Report

UK-India Workshop on Affordable Assisted Living Technologies for Older People

Venue: IISc Bangalore

Date: 19 November 2014

Organised by:

The UK Science and Innovation Network India

Email: Sheryl Anchan

Supported by:

Biogenesis, Bengaluru

| Assisted Living Technologies for older people | 2014 |

The UK-India closed door workshop on assisted living technologies (ALT) for the elderly was a follow-up to the ageing exploratory workshop that was held in January 2014. Assisted living technologies for older people was the discussion theme of the workshop. Participants from India and the UK brainstormed on potential UK-India collaborative opportunities in this area and way forward.

The workshop was held in the margins of the 3rd World Congress on Gerontology in Bengaluru, organised by Biogenesis.

Assisted Living Technologies for older people	2014

WORKSHOP PROGRAMME

<table>
<tr><td colspan="3" align="center">UK-India Workshop on Affordable Assisted Living Technologies for the Elderly

J N Tata Auditorium, Indian Institute of Sciences, Bengaluru
19 November 2015</td></tr>
<tr><td>09.30-10.00</td><td>Registration and welcome</td><td></td></tr>
<tr><td>10.00-10.10</td><td>Opening Session

• Dr Tom Wells
Deputy Head-Science and Innovation Network

• Dr V P Rao
Scientific Advisor, Biogenesis Euro Indian Health Cluster</td><td></td></tr>
<tr><td>10.15-11.05</td><td>Session 1: Scene- Setting : ALTs in India and the UK
Chair: Dr Gangadharan</td><td></td></tr>
<tr><td></td><td>(Ten-min presentation by each, followed by five min Q&A)

• ALTs for older people in the UK: current role and directions for future innovation

• Factors influencing the use of aids for disability in India and main disabilities amongst the elderly in India based on UNFPA Study

• Challenges to use ALTs in the Rural Indian Scenario and government initiatives to encourage technological interventions for the elderly</td><td>Professor Mark Hawley, University of Sheffield

Professor K S James, Institute of Social and Economic Change, Bangalore

Dr Pretesh Kiran, St John's National Academy of Health Sciences, Bangalore</td></tr>
<tr><td>11.05-11.10</td><td>Coffee</td><td></td></tr>
<tr><td>11.15-12.15</td><td>Session 2: ALTS for the elderly : Research and NGOs perspectives
Chair : Dr Amit Arora, British Geriatrics Society</td><td></td></tr>
<tr><td></td><td>(Ten-min presentation by each, followed by five min Q&A)

• Sensor technologies at home: applications for the Indian set up

• Ageing Research: Ongoing projects with India-benefits and challenges</td><td>Ms Patty Holley, University of Bristol

Dr Sarah Hillcoat-Nallétamby, Swansea University</td></tr>
</table>

Assisted Living Technologies for older people	2014

	• ALTs in India -NGO perspective	Dr Radha Murthy, Nightingale Trust Bangalore
12.15-13.15	*Lunch*	
13.15-14.30	**Session 3: Tackling the issue using technological interventions – government , academia and industry perspectives**	
	(Ten-min presentation by each, followed by five min Q&A)	
	• Models for health and care at home – applying UK experience to India?	Professor Mark Hawley, University of Sheffield
	• Health challenges faced by the elderly in India and medical services/systems in place to tackle the issue	Dr Vikas Bhatia, AIIMS
	• Industry perspective on the future market potential in this area in India	Dr Gangadharan, Heritage India , Hyderabad
	• UK policy in relation to ALTs for the elderly and available ALT equipment in the UK	Dr Amit Arora, British Geriatrics Society
	• C-CAMP's role in translating and supporting innovative technologies by entrepreneurs/start-ups	Dr Taslimarif Syyed, C-CAMP Bangalore
14.30-15.30	**Panel Discussion:** UK-India collaborative opportunities and way forward *Chair: Dr Radha Murthy* Panelists: Mukul Kishore, Motivation India Mark Hawley, Sheffield University Sarah Hillcoat-Nallétamby, Swansea University Sailesh Misra, Silver Innings	
16.00-16.15	Wrap up of discussions	Professor K S James and Ms Patty Holley
16.15-16.30	Closing Remarks	Mr Sunil Kumar British Deputy High Commission, Bangalore
End of programme		

Session 1:

Challenges to use ALTs in the Rural Indian Scenario and government initiatives to encourage technological interventions for the elderly

India has a large proportion of older people – 8.2 per cent of the total population which is nearly 100 million (projected to cross 200 million by 2050).Elderly in urban areas comprise of about thirty per cent of the Indian population. Most of the technological interventions in recent times seem to be targeted to only this set of population. More attention and focus needs to be steered towards the remaining seventy percent of the elderly living in the rural parts of the country.

It has been documented that the disability rate in the age group of 60-70 years is much lower than those above the age of seventy years. The proportion of elderly who are independent for their daily maintenance is only thirty per cent. Thirty percent of elderly people live below the poverty line and thirty percent of the elderly in the rural areas do not work, are either living alone or with a spouse.

Factors that determine health conditions amongst elderly in India mainly include:

1)Burden of diseases
2)Poor compliance of medicines
3)Psychosocial issues
4)Caregiver burden
5)Healthcare availability, accessibility and utilization

Medical problems include:
1)Acute Health problems- Studies have shown that the elderly have at least 8-10 episodes of acute health problems in a year, for which some of them do not have access to healthcare in the rural settings.
2) Chronic health problems- Besides the elderly who are disabled, functional elderly people as well do not have access to health care for a routine check.
3) Multiple morbidity
4)Mental health issues
5) Functional decline

In India, eighty percent of costs are paid out of pocket and health debts plunge 40 million Indians into poverty every year. Only twenty percent of elderly have some form of Health Insurance coverage. Overall treatment costs have also increased alongside other diagnostics and investigative costs.

Social issues that should be considered with regard to designing / developing ALTs for the elderly in India include:

1) Living alone or lack of family support
2) Low literacy – About seventy percent of the Indian elderly currently do not have any formal education. Devices that are simple and easy to understand would therefore be best suitable in this context.
3) Financial issues
4) Working elderly- The devices should be designed such that the elderly can use it in their daily work-life as well.
5) Passivity- The elderly tend to have some level of passivity with regard to procuring simple ALTs.
6) Environmental issues- ALTs designed should be useable in urban as well as the rural settings.
   These issues are also compounded by:
   1) Elderly abuse
   2) Denial of rights
   3) Lack of proper policy in place specific to the needs of the elderly. There's poor awareness as well as implantation.
   4) Caregiver burden

Potential collaborative opportunities might exist in the following areas:

1) Low cost multiple diagnostics for rural settings that could also be used by basic health care givers.
   i) Use of mobile phone based technologies and integrating rapid tests for cardio-vascular diseases care. Eg: BMI, ECG, sugar, lipid, haemoglobin tests.
   ii) Diagnostics for cancer detection
   iii) Low-cost scanning (CT scan/MRI-scan)

Range of generic drugs is very limited for diseases like diabetes and hypertension, which contribute to about forty percent of the population who suffer from the disease. This could potentially be an opportunity for industries to technologically innovate and produce more effective drugs. Regulation to bring down costs of drugs needs to be revised such that more drugs can be included in the list of the existing ones.

There is a great need to bring down costs for basic Assisted Living devices like wheel chairs, walkers, medicine compliance reminder devices, cots, early warning system for emergencies, etc. Technologies need to be developed keeping in mind the rural India settings as well as the affordability factor.

Government of Karnataka initiatives for geriatric population in Karnataka:

A taskforce has been put in place by the government of Karnataka's Department of Science and Technology, which specially focuses on the technological interventions for the disabled elderly population. The taskforce comprises of experts from industry, academia, medical and engineering fraternity and government faculty. At a recent round-table discussion proposals of work were put forth in areas such as easy compliance chair, fall detection, protective hip

devices, tablet for dementia care and dental screens.

Session 2:

ALTs for the elderly: research perspectives

Challenges of getting older:

1) A rising ageing population presents many challenges for health and care services around the world.
2) There are more people in recent times living with chronic disease conditions and disabilities.
3) Increased feelings of depression and loneliness.

New approaches and solutions is the need of the hour in order to address the situation. Information technology can play a key role in finding solutions. Future healthcare challenges will not only be met by health and social care professionals, but will also need to include engineers and computer scientists. Local and national governments will need to help put the developed technologies into practice and derive its optimum benefits by putting together relevant legislations and policy in place.

SPHERE: A project run at the University of Bristol, funded by the UK's EPSRC. SPHERE is one of the biggest projects in the UK with £12million from the UK government over five years. The project focuses on affordable and accessible technologies to support 'healthy ageing', with a vision to deliver an 'Internet of Things' solution for personalized healthcare. It aims to develop a platform that can be used across all ages and diseases. SPHERE will be very interested in hosting student exchanges. This will give the opportunity to Indian researchers to work on technologies that will meet the needs of their country taking advantage of the know-how already developed in Bristol.

Challenges and benefits of using ALTs for elderly care:

1) Identifying target groups to meet specified needs amongst the elderly.

For example, elderly people suffering from dementia and their carers form a key target group. A recent WHO study mentioned about an increase in the number of people with dementia. It is very crucial to prepare family members, healthcare workers, carers and social workers for this group in order to avoid social stigmatisation and marginalisation of these groups.

2) The second major group who are neglected are the care-givers. In the current social settings, where more women are taking up jobs and supporting the family, there is understandably stress involved in this caring role. ALTs by way of ICTs can be help caring from a distance in such a context.

3) Healthcare delivery for elderly people in rural areas is also a challenge in the UK. A majority of UK's elderly population are also in rural settings. ALTs by way of ICTs can play an important role in delivering healthcare services in their home settings itself.

Factors to be considered while developing ALTs for the elderly:

1) Most of the current technologies rely on reading literacy as well as technology literacy. A majority of the elderly population seem to lack either or both of these. Could intergeneration learning or practise be a new way forward?

2) While developing and designing ALTs it is important to consider affordability and sustainability of technologies. While the United Nations have put in a lot of emphasis on 'active ageing' and there are a couple of ALTs that support active ageing, one should also bear in mind that not all cultures embrace the idea of living independently the later life stage. Hence it is important to be critical about ideas around independence, autonomy, choice of services and linking it into international agendas.

3)We need to remember that we are developing services for and to the older people and not for 'us' and need to think of older people as active consumers and not as subjects who need products. We need to link with them and see what their needs really are. There is no 'one size fits all' solution.

4) Including older people while designing and developing new technologies is a great way to make sure the right type of technologies are developed.

5) Might be useful to introduce money back schemes in case a particular technology fails or does not meet the need of the elderly person using it.

ALTs for the elderly: NGO perspectives

Assisted Living technologies essentially need to be :

1) Applicable to the community and should lead to health outcomes

2) Affordable

3) Accessible

4) Be a relief to the caregivers

5) Technologically viable, compatible and usable

Technologies needed in:

I] Home-care settings: India lacks the basic forms of technology in home-care settings. Some technologies that would really be useful in the Indian context include in the areas of:

i) Medical optimisation

ii) Remote patient monitoring

Assisted Living Technologies for older people	2014

iii) ICT-based technologies: (Tracking devices and integrated health data collection)

II] Institutional settings: India would benefit from technologies that would assist in :

  i)   Disease management (software to manage chronic health problems and disabilities)
  ii)   Cognitive fitness (to identify high-risk patients)
  iii) Remote training and supervision

Besides these, there needs to be a well-established treatment, best practices and evidence-based guidelines in place. Also, mechanisms to encourage collaborative efforts to reduce escalating costs of chronic illness and disabilities through technologies would be very useful.

Session 3: Tackling the issue using technological interventions

Models for health and care at home – applying the UK experience to India

Chronic diseases is overtaking communicable diseases in India and is one of the leading causes of death. This scenario is similar to the UK context. There is close to 900 million mobile phone users in India. India has added 200 million smart phone users in 2014 (Source: Guardian Newspaper).Though it seems like the UK experience is more applicable to the urban Indian setting, one can explore opportunities that might exist in the rural set-up as well.

Some learnings from the UK experience:

i)Technologies should be developed to solve a real problem. It is important to involve people who are actually going to use the technologies in its development and testing stage. User-centred design is a key methodology.

ii) ALTs are not about technology users alone. In most cases it's the people around the technology eg. the caregivers and health professionals, who are equally important to its success or failure.

iii) Before designing and developing a technology, one must be clear on the purpose and usage of the technology.

iv) In the UK context, it is imperative to consider the level of evidence that might need to be provided for a particular technology that is being developed. For example, if it is a health intervention, one would need to provide research-based evidence, randomised control trials which is then examined by NICE to test it for cost-effectiveness and if it could be recommended to the NHS. For a service-based design, no evidence is needed.

v)Adoption of technologies can take a long time. While developing a technology, it is important to involve all stakeholders at the very beginning. Collaboration between healthcare

professionals, academia and industry can lead to better designed interventions and can speed up adoption.

vi) Solutions need to be cost effective and widely available.

vii) It would be the wrong approach to invent new technologies and push these onto people and systems. User-centred design methodologies for technology development must be adopted and all stakeholders (end users, carers, community, healthcare professionals) should be involved throughout. This makes it more likely that ALTs will be adopted and used.

Mobile phones and smart-phone technology is becoming fairly ubiquitous in recent times and could be looked upon as one of the ways that ALTs could become affordable in both the Indian and the UK context. Smart phones are not the only technology that should be considered - there is a need for greater availability of all types of ALT, including basic walking sticks and wheelchairs etc. One problem with introducing ALTs is the stigma attached to them. Use of smart phones may not have the same stigma since they are carried by the majority of people.

Tablets and mobile phones are making a huge difference to the cost of Augmented and Alternative Communication (AAC) aids through the usage of apps. An AAC aid could cost about £8000-£10,000. But an app on a mobile /smart-phone could cost only £10-£100.

Examples of some of the technologies that could be useful in the Indian context:

1)Simple tele-health technologies: Unlike expensive tele-health devices, one could consider the usage of simple tele-health technologies which can send a text message to remind the elderly person to take their vital sign measurements and ask them to text it back. A service system then collects the information. This data is then seen by the healthcare professional. If India has 800 million mobile phone users, this might be immediately applicable in the Indian context.

2)Low-cost simple sensors combined with mobile smart phones: Such technologies enables the elderly person to self monitor and self manage their own health conditions. Professor Mark Hawley's team at the University of Sheffield, have worked with older persons suffering from stroke, chronic obstructive pulmonary disease, heart failure and chronic pain to develop such technologies. It enables older persons to support themselves, take more exercises, to stop smoking, to regulate their nutrition, to take their own vital sign measurement and to monitor their own health symptoms. Such technologies help older people to manage their own long term conditions and needs to be designed to be really easy to use by the elderly on a regular basis.

3) Technologies that enable caregivers to be supported by trained healthcare professionals: These include technologies that can enables a highly trained care-worker to oversee a group of the care workers at the lower level in the home setting, using smart phone technologies, video conferencing and monitoring at the same time.

Health problems and challenges faced by the elderly in India and recommendations for actions that could be considered and current government initiatives

When one considers developing ALTs for the elderly, one needs to consider the four main problem areas that elderly people face:

(a)Psychological (b) Medical (c) Social and (d) Functional

The major health problems that exist amongst the elderly in India include:

- i)   Senile cataract
- ii)   Glaucoma
- iii)   Nerve deafness
- iv)   Failure of special senses
- v)   Emphysema
- vi)   Osteoporosis

The major health problems associated with long term illness amongst the elderly include:

- i)   Degenerative diseases
- ii)   Diabetes
- iii)   Cancer
- iv)   Diseases of the locomotive system
- v)   Respiratory illnesses
- vi)   Genitourinary system disorder

Technologies that would be very useful for the elderly population of India includes simple techniques that could help detect sugar, cholesterol and BP levels; indicate warning signals against coronary artery diseases; early detection of cancer, etc.

Government of India initiatives:

1) A [non-communicable disease programme](#) has been introduced specially to take care of healthcare needs of people in rural areas. Under this programme all ASHA community healthcare workers are provided with a glucometer and BP meters at the village level.
2) The government has now introduced a [Urban Health Mission Programme](#), which helps meet the health needs of a poor man living in urban areas.
3) The government of India also plans introducing the [National Health Assurance Mission](#), under which every citizen of the country will be assured of healthcare.
4) A [National Health Programme for the Elderly in India](#) was introduced in 2011. This has yet to be formalized.

Recommendations and areas that need development:
Strengthening of geriatric care services at all healthcare levels

- i)   Ensuring quality preventive, curative and rehabilitative care
- ii)   Quality Training of service providers: medical and para-medical staff
- iii)   Easy availability of adequate medicines and logistics

iv) Special ambulance facilities for the elderly
v) Domiciliary visits by healthcare workers and ASHAs
vi) Regular screening camps for cataract, cancer and NCDs
vii) Mobile clinics for hard to reach places
viii) Training of elderly for self-care
ix) Better design and environment in hospitals for easy access
x) Manufacturing of affordable aids and appliances
xi) Programmes/Short certified and post graduate courses in geriatrics need to be included in medical curriculum. India needs technicians, nursing staff, social care workers who are trained in managing and taking care of elderly people.

Assisted Living Technologies for older people	2014

Key points:

- India, as the rest of the world, is facing a change in population structure with increased longevity and therefore there are growing needs in healthcare especially in the ageing population. New technologies play a role in addressing some of the needs of these changes in society.

- Technology is available, rapidly evolving and gradually becoming less expensive and easily available. Indigenous methods/modifications could work for some population groups in India. One needs to identify which patient groups need it or potentially will benefit from it and will be happy to have it while developing a technology and ensure that commercial interests are not the main motive.

- Evidence and data gathering is important as will /could inform national policy. India can learn from the UK experience. India has a rich talent pool and a lot can be achieved through knowledge sharing.

- In the first instance, a framework for ALTs for the elderly in India will need to be created in order to make sure that the needs are met in different settings:
  i) Institutional (care home, hospital or nursing home)
  ii) Home (where ALT users will primarily be older people and their informal support networks of friends, neighbours, etc)
  iii) Community (village hall, primary health care centres, etc. which act as "hubs").

1. <u>ALTs in different settings - assessing needs, preferences and capacities</u>:
India has complex and diverse populations depending upon region/state and urban/rural distinctions – there will therefore be no "one size fits all" ALT solutions.

<u>Implications for research</u>:

- needs assessments for ALTs by region/state/urban-rural locations, settings (e.g. home, community, institution) and groups (e.g. age, socio-economic, linguistic)- would be vital to ensure cultural acceptability; meeting a wide spectrum of cognitive, physical and sensory needs (e.g. visual impairments); affordability, sustainability and attractiveness to business investors. The UNFPA report shows high prevalence of chronic illnesses and disabilities for example, hence needs for technology and equipment may be very basic (e.g. hearing aids, mobility aids, etc.).
- including a wide range of stakeholders: older citizens, their families and informal carers (as service consumers), businesses (as investors and entrepreneurs), industries (for technical innovations), support and professional staff (as service providers and specialist health educators). The A4B Knowledge Exchange Project- Care in Business, led by Swansea University includes a network of business and research expertise in the area of ALTs in Swansea and could be looked as a model for developing ALTs including a range of various stakeholders.
- distinguishing settings in which ALT may be delivered, as this will determine issues of costs, accessibility, training requirements, sustainability, support systems (e.g. internet access, smart phones, etc.).

- developing needs assessment framework for each setting, to facilitate identification of ALTs, aids and equipment required per setting (e.g. personal alarms, telemedicine infrastructure, grab rails, sensor mats, camera surveillance) and what is already available in India and beyond to meet these needs. Could involve development of needs assessment surveys.

2. <u>The impact of ALTs on quality of life and well-being – should we run before we can walk?</u>
   ALTs are not as yet available wide-scale in any region of the world so their effects on older people's well-being (and/or that of their carers) are poorly understood.

   <u>Implications for research</u>:

- a "state of the art" review of the current international evidence base about the (dis)advantages of ALTs across a variety of settings, including evidence from a variety of stakeholders (see above).

3. <u>Socio-economic change and support networks</u>
   Internal and international migration play a significant role in shaping the informal support networks available to older people in India as demonstrated by research undertaken by the [Centre for Innovative Ageing](). Use of ALTs and ICTs could potentially play an increasingly important role.

   <u>Implications for research</u>:

- examining the role of ICTs and ALTs for migrant families in caring for, and supporting older family members.

- Few areas of need where technology could help in the immediate future:
    o Better hearing and vision aids.
    o Better walking aid systems (improvements in walking sticks, simmer frames) and other devices to prevent falls.
    o Low cost monitoring devices (i.e. glucose measurement).
    o Mobil apps to aid self-care of chronic health conditions.
    o Everyday utensils that are easier to handle and use.
    o Better training material for healthcare professionals (i.e. using current online media systems).
- Key to the development of all these new technologies and devices is the participation of the user in the generation of ideas and the design of the devices. At the same time local and national governments should be involved in developing pathways so the users (patients, carers, health professionals) can access new technologies. In addition, seed funding should be made available for SMEs both in India and the UK.

- Most importantly, India has a high number of trained professionals that would benefit from interchanges with researchers in the UK. Co-funded PhD studentships will be an excellent way to promote collaboration between these two nations.

Assisted Living Technologies for older people	2014

List of delegates:

1)Professor Mark Hawley	University of Sheffield
2)Dr Sarah Hillcoat-Nallétamby	Swansea University
3)Ms Patricia Holley	University of Bristol
4) Dr V P Rao	Biogenesis, Bengaluru
5)Dr Amit Arora	British Geriatrics Society
6)Ms Priya Varadarajan	UK Trade and Investment, British Deputy High Commission Bengaluru
7)Dr K R Gangadharan	Heritage India, Hyderabad
8)Dr Vikas Bhatia	AIIMS, New Delhi
9)Professor K S James	Institute of Social and Economic Change, Bengaluru
10)Dr Indira Jai Prakash	Bangalore University
11)Dr Radha Murthy	Nightingale Trust Foundation, Bengaluru
12)Sailesh Mishra	Silver Innings, Mumbai
13)Dr Pretesh Kiran	St John's National Academy of Health Sciences,Bengaluru
14)Mr Govind B S	Independent Director M/s Kirloskar Ferrous Industries Ltd
15)M Mukunda Rao	Former faculty member -IIT Madras
16)Dr Mukul Kishore	Motivation Innovation, Bengaluru
17)Dr Taslimarif Syed	C-CAMP , NCBS Bengaluru
18)Professor Jaya Sreevalsan Nair	IIITB, Bengaluru
19)Professor Subir K Roy	IIITB, Bengaluru
20)Dr Tom Wells	UK Science and Innovation Network, British Deputy High Commission Bengaluru
21)Mr Sunil Kumar	UK Science and Innovation Network, British Deputy High Commission Bengaluru
22)Ms Sheryl Anchan	UK Science and Innovation Network, British Deputy High Commission Mumbai

Photos

_____