	75	(3/4)	67	(2/3)	96	(22/23)	94	(16/17)
	HICs	80	(4/5)	88	(7/8)	83	(5/6)	83	(5/6)	91	(10/11)	92	(11/12)
Suction system	All	82	(9/11)	89	(17/19)	80	(8/10)	77	(10/13)	94	(32/34)	93	(26/28)
	MICs	83	(5/6)	91	(10/11)	67	(2/3)	67	(4/6)	95	(21/22)	94	(15/16)
	HICs	80	(4/5)	88	(7/8)	86	(6/7)	86	(6/7)	92	(11/12)	92	(11/12)
Ventilator, ICU	All	67	(4/6)	89	(17/19)	82	(9/11)	71	(5/7)	94	(31/33)	93	(27/29)
	MICs	50	(1/2)	91	(10/11)	80	(4/5)	67	(2/3)	95	(20/21)	94	(16/17)
	HICs	75	(3/4)	88	(7/8)	83	(5/6)	75	(3/4)	92	(11/12)	92	(11/12)
Infusion set	All	78	(7/9)	89	(17/19)	82	(9/11)	86	(12/14)	94	(32/34)	93	(26/28)
	MICs	75	(3/4)	91	(10/11)	80	(4/5)	83	(5/6)	95	(21/22)	94	(15/16)
	HICs	80	(4/5)	88	(7/8)	83	(5/6)	88	(7/8)	92	(11/12)	92	(11/12)
Physiological monitoring system	All	78	(7/9)	89	(16/18)	75	(9/12)	83	(10/12)	94	(30/32)	93	(26/28)
	MICs	80	(4/5)	90	(9/10)	60	(3/5)	86	(6/7)	95	(19/20)	94	(15/16)
	HICs	75	(3/4)	88	(7/8)	86	(6/7)	80	(4/5)	92	(11/12)	92	(11/12)

Note: As per Table 6 “Number of respondents by country”, 42 people completed the survey for MD. The number of responses by question is indicated as the denominator for each device in the above table. The responses for ‘not necessary’ were not included due to the low number of respondents. These variations demonstrate that not every person has knowledge about the devices being used in the different settings.

ICU – intensive care unit

The device most needed in health centres was reported to be operating tables. The greatest need for these devices was seen to be in public hospitals, with similar responses for MICs and HICs.

The number of responses was higher for public hospitals than private hospitals or health centres

for both current availability and what “should be available”. The number of responses was lowest for availability of the cryosurgery unit compared with any other device. This may be attributed to the lack of knowledge regarding the cryosurgery unit.

Table 25. Perceived influence of factors on the availability of currently available medical devices

Rank	Factor	Weighted rank
1	Appropriateness of the device or service in terms of current practice	18.0
2	Acceptability to health care personnel	15.2
3	Affordability of the device or service (because it is reimbursable)	15.0
4	Availability of the device in the national medical device market	13.9
5	Affordability of the device or service (that is not reimbursable and the person has to pay as out-of-pocket expenditure)	13.0
6	Acceptability to patients	12.6
7	Quality of the devices	12.2
8	Other factors	0.1

5.3.4 Factors affecting availability of medical devices

The rankings for factors affecting availability of MD that are presented in tables 25–27 were derived using a Rank Order Centroid method of weighting approach (see footnote 7, 5.2.2) with five ranks for questions 3 and 4, and three ranks for question 5.

Factors influencing current availability of medical devices

Table 25 shows the overall rankings for factors perceived to have influenced the availability of currently available MD in the six countries, based on the rankings given by individual respondents. “Appropriateness of the device or service in terms of current practice” was seen as most significant. Scores for “acceptability to health care personnel” and “availability of reimbursable MD” were ranked next highest.

When asked to comment on “other factors” influencing the availability of medical devices, one respondent from the Philippines commented: “Probably realised by the government through random assessment of health issues of the community. Most equipment used by public hospitals were usually second hand or

old models which depends on the budget available, hence the reason for its availability in the communities we are working with.”

Overall rankings for factors perceived to have influenced the non-availability of currently unavailable MD are shown in Table 26. “Unaffordability of the device” ranked first, and “unavailability of the device in the national medical device market” came second. “Lack of capital and/or recurrent funding” and “unsuitability of the device in terms of current practice” were next, with similar scores.

When asked to comment on “other factors” influencing the non-availability of medical devices, respondents commented as follows:

Malaysia:

- “There are small general hospitals, less than 150 beds. It is hard to get or renew MD as that can make a fall in profits.”

Philippines:

- “Lack of trained personnel to operate the device.”
- “Lack of capital – private hospitals in some localities cannot afford to install such devices.”
- “Inappropriate budget for health programs because of lack of data regarding incidence of common

Table 26. Perceived influence of factors on the non-availability of currently unavailable medical devices

Rank	Factor	Weighted rank
1	Unaffordability of the device to those clients of the service in which it is used	19.9
2	Unavailability of the device in the national medical device market	17.0
3	Lack of capital and/or recurrent funding	14.4
4	Unsuitability of the device in terms of current practice	14.3
5	Lack of acceptance of the device by patients	14.0
6	Lack of acceptance of the device by health care personnel	9.2
7	Unacceptable quality of the device	8.5
8	Other factors	2.8

health problems of people in the community. Law makers would always depend on the data to realise the priority needs of a certain community.”

- “Government red tape in acquisition of necessary devices.”⁸
- “Expensive.”
- “Return on Investment (ROI) is very slow if the cost will be shouldered by patients themselves. Hence, no investors are willing to provide the capital funds. Government subsidy is needed.”

Table 27 shows rankings for approaches that might improve access to MD in the respondents’ countries. “Decrease cost of available devices or services to consumers” and “improve governance and policy” had the highest rankings.

When asked to comment on “other” approaches that might improve availability of medical devices, respondents commented as follows:

- “Research.”
- “More trained personnel should be available.”
- “Build primary and secondary hospital in the rural areas and islands to gain wide access to older population in need of the MD.”

- “Political will of the leaders and data base of common health problems in the community.”
- “Regular preventive maintenance programs for available devices especially in public hospitals.”
- “Ensure that devices provided are durable and of good quality.”
- “Even donated AD/MD should be checked for quality and functionality.”

5.3.5 Other devices that were needed but were not affordable or accessible

Suggestions for other devices that were currently not available are shown in Table 28. Two of these refer to bone densitometry, which was one of the items in question 2 (MD for diagnostic imaging). One comment mentions a more specific requirement for a ventilator, also included in question 2. Three of the comments do not give specific details of the required MD.

Ten respondents (2 from China, 5 from Japan, 1 from the Republic of Korea and 2 from Viet Nam) indicated that they had no suggestions regarding additional required MD. Possibly this might reflect a level of acceptance of the list of MD that was selected for the survey.

⁸ Refers to processes for approval.

Table 27. Perceived importance of approaches that might improve the availability of medical devices

Rank	Factor	Not important	Important	Very important	Weighted rank
1	Decrease cost of available devices/services to consumers	1	18	24	4.12
2	Improve governance and policy	0	21	22	4.02
3	Improve levels of training for health care personnel by manufacturers	2	23	18	3.74
4	Improve quality of available devices	2	24	17	3.74
5	Improve infrastructure and health service provision	1	26	16	3.70
6	Increase funds for maintenance of medical equipment to avoid down time that makes them unavailable	4	21	18	3.70
7	Improve distribution of products or services	3	24	16	3.65
8	Have a regulatory process for medical devices (if not available)	2	32	9	3.33
9	Increase regulatory efficiency (if available but long response time)	2	32	9	3.33
10	Increase local production of devices in your country, to increase availability	5	27	11	3.19
11	Increase availability of donated devices	8	30	5	2.86
12	Other				

Table 28. Other medical devices that are not currently available

Country	Respondent	Technology
Japan	Service provider	“Non-invasive ventilator, need instead of invasive ventilator because it can be used without tracheal intubation”
	Service provider	“Portal car driving device for people with spinal cord injury using arm only”
	Service provider	“Construction of a safe operating system and efficient battery-charge management for battery-equipped medical equipment”
Malaysia	Commercial supplier	“Rehabilitative and therapeutic technologies”
Philippines	University	“Spinal orthosis”
		“Dual X-ray bone densitometry”
	Disabled people’s group	“Treatment for AIDS or its prevention, if already available”
	Service provider	“There are too many to mention even the basic ones”
	Service provider	“Central dual X-ray bone densitometry scanner”
		“Electromyogram for nerve conduction velocity”
	Older people’s group	“Transcranial magnetic stimulation for stroke and pain”
	Disabled people’s group	“Extracorporeal shock wave therapy for musculoskeletal pain”
	Disabled people’s group	“The ventilation and perfusion lung scan machine is not commonly available to check for pulmonary embolism due to added cost”



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6. Conclusions

The development and application of this survey, and its underlying methodology, provided useful information in documenting the needs, use and gaps for assistive and medical devices in support of older populations. Noteworthy was the novel consolidation of a larger list of functional activities, as featured in the ICF and ISO, into 12 categories. This facilitated the utility of the survey.

Based on prior systematic reviews for medical devices, the list of MD largely focused on those of use in clinical settings. Matching survey results against broader epidemiological information on burden of disease and declines in cognitive functioning will help prioritize development of specific devices and assistive health technologies.

The survey was successful in obtaining useful information for the six countries (China, Japan, Malaysia, the Philippines, the Republic of Korea and Viet Nam) in the WHO Western Pacific Region. A list of priority needs for AD to meet consistent functional activities in older populations was produced and can be used as the basis for further discussion.

Governments have an important role to play in supporting programmes to develop or update, implement, monitor and evaluate policies on better access to health technologies, and to strengthen evidence-based selection and rational use of these technologies. Availability and needs for categories of MD were documented for different clinical settings. Appropriateness of the MD was reported to be a key factor influencing its availability, while unaffordability was a key factor when MDs were not available.

As recommendations in Section 3 indicate, learning from and expanding upon this survey instrument will provide useful information on prioritizing and driving further innovations for those assistive and medical devices that respond to the greatest needs of older people in communities around the world. Moreover, important lessons were gleaned as to the perceptions of barriers and enablers to greater availability and accessibility of affordable health technologies. Translation of the survey into local languages and use of intermediaries and/or specific, shorter and tailored surveys, to access older people themselves will expand the utility of the survey and affirm findings. Applying the survey in other parts of the world will help increase its utility.

7. References

- ASERNIP-S, Maddern G, Royal Australasian College of Surgeons (2013). Systematic review on needs for medical devices for older people, ASERNIP-S report. Stepney, Australia: Australian Safety and Efficacy Register of New Interventional Procedures – Surgical.
- Bauer S, Elsaesser LJ (2012). Integrating medical, assistive, and universally designed products and technologies: Assistive technology device classification (ATDC). *Disability and Rehabilitation: Assistive Technology* 7(5):350–5.
- Bauer SM, Elsaesser LJ, Arthanat S (2011). Assistive technology device classification based upon the World Health Organization's, International Classification of Functioning, Disability and Health (ICF). *Disability and Rehabilitation: Assistive Technology* 6(3):243–59.
- Connell J, Grealy C, Olver K, Power J (2008). Comprehensive scoping study on the use of assistive technology by frail older people living in the community. Canberra, Australia: Department of Health and Ageing.
- Dolan J (2010). Multi-criteria clinical decision support: A primer on the use of multiple criteria decision making methods to promote evidence-based, patient-centered healthcare. Bethesda, USA: National Institutes of Health. (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3049911/>, accessed 3 september 2014).
- ISO (2011). Assistive products for persons with disability – classification and terminology. Geneva: International Organization for Standardization.
- Löfqvist C, Nygren C, Széman Z, Iwarsson S (2005). Assistive devices among very old people in five European countries. *Scandinavian journal of occupational therapy* 12(4):181–92.
- Mann WC, Johnson JKM, Lynch L, Justiss MD, Tomita M, Wu S (2008). Changes in impairment level, functional status, and use of assistive devices by older people with depressive symptoms. *American Journal of Occupational Therapy* 62(1):9–17.
- Mann WC, Llanes C, Justiss MD, Tomita M (2004). Frail older adults' self-report of their most important assistive device. *Occupation, Participation and Health* 24(1):8.
- Mann WC, Ottenbacher KJ, Fraas L, Tomita M, Granger CV (1999). Effectiveness of assistive technology and environmental interventions in maintaining independence and reducing home care costs for the frail elderly. A randomized controlled trial. *Archives of family medicine* 8(3):210.
- Rejeski WJ, Ip EH, Marsh AP, Miller ME, Farmer DF (2008). Measuring disability in older adults: The International Classification System of Functioning, Disability and Health (ICF) framework. *Geriatrics and Gerontology International* 8(1):48–54.
- Sivo SA, Saunders C, Chang Q, Jiang JJ (2006). How low should you go? Low response rates and the validity of inference in IS questionnaire research. *Journal of the Association for Information Systems* 7(6).
- Verbrugge LM, Rennert C, Madans JH (1997). The great efficacy of personal and equipment assistance in reducing disability. *American Journal of Public Health* 87(3):384–92.

- WHO (2010). Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings. Geneva: World Health Organization. (http://www.who.int/cardiovascular_diseases/publications/pen2010/en/, accessed 3 September 2014).
- WHO (2011). Core medical equipment. Geneva: World Health Organization. (http://www.who.int/medical_devices/innovation/core_equipment/en/, accessed 3 September 2014).
- WHO (2013). WHO Centre for Health Development Annual Report 2013. Kobe, Japan: World Health Organization. (http://www.who.int/kobe_centre/publications/annual_report_2013/en/, accessed on 31 July 2014).
- WHO (2014a). Compendium of innovative health technologies for low-resource settings: Assistive devices, eHealth solutions, medical devices. Geneva: World Health Organization. (http://www.who.int/medical_devices/innovation/compendium/en/, accessed 3 September 2014).
- WHO (2014b). OneHealth Tool [software tool]. Geneva: World Health Organization. (<http://www.who.int/choice/onehealthtool/en/>, accessed 3 September 2014).
- WHO and USAID (2011). Joint position paper on the provision of mobility devices in less resourced settings. Geneva: World Health Organization and United States Agency for International Development (http://www.who.int/disabilities/publications/technology/jpp_final.pdf, accessed 2 September 2014).

Appendix A: Survey tool

Medical and assistive devices for older people (Asia/Pacific - Stg 2)

Thank you for taking time to help us with this survey.

With support from the Japanese Ministry of Health, Labour & Welfare (MoHLW), World Health Organisation (WHO) is working with the Royal Australian College of Surgeons and Motivation Australia to study the priority needs and gaps for medical and assistive devices for ageing populations in selected countries of the Asia Pacific region: **China, Japan, Malaysia, Philippines, Republic of Korea, Viet Nam.**

Two initial systematic reviews/studies have been completed (see [Report from WHO Kobe Centre](#)). These were reported at the WHO Consultation on Advancing Technological Innovation for Older Persons, February 2013, WHO Kobe Centre, Japan.

This survey is being undertaken to further identify required priority medical and assistive devices; to understand the contributing factors for their availability / unavailability; and to identify possible solutions/ approaches to improve access to high quality assistive devices at an affordable cost.

The survey questions for **Medical devices** focus on devices for:

- a) non-communicable diseases including: cardiovascular diseases, malignant neoplasms, respiratory diseases and sense organ diseases, and
- b) devices categorized according to diagnostic imaging, laboratory, surgical and basic equipment.

The questions for **Assistive devices** focus on functional and activity aspects deemed most important for older people to maintain their independence and to increase their overall well-being.

It should take you about 15-20 mins to answer either the questions for medical devices OR assistive devices, and 30mins if you do both (which depends on how you answer the question on your experience in these areas). Thanks very much for giving your valuable time to assist us.

As you complete this survey you will find helpful examples will pop up if you hover (with the mouse cursor) over terms that are not familiar to you.

There are 75 questions in this survey

Your country

Your country *

Please choose **only one** of the following:

- China
- Japan
- Republic of Korea
- Malaysia
- Philippines
- Viet Nam

Details about your organisation and sector

Select the organisation type that most represents your organisation: *

Please choose **only one** of the following:

- Aged Person's Group/Association
- Disabled Persons Group/Association
- Consumer Health Organisation
- Service provider (hospital, clinic etc.)
- Commercial supplier of equipment
- Manufacturer
- Assistive Device Advocacy/Advice Org.
- Medical Device Industry Association
- University / research institution
- Governmental Agency
- Medical/Health Insurer (incl. Welfare Ins.)
- Private Insurance Agency
- Professional Association/College

Is your organisation *

If you choose 'Other' please also specify your choice in the accompanying text field.

Please choose **only one** of the following:

- Government
- Business/Commercial
- Not for Profit
- Other

Approximately how far is your organisation's main office from the National Capital? *

Only answer this question if the following conditions are met:

Answer was 'China' at question '1 [Q1]' (Your country)

Please choose **only one** of the following:

- Less than 200km
- Between 200 and 1000 km
- >1000km

[] Approximately how far is your organisation's main office from the National Capital? *

Only answer this question if the following conditions are met:

Answer was NOT 'China' at question '1 [Q1]' (Your country)

Please choose **only one** of the following:

- Less than 100km
- Between 100 and 500 km
- >500km

[] Approximately how much of your funding comes from the Government? *

Only answer this question if the following conditions are met:

Answer was NOT 'Government' at question '3 [Q2b]' (Is your organisation)

Please choose **only one** of the following:

- 0%
- < 25%
- 25-50%
- 50-75%
- >75%

Details about you

Select the category (or categories) that describe you personally *

Please choose **all** that apply:

- Consumer advocate/counsellor
- Allied health/rehabilitation professional
- Medical doctor
- Nurse, nurse practitioner
- Other health professional (e.g. social work, rehabilitation therapist etc.)
- Technical Professional (e.g. Engineer, designer)

- Other health technical officer (e.g. Laboratory scientist, Senior service technician etc.)
- Government/Agency official
- Organisation Manager/Director
- Researcher
- Teaching professional
- Other (please describe):

Please provide: *

Please write your answer(s) here:

Your name

Institution

Please provide your email address: *

Please check the format of your answer.

Please write your answer here:

Contact telephone number (including your international country code): *

Please write your answer here:

Please enter phone number in this format: +ccc xx xxxx xxxx

Details of the population group you (or your organisation) represent or serve

Select the population group you serve or represent *

Please choose **only one** of the following:

- National
- Provincial/State/Prefecture
- District/City
- Other

If your work covers multiple countries please select 'other' and note those countries and which country you are responding about.

In which setting(s) do you support or represent people? *

Please choose **all** that apply:

- Urban
- Rural
- Transient (slums & refugee camps)

In meeting the needs of older people, I have current experience or knowledge of *

Please choose the appropriate response for each item:

	None/Very Limited	< 1 year practice/knowledge	1-5 years practice/knowledge	more than 5 years practice/knowledge
Assistive Devices (AD) (or Aids & Equipment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medical Devices (MD)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part B - Assistive Devices Survey - Q1 - Rating Functional Areas

Questions in this section relate to Assistive Devices (sometimes known as aids and equipment)

[] For older people in your community, please rate the importance of the following functional areas *

Please choose the appropriate response for each item:

	Not relevant	Slightly useful	Useful task	Important task	Vital task
Able to be clean & hygienic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Able to dress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transfer to or from bed or chair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Move about and use transport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grip or pickup items and do housework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eat and drink as independently as possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Able to hear and communicate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Able to see and understand writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manage health care & fatigue including following health advice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participate in community activities (can include employment) & visiting others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take care of a family member	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experience intimate/sexual relations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Comment

Please write your answer here:

Part B Q2 - Rating whether Assistive Devices help older people in each area of function

Question 2 - Under each of the functions rate the usefulness of possible assistive devices in helping older people with that function

□

Under each of the functions you indicated were important, please rate the usefulness of possible assistive devices in helping older people with that function; and

Rank the top 5 related assistive devices under each functional area

Only answer this question if the following conditions are met:

((Q4c_SQ001.NAOK == "A2" or Q4c_SQ001.NAOK == "A3" or Q4c_SQ001.NAOK == "A4"))

□

Able to be clean & hygienic

Only answer this question if the following conditions are met:

Answer was 'Important task' or 'Vital task' or 'Slightly useful' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to be clean & hygienic))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for toileting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for managing continence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for washing, bathing and showering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for personal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for walking, manipulated by both arms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for walking, manipulated by one arm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for lifting persons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting handrails and grab bars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety equipment for home & other places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for holding, opening or manipulating objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Useful task' or 'Slightly useful' or 'Vital task' or 'Important task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to be clean & hygienic))

All your answers must be different.

Please number each box in order of preference from 1 to 17

- | | |
|----------------------|---|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | AD for toileting |
| <input type="text"/> | AD for managing continence |
| <input type="text"/> | AD for washing, bathing and showering |
| <input type="text"/> | AD for personal care |
| <input type="text"/> | AD for walking, manipulated by both arms |
| <input type="text"/> | AD for walking, manipulated by one arm |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | AD for lifting persons |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Supporting handrails and grab bars |
| <input type="text"/> | Safety equipment for home & other places |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for holding, opening or manipulating objects |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | Non AD: Personal assistance |

[]

Able to dress

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Useful task' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to dress))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb prosthetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted clothing & AD for dressing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for managing continence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted beds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting handrails and grab bars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Vital task' or 'Important task' or 'Useful task' or 'Slightly useful' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to dress))

All your answers must be different.

Please number each box in order of preference from 1 to 13

- | | |
|----------------------|--|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Upper limb prosthetic |
| <input type="text"/> | Upper limb orthotics |
| <input type="text"/> | Adapted clothing & AD for dressing |
| <input type="text"/> | AD for managing continence |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Adapted beds |
| <input type="text"/> | Supporting handrails and grab bars |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | Non AD: Personal assistance |

[]

Transfer to or from bed or chair

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Useful task' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Transfer to or from bed or chair))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
Upper limb prosthetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for lifting persons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted beds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting handrails and grab bars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Vital task' or 'Important task' or 'Slightly useful' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Transfer to or from bed or chair))

All your answers must be different.

Please number each box in order of preference from 1 to 8

- | | |
|----------------------|------------------------------------|
| <input type="text"/> | Upper limb prosthetic |
| <input type="text"/> | Upper limb orthotics |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | AD for lifting persons |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Adapted beds |
| <input type="text"/> | Supporting handrails and grab bars |
| <input type="text"/> | Non AD: Personal assistance |

Part B Q2 - Rating Continued...1

[]

Move about and use transport

Only answer this question if the following conditions are met:

Answer was 'Vital task' or 'Useful task' or 'Important task' or 'Slightly useful' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Move about and use transport))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
Lower limb orthotic/prosthetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for walking, manipulated by one arm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for walking, manipulated by both arms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manual wheelchairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Powered wheelchairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for lifting persons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting handrails and grab bars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for hearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for controlling from a distance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Useful task' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Move about and use transport))

All your answers must be different.

Please number each box in order of preference from 1 to 15

- | | |
|----------------------|--|
| <input type="text"/> | Lower limb orthotic/prosthetic |
| <input type="text"/> | AD for walking, manipulated by one arm |
| <input type="text"/> | AD for walking, manipulated by both arms |
| <input type="text"/> | Manual wheelchairs |
| <input type="text"/> | Powered wheelchairs |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | AD for lifting persons |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Supporting handrails and grab bars |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for hearing |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for controlling from a distance |
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Non AD: Personal assistance |



Grip or pickup items and do housework

Only answer this question if the following conditions are met:

Answer was 'Useful task' or 'Slightly useful' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Grip or pickup items and do housework))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
Upper limb prosthetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for preparing food and drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for doing housework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting handrails and grab bars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety equipment for home and other places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for alarming, indicating, reminding and signalling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for holding, opening or manipulating objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for gardening and lawn care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for care of animals (pet care)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.**Only answer this question if the following conditions are met:**

Answer was 'Useful task' or 'Slightly useful' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Grip or pickup items and do housework))

All your answers must be different.

Please number each box in order of preference from 1 to 15

- | | |
|----------------------|---|
| <input type="text"/> | Upper limb prosthetic |
| <input type="text"/> | Upper limb orthotics |
| <input type="text"/> | AD for preparing food and drink |
| <input type="text"/> | AD for doing housework |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Supporting handrails and grab bars |
| <input type="text"/> | Safety equipment for home and other places |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for alarming, indicating, reminding and signalling |
| <input type="text"/> | AD for holding, opening or manipulating objects |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | AD for gardening and lawn care |
| <input type="text"/> | AD for care of animals (pet care) |
| <input type="text"/> | Non AD: Personal assistance |

[]

Eat and drink as independently as possible

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Useful task' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Eat and drink as independently as possible))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other prosthetics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb prosthetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for preparing food and drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for eating and drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety equipment for home and other places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for holding, opening or manipulating objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Useful task' or 'Important task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Eat and drink as independently as possible))

All your answers must be different.

Please number each box in order of preference from 1 to 14

- | | |
|----------------------|---|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Other prosthetics |
| <input type="text"/> | Upper limb prosthetic |
| <input type="text"/> | Upper limb orthotics |
| <input type="text"/> | AD for preparing food and drink |
| <input type="text"/> | AD for eating and drinking |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Safety equipment for home and other places |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for holding, opening or manipulating objects |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | Non AD: Personal assistance |

□

Able to hear and communicate

Only answer this question if the following conditions are met:

Answer was 'Vital task' or 'Slightly useful' or 'Important task' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to hear and communicate))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for hearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for voice production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD that record, play and display audio/visual information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for face-to-face communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for telephone and messaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for alarming, indicating, reminding and signalling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessible computer (hardware + software)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for controlling from a distance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for environmental improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Vital task' or 'Slightly useful' or 'Important task' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to hear and communicate))

All your answers must be different.

Please number each box in order of preference from 1 to 12

- | | |
|----------------------|---|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | AD for hearing |
| <input type="text"/> | AD for voice production |
| <input type="text"/> | AD that record, play and display audio/visual information |
| <input type="text"/> | AD for face-to-face communication |
| <input type="text"/> | AD for telephone and messaging |
| <input type="text"/> | AD for alarming, indicating, reminding and signalling |
| <input type="text"/> | Accessible computer (hardware + software) |
| <input type="text"/> | AD for controlling from a distance |
| <input type="text"/> | AD for environmental improvement |
| <input type="text"/> | Non AD: Personal assistance |

Rank the top 5 related assistive devices.

Able to see and understand writing

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Important task' or 'Vital task' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to see and understand writing))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for drawing and writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for telephone and messaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessible computer (hardware + s'ware)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Important task' or 'Vital task' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Able to see and understand writing))

All your answers must be different.

Please number each box in order of preference from 1 to 8

- | | |
|----------------------|---|
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for drawing and writing |
| <input type="text"/> | AD for telephone and messaging |
| <input type="text"/> | AD for reading |
| <input type="text"/> | Accessible computer (hardware + s'ware) |
| <input type="text"/> | Non AD: Personal assistance |

Part B Q2 - Rating Continued...2

□

Manage health care & fatigue including following health advice

Only answer this question if the following conditions are met:

Answer was 'Slightly useful' or 'Vital task' or 'Useful task' or 'Important task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Manage health care & fatigue including following health advice))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment for movement, strength and balance training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for washing, bathing and showering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for personal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for preparing food and drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted beds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for telephone and messaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for alarming, indicating, reminding and signalling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for holding, opening or manipulating objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for controlling from a distance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for carrying and transporting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for environmental improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.**Only answer this question if the following conditions are met:**

Answer was 'Slightly useful' or 'Vital task' or 'Useful task' or 'Important task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Manage health care & fatigue including following health advice))

All your answers must be different.

Please number each box in order of preference from 1 to 19

- | | |
|----------------------|---|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Equipment for movement, strength and balance training |
| <input type="text"/> | AD for washing, bathing and showering |
| <input type="text"/> | AD for personal care |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | AD for preparing food and drink |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Adapted beds |
| <input type="text"/> | AD for telephone and messaging |
| <input type="text"/> | AD for alarming, indicating, reminding and signalling |
| <input type="text"/> | AD for reading |
| <input type="text"/> | AD for holding, opening or manipulating objects |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for controlling from a distance |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | AD for carrying and transporting |
| <input type="text"/> | AD for environmental improvement |
| <input type="text"/> | Non AD: Personal assistance |

[]

Participate in community activities (can include employment) & visiting others

Only answer this question if the following conditions are met:

Answer was 'Important task' or 'Vital task' or 'Useful task' or 'Slightly useful' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Participate in community activities (can include employment) & visiting others))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment for movement, strength and balance training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for washing, bathing and showering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for personal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for preparing food and drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted beds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for telephone and messaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for alarming, indicating, reminding and signalling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for holding, opening or manipulating objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for controlling from a distance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for carrying and transporting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for environmental improvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Important task' or 'Slightly useful' or 'Useful task' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Participate in community activities (can include employment) & visiting others))

All your answers must be different.

Please number each box in order of preference from 1 to 19

- | | |
|----------------------|---|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Equipment for movement, strength and balance training |
| <input type="text"/> | AD for washing, bathing and showering |
| <input type="text"/> | AD for personal care |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | AD for preparing food and drink |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Adapted beds |
| <input type="text"/> | AD for telephone and messaging |
| <input type="text"/> | AD for alarming, indicating, reminding and signalling |
| <input type="text"/> | AD for reading |
| <input type="text"/> | AD for holding, opening or manipulating objects |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for controlling from a distance |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | AD for carrying and transporting |
| <input type="text"/> | AD for environmental improvement |
| <input type="text"/> | Non AD: Personal assistance |

□

Take care of a family member

Only answer this question if the following conditions are met:

Answer was 'Important task' or 'Vital task' or 'Slightly useful' or 'Useful task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Take care of a family member))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for cognitive assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb prosthetic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper limb orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for preparing food and drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for doing housework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted furniture and accessories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification or AD for building access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety equipment for home and other places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for seeing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for telephone and messaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for alarming, indicating, reminding and signalling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for hearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for operating and controlling devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for controlling from a distance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for extended reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for care of animals (pet care)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

Answer was 'Important task' or 'Useful task' or 'Slightly useful' or 'Vital task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Take care of a family member))

All your answers must be different.

Please number each box in order of preference from 1 to 17

- | | |
|----------------------|---|
| <input type="text"/> | AD for cognitive assistance |
| <input type="text"/> | Upper limb prosthetic |
| <input type="text"/> | Upper limb orthotics |
| <input type="text"/> | AD for preparing food and drink |
| <input type="text"/> | AD for doing housework |
| <input type="text"/> | Adapted furniture and accessories |
| <input type="text"/> | Modification or AD for building access |
| <input type="text"/> | Safety equipment for home and other places |
| <input type="text"/> | AD for seeing |
| <input type="text"/> | AD for telephone and messaging |
| <input type="text"/> | AD for alarming, indicating, reminding and signalling |
| <input type="text"/> | AD for hearing |
| <input type="text"/> | AD for operating and controlling devices |
| <input type="text"/> | AD for controlling from a distance |
| <input type="text"/> | AD for extended reach |
| <input type="text"/> | AD for care of animals (pet care) |
| <input type="text"/> | Non AD: Personal assistance |

[]

Experience intimate/sexual relations

Only answer this question if the following conditions are met:

Answer was 'Vital task' or 'Useful task' or 'Slightly useful' or 'Important task' at question '14 [g2q1]' (For older people in your community, please rate the importance of the following functional areas (Experience intimate/sexual relations))

Please select at least 5 answers

Please choose the appropriate response for each item:

	Useless	Slightly useful	Useful	Important	Essential
AD for managing continence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for personal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for sexual activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for preparing food and drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD for transfer and turning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapted beds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non AD: Personal assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Rank the top 5 related assistive devices.

Only answer this question if the following conditions are met:

((g2q1_SQ012.NAOK == "A2" or g2q1_SQ012.NAOK == "A3" or g2q1_SQ012.NAOK == "A4" or g2q1_SQ012.NAOK == "A5"))

All your answers must be different.

Please number each box in order of preference from 1 to 7

- | | |
|----------------------|------------------------------------|
| <input type="text"/> | AD for managing continence |
| <input type="text"/> | AD for personal care |
| <input type="text"/> | AD for sexual activities |
| <input type="text"/> | AD for preparing food and drink |
| <input type="text"/> | AD for transfer and turning |
| <input type="text"/> | Adapted beds |
| <input type="text"/> | Non AD: Personal assistance |

Part B Q3 - Extent of current Assistive Device use

To what extent are older people using assistive devices in your area?

[] For each of the Assistive Device Categories listed below, please rate beside each how well (widely & effectively) these devices are used by older people who need them in your context. *

Please choose the appropriate response for each item:

	Not used/available	Used occasionally	Use varies	Used satisfactorily by many	Used very well in nearly all cases	I don't know
Communication & information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cognitive support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prosthetics/ orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking aid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal care & dressing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hygiene & toileting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
House access/furniture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food preparation/eating /drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Household tasks (including garden work)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[] Comment

Please write your answer here:

[]Quality: Are the following devices of sufficient quality for their intended purpose? *

Please choose the appropriate response for each item:

	Not available	Very unreliable/variable	Some OK, but variable consistency	Varies depending on source	Reasonably good consistency	Quality control very good
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cognitive support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking aid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prosthetics/orthotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hygiene & toileting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
House changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AD to eat/drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[]Comments

Please write your answer here:

Part B - Q5-7 - causes & possible remedies to Assistive Device access

Ranking the issues impacting access to AT

[]

Q5. Please rank what you believe are the main reasons that ensure certain assistive devices *are widely used by older people*:

All your answers must be different.
Please select at least 5 answers

Please number each box in order of preference from 1 to 12

Please choose at least 5 items.

- Functionally very effective
- Culturally appropriate and acceptable
- There is good community education & awareness of such devices
- The device was created and/or is readily available locally
- The device is available for an affordable cost to older person and/or their family
- The device is adjustable; or there is a choice of type to properly suit the individual
- The device looks good
- The device is a part of other supports/therapy
- There is research evidence of the benefits the device offers
- The device is routinely provided for those with identified need
- There is a well-functioning and accessible service in place to assess individual user's needs and prescribe the device
- There is Government commitment and action to ensure access to assistive devices

[]Other/Comment

Please write your answer here:

[]

Q6. Now rank what you believe are the main reasons why other assistive devices *don't get used* by older people:

All your answers must be different.
Please select at least 5 answers

Please number each box in order of preference from 1 to 12

Please choose at least 5 items.

- The device is poorly designed or is unworkable in usual environment
- The device is culturally inappropriate
- There is stigma or resistance from family or community around using this device
- There is poor community education and awareness of such devices
- The device is not readily available locally
- The device is not available at an affordable cost to older person and or their family
- The device is not sufficiently adjustable or there is no choice of type – so it cannot be properly made to suit the individual
- The device looks bad or dangerous
- The device is not part of other support/therapy
- There is no widely accessible service in place to assess individual user's needs and prescribe the device
- There is no Government commitment or action to increase access to the device.
- The quality of the device is too poor/variable for safe issue

[]Other/comment

Please write your answer here:

Q7. Please rank the strategies that you believe would have the greatest impact on improving access to Priority Assistive Devices for older people in your community:

All your answers must be different.
Please select at least 5 answers

Please number each box in order of preference from 1 to 12

Please choose at least 5 items.

- Creating devices that are more suitable for local need
- Funding support for agencies/companies to develop new appropriate products
- Improving local capacity to manufacture devices
- Better training of health professionals on the value of assistive devices
- More community awareness & education on the devices and their uses/benefits
- Improving logistics to get devices to end users
- Locally available services to assist with assessment, fitting and adjustment
- Better product support (repairs, parts, adjustment, maintenance)
- Training older people & families in how to use and maintain their device
- Government/agency assistive device procurement support or subsidy
- Better quality checks on devices offered for sale
- Less regulation that hinders market competition

Other/comment

Please write your answer here:

Part C – Medical Devices Survey

□

Q1. Please indicate those disease areas in which you have knowledge of medical devices: *

Please choose the appropriate response for each item:

	Yes	No
Cardiovascular disease	<input type="radio"/>	<input type="radio"/>
Malignant neoplasms	<input type="radio"/>	<input type="radio"/>
Sense organ diseases	<input type="radio"/>	<input type="radio"/>
Respiratory diseases	<input type="radio"/>	<input type="radio"/>

Remember you can roll your cursor over a term for examples.

Part C- (Q3-5) Factors affecting medical device availability

[]

Q3. For those priority medical devices that you indicated are currently available, please rank what factors have contributed to their availability in your setting:

All your answers must be different.
Please select at least 5 answers

Please number each box in order of preference from 1 to 8

Please choose at least 5 items.

- Availability of the device in the national medical device market
- Affordability of the device or service (because it is reimbursable)
- Affordability of the device or service (that is not reimbursable and the person has to pay as out-of-pocket expenditure)
- Appropriateness of the device or service in terms of current practice
- Acceptability to patients
- Acceptability to health care personnel
- Quality of the devices
- Other factors (please specify in comment)

[]Comments for Q3

Please write your answer here:

[]

Q4. For those medical devices that you indicated are currently not available, please rank what factors you believe have contributed to their unavailability in your country.

All your answers must be different.
Please select at least 5 answers

Please number each box in order of preference from 1 to 8

Please choose at least 5 items.

- Lack of capital and/or recurrent funding (please comment if you choose this one)
- Unavailability of the device in the national medical device market
- Unaffordability of the device to those clients of the service in which it is used
- Unsuitability of the device in terms of current practice
- Lack of acceptance of the device by patients
- Lack of acceptance of the device by health care personnel
- Unacceptable quality of the device
- Other factors (please specify in comments)

[]Comments for Q4.

Please write your answer here:

[]

Q5. Which of the following do you believe would improve access to Priority Medical Devices for non-communicable diseases and ageing populations in your country?

*

Please choose the appropriate response for each item:

	Not important	Important	Very important
Improve governance and policy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have a regulatory process for medical devices (if not available)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase regulatory efficiency (if available but long response time)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve levels of training for health care personnel by manufacturers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase availability of donated devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase local production of devices in your country, to increase availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decrease cost of available devices/ services to consumers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve quality of available devices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve infrastructure and health service provision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve distribution of products or services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase funds for maintenance of medical equipment to avoid down time that makes them unavailable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please provide details in comments)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[]Comments for Q5.

Please write your answer here:

Part C - Q6 - Any other medical devices not mentioned

[] Are there any other medical devices that are needed, but not affordable or accessible in your setting?

Please write your answer here:

Thankyou for completing the survey, your responses have been saved.

If you know of others who plan to complete the survey please let them know that responses are required by **28 February 2014** (*new deadline*).

The survey data will be analysed, put in context with other sources of information, and a report produced by 31 March 2014.

OUTCOMES

The report will include:

- a refined list of priority (essential) assistive devices that respond to the burdens of disease/functional impairment in the 6 countries considered;
- priority actions to enable the development, availability, and access to the devices in the 6 countries considered.

Please let WHO Kobe know if you would like to be advised when the report becomes available. You can contact [Dr Jostacio Lapitan](#) for further information.

2014-03-27 – 11:25

Submit your survey.

Thank you for completing this survey.

Appendix B: Linking specific assistive devices (from ISO 9999) to the table of 22 Activities/Functions

Table of 22 Activities/Functions (covering ICF domains)

Is it a priority that older people be able to independently:

1. Get dressed including tying shoes, working zippers, and doing buttons
2. Reach and lift down a 2kg object (bag of flour) from just above your head
3. Carry out light housework
4. Grip with your hands
5. Move in and out of a chair
6. Walk 500m (two or three blocks)
7. Walk from one room to another on the same level
8. Walk up one flight of stairs
9. Get into and out of bed
10. Have a bath or shower, including getting in and out of the bath or shower
11. Go to the toilet including getting on and off the toilet
12. Get in and out of a vehicle
13. Hear and understand others
14. Communicate effectively with another person
15. See writing/symbols at a reading distance
16. Manage health care including follow health advice
17. Manage the energy needed for daily tasks
18. Eat and drink as independently as possible
19. Undertake employment (paid or unpaid)
20. Experience intimate/sexual relations
21. Taking care of a family member
22. Participating in community activities including visiting with relatives or friends

bath/shower seats, soap dispensers, non-slip mats, long handles sponge, bidet
canes, walking stick, crutches
walking frame
handrails, grab bars
grip tongs
urine/faeces collection bags
nail brushes, nail files
sliding board, transfer belt
enhanced lighting
flat thresholds, wider doors
non-slip surface finish
transfer hoists
jar opener, tube squeezer
lever handles, large switches
tweezers, forearm support

mobility devices indoor*
spectacles, magnifiers adapted knives, adapted kettle
grip tongs, push sticks, long handled duster, adapted dustpan
enhanced lighting
minimal thresholds, door holders, floor coverings
safety barriers for stairs, non-slip floor finishes
visual alarms (e.g. smoke), personal emergency alarm, medication reminder
arm orthotic arm prosthetic
clothes washer, adapted scissors, modified ironing board
jar opener, tube squeezer
lever door handles, large switches, timers
adapted garden shears, kneeling bench, modified cultivator
pet litter box cleaner, adapted grooming tools

* Mobility Devices Indoor was a 'super subclass' that included a number of mobility device subclasses for indoor use (e.g., manual wheelchair, rollator, crutches, walking stick, etc.)

Related AD lists (ISO 9999 – in subclasses) – respondents rate/rank these lists (22 in all)

Appendix C: Final survey assistive device subclasses

Title	Examples
AD for gardening and lawn care	adapted cutters, kneeling bench, modified cultivator
AD for hunting and fishing	fishing accessory, wheelchair rifle mount
AD for care of animals (pet care)	litter box cleaner, adapted pet grooming tools
AD for preparing food and drink	adapted knives, stove guards, microwave oven
AD for eating and drinking	special cups, modified utensils, feeders
AD for doing housework	long handled duster, adapted dustpan, clothes washer, adapted scissors, modified ironing board
AD for controlling from a distance	environmental control device, TV remote control
AD for holding, opening or manipulating objects	tweezers, pen holder, manuscript holder, forearm support, jar opener, tube squeezer, clamps
AD for extended reach	grip tongs, push sticks
AD for carrying and transporting	tray, shopping trolley
Adapted clothing and AD for dressing	adapted clothes, hand protection, dressing hook, shoehorns, sock/stocking aid, hip pads
AD for toileting	adapted commodes/toilets, raised toilet seat, toilet paper tongs, bedpans
AD for managing continence	incontinence pads, urine/faeces collection bags, stoma shields, urethral/anal plugs
AD for washing, bathing and showering	bath/shower seats, soap dispensers, non-slip mats
AD for personal care	nail brushes, nail files, adapted hair brush, razor, toothbrush, makeup application
AD for sexual activities	AD for erection
AD for seeing	spectacles, magnifiers
AD for hearing	hearing aids, headphones
AD for voice production	voice generators, voice amplifiers
AD for drawing and writing	modified pencil/pen, signature guide, word processor, writing board
AD that record, play and display audio/visual information	radio, television, induction loop system
AD for face-to-face communication	word/letter board, speech output devices
AD for telephone and messaging	large button telephone, intercom, entry phone
AD for alarming, indicating, reminding and signalling	visual alarms, personal emergency alarm, medication reminder
AD for reading	audio books, page turner, readers

Title	Examples
Accessible computer (hardware + software)	computer, access software, screen reader software, tactile display
AD for cognitive assistance	dementia dolls, companion robots
Equipment for movement, strength and balance training	exercise bicycles standing frames, hand/finger exercisers
AD for training in social skills	tools and resources to build social skills
Adapted furniture and accessories	adapted chair, cushions, back supports, leg/foot support, chair leg extenders, adapted table/desk
Adapted beds	adjustable bed, bed lifts, bedrails
Supporting handrails and grab bars	handrails, grab bars
Modification or AD for building access	wider door, low threshold, ramp, door/window/curtain opener, improved lighting
Safety equipment for home and other places	safety barriers, non-slip surface
AD for operating and controlling devices	door handles, large switches, timers
AD for environmental improvement	air conditioner, light dimmer, sound insulation
Manual wheelchairs	manual wheelchair
Powered wheelchairs	powered wheelchair
AD for walking, manipulated by one arm	canes, walking stick, crutches
AD for changing body position (AD for transfer and turning)	sliding board, lifting belt
AD for lifting persons	transfer hoists
AD for walking, manipulated by both arms	walking frame, rollator
Upper limb orthotics	wrist splint, elbow orthotic
Upper limb prosthetic	forearm prosthetic, whole arm prosthetic
Spinal and cranial orthoses	neck/spinal brace, corset
Lower limb orthotic/prosthetic	Ankle foot orthosis, prosthetic foot/leg, knee brace
AD for music or art/craft	adapted musical tools, photographic equipment, handicraft tools, easel
AD for camping and caravanning	accessible caravan, outdoor walker
AD for games and sport	adapted board games, cards, sport equipment

AD = assistive device

Notes: The ISO 9999 term “assistive products” has been replaced throughout the survey and this report with the term “assistive devices”.

Shaded items were created for the survey by grouping ISO 9999 subclasses.

Appendix D: Assistive device lists in the respondents' rank order with average rating for each function/activity

Able to be clean and hygienic

AD	Average rating
AD for personal care	4.0
AD for toileting	4.4
AD for washing, bathing and showering	4.1
AD for seeing	4.2
AD for managing continence	4.0
Safety equipment for home and other places	4.2
AD for cognitive assistance	3.8
AD for walking, manipulated by one arm	4.0
AD for transfer and turning	3.8
Supporting handrails and grab bars	4.1
AD for walking, manipulated by both arms	3.9
Non AD: Personal assistance	3.7
AD for lifting persons	3.4
AD for holding, opening or manipulating objects	3.6
AD for operating and controlling devices	3.3
Modification or AD for building access	3.6
AD for extended reach	3.3

Able to dress

AD	Average rating
Adapted clothing and AD for dressing	4.0
AD for seeing	4.0
AD for cognitive assistance	3.8
Supporting handrails and grab bars	3.9
AD for transfer and turning	3.8
Non AD: Personal assistance	3.9

AD	Average rating
Adapted furniture and accessories	3.8
Upper limb orthotics	3.6
Upper limb prosthetic	3.3
AD for extended reach	3.5
AD for managing continence	3.7
Adapted beds	3.5
Modification or AD for building access	3.5

Transfer to or from bed or chair

AD	Average rating
AD for transfer and turning	4.1
Adapted beds	4.1
Supporting handrails and grab bars	4.3
Adapted furniture and accessories	3.8
AD for lifting persons	3.9
Non AD: Personal assistance	3.9
Upper limb orthotics	3.5
Upper limb prosthetic	3.3

Move about and use transport

AD	Average rating
Manual wheelchairs	4.3
AD for seeing	4.2
AD for walking, manipulated by one arm	4.3
Modification or AD for building access	4.1
Powered wheelchairs	3.9
AD for transfer and turning	4.0
Supporting handrails and grab bars	4.3
AD for walking, manipulated by both arms	4.1
Lower limb orthotic/prosthetic	3.8
AD for cognitive assistance	3.9
Non AD: Personal assistance	4.2
AD for hearing	3.9
AD for operating and controlling devices	3.6
AD for controlling from a distance	3.6
AD for lifting persons	3.4

Grip or pick up items and do housework

AD	Average rating
AD for preparing food and drink	4.2
AD for seeing	4.2
AD for holding, opening or manipulating objects	4.1
Safety equipment for home and other places	4.2
AD for doing housework	3.9
Non AD: Personal assistance	4.0
Upper limb orthotics	3.8
AD for extended reach	3.8
AD for operating and controlling devices	3.7
Supporting handrails and grab bars	3.8
Modification or AD for building access	3.5
AD for alarming, indicating, reminding and signalling	3.8
Upper limb prosthetic	3.9
AD for gardening and lawn care	2.9
AD for care of animals (pet care)	2.7

Eat and drink as independently as possible

AD	Average rating
AD for eating and drinking	4.5
AD for seeing	4.3
AD for holding, opening or manipulating objects	4.1
AD for preparing food and drink	4.1
Upper limb orthotics	3.9
AD for cognitive assistance	4.1
Upper limb prosthetic	3.9
Safety equipment for home and other places	4.0
Non AD: Personal assistance	4.0
Adapted furniture and accessories	3.7
AD for operating and controlling devices	3.6
AD for extended reach	3.7
Modification or AD for building access	3.4
Other prosthetics	3.5

Able to hear and communicate

AD	Average rating
AD for hearing	4.5
AD for cognitive assistance	4.1
AD for telephone and messaging	4.2
AD for face-to-face communication	4.0
AD for alarming, indicating, reminding and signalling	4.1
Accessible computer (hardware + software)	3.9
AD that record, play and display audio/visual information	3.9
AD for voice production	4.1
Non AD: Personal assistance	3.2
Adapted furniture and accessories	3.5
AD for environmental improvement	3.8
AD for controlling from a distance	3.5

Able to see and understand writing

AD	Average rating
AD for seeing	4.6
AD for reading	4.2
Accessible computer (hardware + software)	3.9
AD for drawing and writing	3.9
AD for telephone and messaging	4.0
Non AD: Personal assistance	3.6
Modification or AD for building access	3.5
Adapted furniture and accessories	3.5

Manage health care and fatigue including following health advice

AD	Average rating
AD for personal care	4.1
Equipment for movement, strength and balance training	4.1
AD for washing, bathing and showering	4.1
AD for cognitive assistance	3.8
AD for transfer and turning	4.0
Adapted beds	3.9
AD for environmental improvement	3.8

AD	Average rating
AD for reading	3.7
AD for alarming, indicating, reminding and signalling	3.7
Non AD: Personal assistance	4.0
AD for carrying and transporting	3.9
AD for preparing food and drink	3.7
Adapted furniture and accessories	3.7
Modification or AD for building access	3.7
AD for operating and controlling devices	3.5
AD for controlling from a distance	3.5
AD for holding, opening or manipulating objects	3.5
AD for telephone and messaging	3.6
AD for extended reach	3.2

Participate in community activities (can include employment) and visiting others

AD	Average rating
AD for cognitive assistance	4.0
AD for carrying and transporting	4.2
AD for transfer and turning	3.9
Modification or AD for building access	4.2
Equipment for movement, strength and balance training	3.7
AD for environmental improvement	4.2
AD for reading	3.9
AD for personal care	4.0
AD for controlling from a distance	3.7
AD for operating and controlling devices	3.7
AD for alarming, indicating, reminding and signalling	3.9
Non AD: Personal assistance	3.6
AD for telephone and messaging	3.9
AD for preparing food and drink	3.4
AD for washing, bathing and showering	3.7
Adapted furniture and accessories	3.5
AD for extended reach	3.4
AD for holding, opening or manipulating objects	3.6
Adapted beds	2.9

Take care of a family member

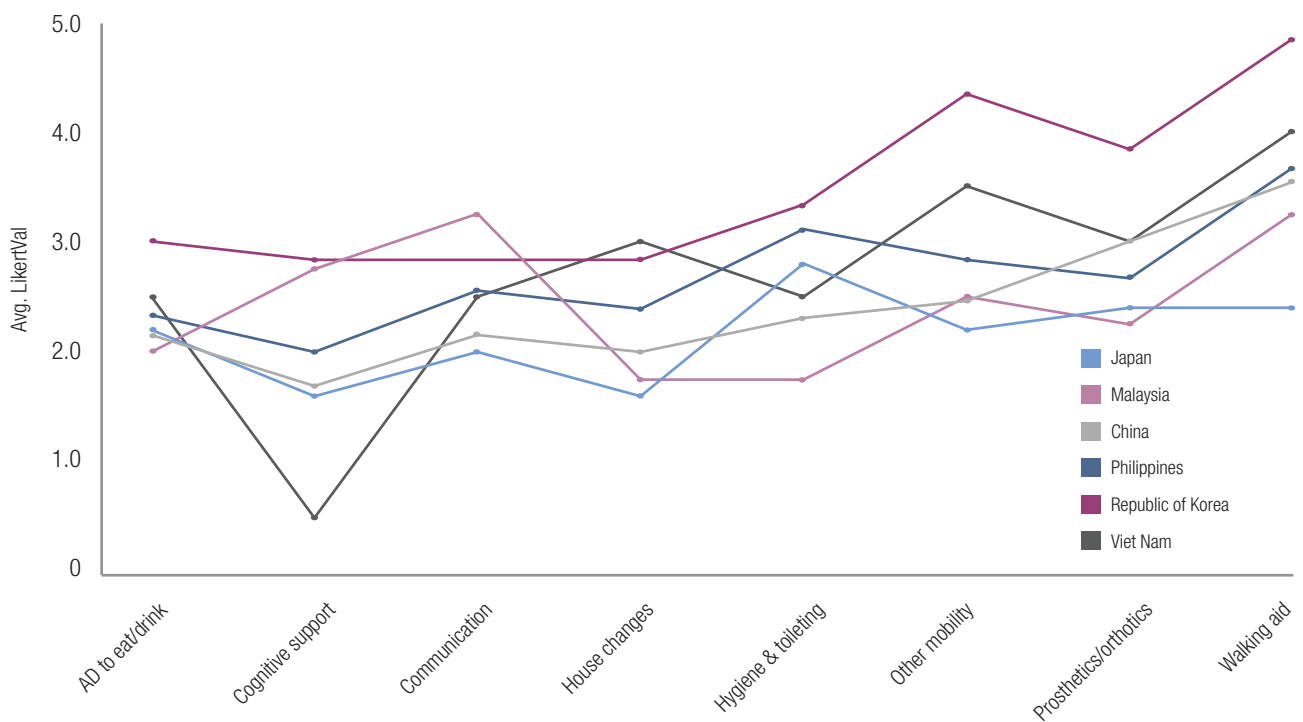
AD	Average rating
AD for seeing	4.2
Safety equipment for home and other places	4.2
AD for cognitive assistance	4.0
AD for hearing	4.2
AD for doing housework	4.0
AD for preparing food and drink	4.1
Adapted furniture and accessories	3.8
AD for alarming, indicating, reminding and signalling	4.0
Modification or AD for building access	4.0
Non AD: Personal assistance	3.0
AD for operating and controlling devices	3.6
AD for controlling from a distance	3.8
Upper limb orthotics	3.4
AD for extended reach	3.8
Upper limb prosthetic	3.4
AD for telephone and messaging	4.1
AD for care of animals (pet care)	3.1

Experience intimate/sexual relations

AD	Average rating
AD for managing continence	4.0
AD for personal care	4.0
AD for sexual activities	3.8
Adapted beds	3.9
AD for transfer and turning	3.8
AD for preparing food and drink	3.5
Non AD: Personal assistance	3.3

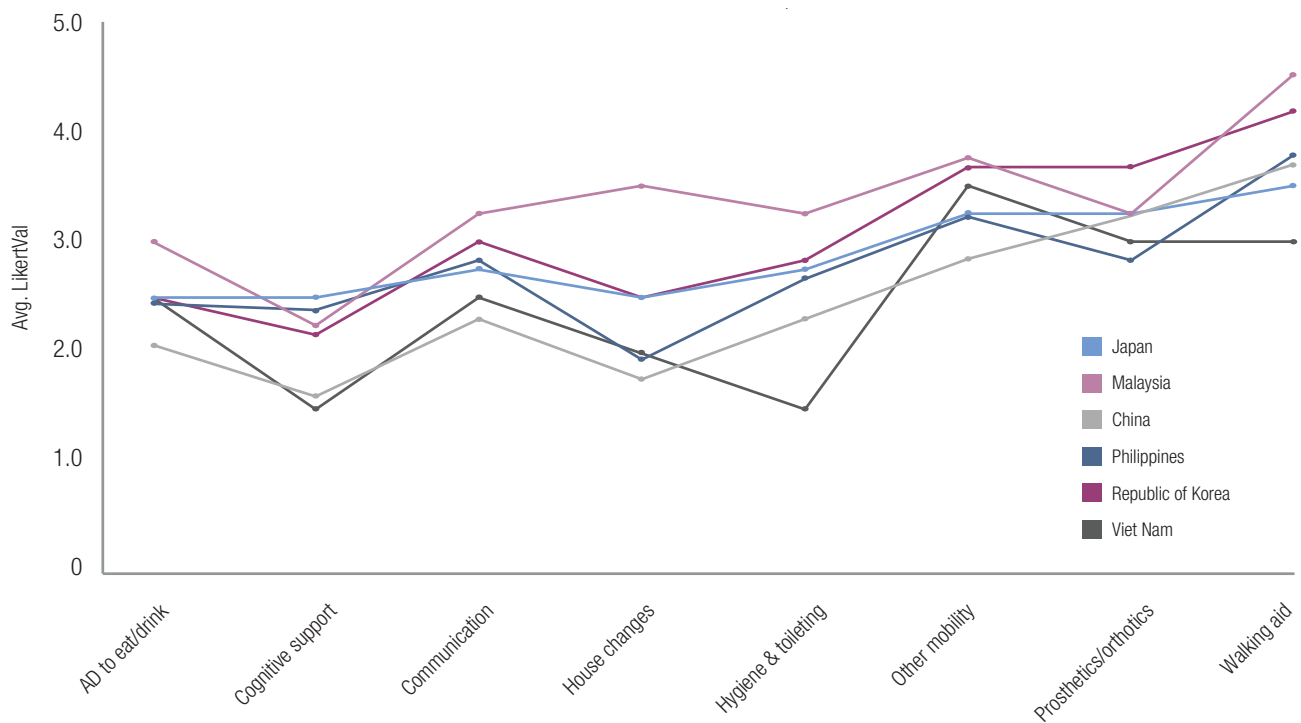
Appendix E: Rating of available assistive device groups for accessibility, acceptability, adaptability, affordability, availability and quality

Accessibility: Do older people find the following available devices accessible?



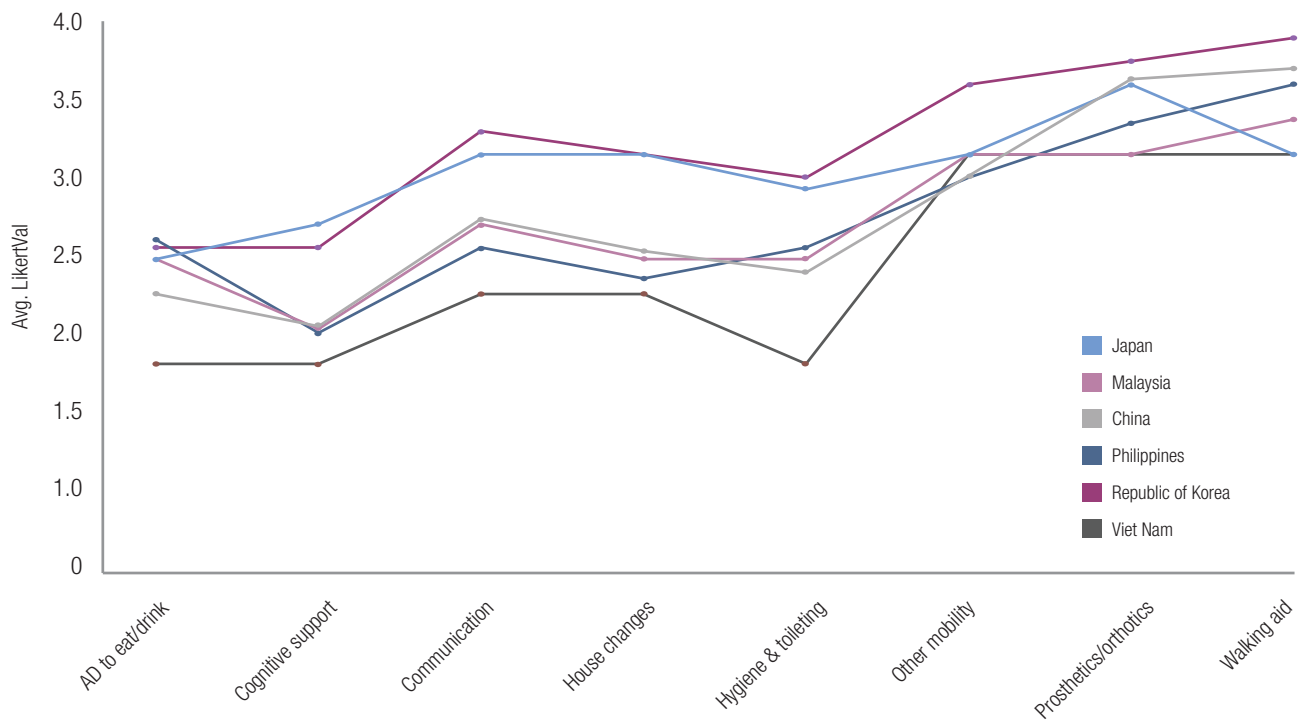
AD = assistive device.

Acceptability: Do older people find the following devices appropriate, useful and helpful in their lives?



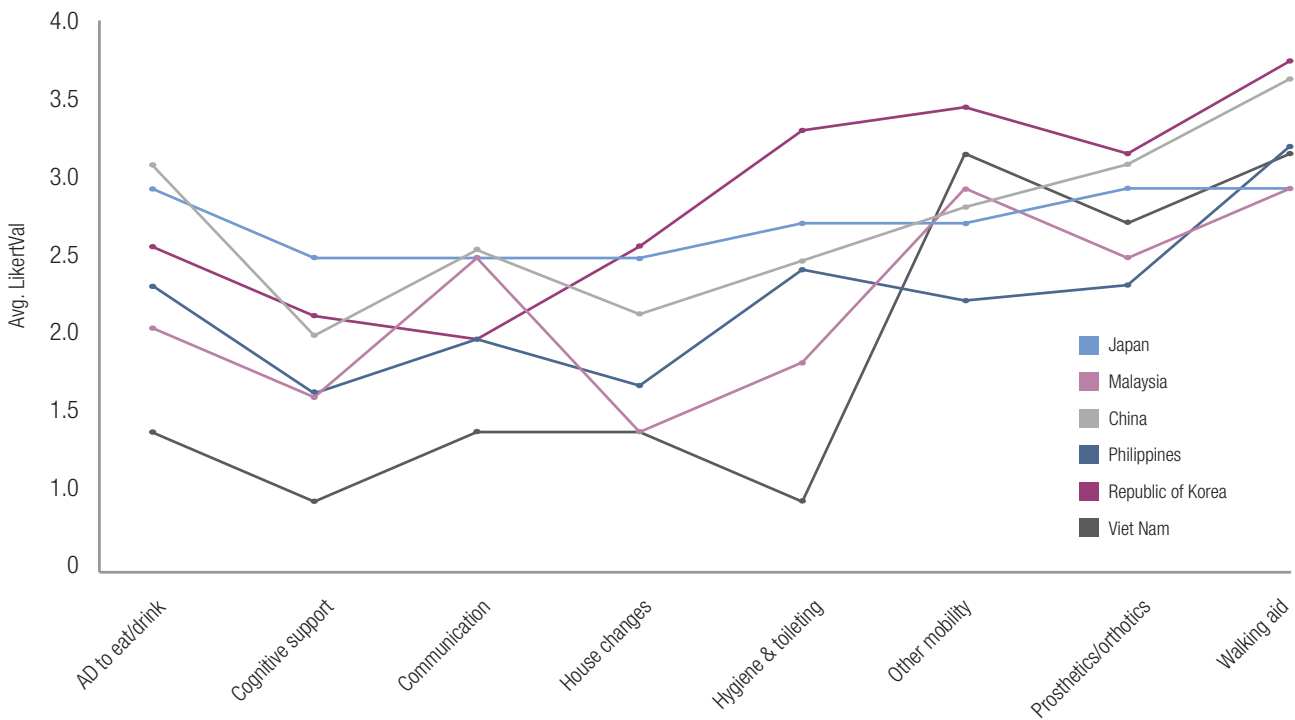
AD = assistive device.

Adaptability: Are the following devices adaptable/adjustable enough to meet each individual's needs, in your context?



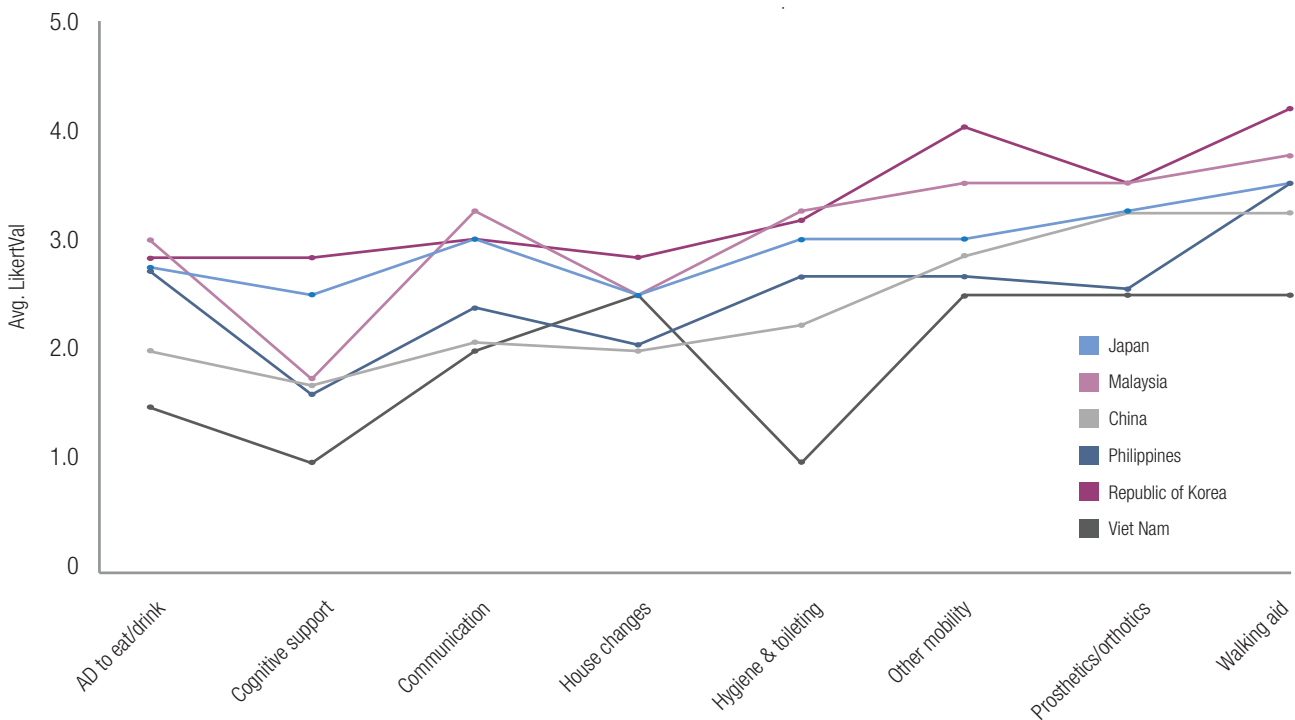
AD = assistive device.

Affordability: Are the following devices available to people/families at a cost they can afford?



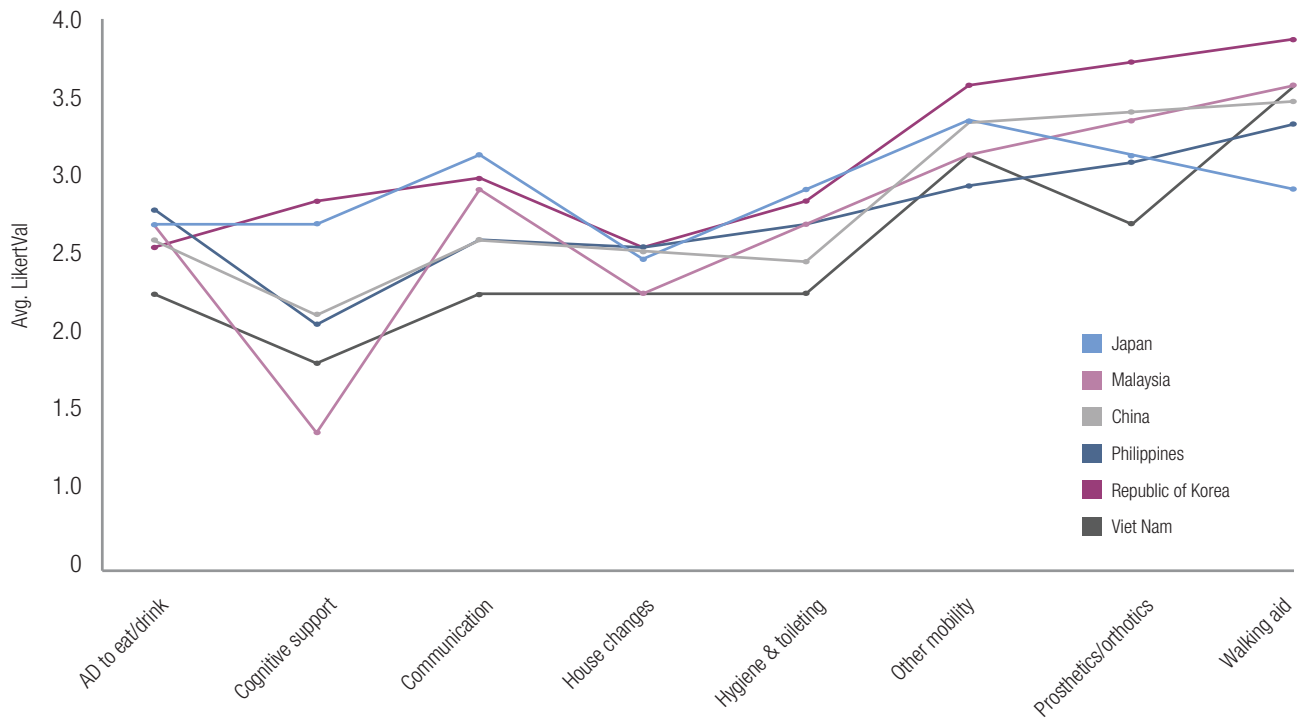
AD = assistive device.

Availability: Are the necessary services and trained personnel to assess for and prescribe the following devices readily available to older people?



AD = assistive device.

Quality: Are the following devices of sufficient quality for their intended purpose?



AD = assistive device.



**World Health
Organization**

**World Health Organization Centre for
Health Development (WHO Kobe Centre)**

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OLDER PEOPLE WHO WESTERN PACIFIC REGION ASSISTIVE DEVICES FOR NEEDS SURVEY



SURVEY OF NEEDS FOR ASSISTIVE AND MEDICAL DEVICES FOR OLDER PEOPLE IN SIX COUNTRIES OF THE WHO WESTERN PACIFIC REGION

**China, Japan, Malaysia, the Philippines,
the Republic of Korea and Viet Nam**



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