

**A study on perception of Elderly residents and Clinicians on Telecare Services and factors influencing its adoption.**

Dissertation Submitted to



**The IIHMR University, Jaipur**

For partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

In

Hospital and Health Management

By

Priya Sharma

Under Supervision and Guidance of

Prof. Neetu Purohit

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### **DECLARATION BY STUDENT**

I hereby declare that this dissertation titled “**A study on perception of Elderly residents on Telecare Services and factors influencing its adoption**” is the Bonafide record of my original researchwork. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



**Priya Sharma**

**MBA-Hospital and Health Management**

**IIHMR University, Jaipur**

**01-07-2021**

## **CERTIFICATE**

This is to certify that **Priya Sharma** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her/his internship at Silver Genie Pvt. Ltd. during April 01, 2021 to July 01, 2021.

**PLACE:** Silver Genie Pvt. Ltd, Delhi

**DATE:** 02-07-2021



**Mrs. Divya Gurudeo**

**Research Officer**

**Silver Genie Pvt. Ltd.**

## **CERTIFICATE**

This is to certify that dissertation titled “**A study on perception of Elderly residents on Telecare Services and factors influencing its adoption**” is a record of the research work undertaken by **Priya Sharma** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Prof. Neetu Purohit  
IIHMR University, Jaipur

School Dean  
IIHMR University, Jaipur

Date

Date

## **ABSTRACT**

### **Research Question**

What is the perception of Elderly residents and clinicians on Telecare Services and factors influencing its adoption?

### **Research Objective**

1. To assess the knowledge and gather perception of elderly on Telecare Services.
2. To gather the perception of clinicians on Telecare services.
3. To analyse the challenges and factors influencing the adoption of Telecare services.

### **Methodology**

1. **Research study-** Descriptive Study
2. **Data source-** Primary data
3. **Data collection tool-**
  - self-administered online questionnaire for elders.
  - qualitative interview with empanelled clinician.
4. **Sampling technique-** Convenience Sampling
5. **Target population-**
  - Elders whose health records were saved in Silver Genie Eldercare data-base.
  - Clinicians empanelled with Silver Genie Eldercare organization.
6. **Sample size-**
  - the questionnaire was sent to 400 elders, out of which 230 responded. after exclusion of incomplete responses 200 responses were selected for the study.
  - qualitative interview was taken of the 5 empanelled general physicians.

### **Results**

Mixed perceptions were seen amongst the elders. Majority of the perceptions and barriers were about technology-related, Privacy-related, cost-related issues. However even though elders were satisfied with clinician/nurse and TCC interaction, yet they

preferred in-person visit more than online. Some respondents preferred telecare services only for short term use.

### **Conclusion**

To remove the perceived barriers amongst the elderly, focus on awareness and importance of telecare services as both preventive and curative health model must be given. Raising the satisfaction with service provider coordinator, nurse and clinician will further improve the adoption of telecare services.

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## **TABLE OF CONTENTS**

| <b>S.No.</b>               | <b>Title</b>                                                                                         | <b>Page No.</b> |
|----------------------------|------------------------------------------------------------------------------------------------------|-----------------|
| 1.<br>1.1.<br>1.2.<br>1.3. | Introduction<br>What are Telecare Services<br>Scenario of Ageing in India<br>Need for Telemonitoring | 3-8             |
| 2.                         | Review of literature                                                                                 | 9-12            |
| 3.<br>3.1.<br>3.2.         | Aim of the Study<br>Objectives of Study<br>Methodology                                               | 13-14           |
| 4.                         | Results                                                                                              | 15-16           |
| 5.                         | Result Interpretation                                                                                | 17-19           |
| 6.                         | Discussion                                                                                           | 20-22           |
| 7.                         | Conclusions                                                                                          | 23              |
| 8.                         | References                                                                                           | 24-25           |

## **ABBREVIATIONS**

TCS- Tele-care Services

TMD- Telemonitoring Devices

TCC- Tele-Care Coordinator

TM- Telemedicine

TH- Tele Health

LTC- Long Term Chronic Illness

HTS- Home Telemonitoring System

GP- General Physician

## **1. INTRODUCTION**

### **1.1. What are Telecare Services?**

Telecare is defined as “care provided to patients remotely via telecommunications technology, either synchronous (live video) or asynchronous (store-and-forward, remote patient monitoring).” The telecare service is a social and sanitary healthcare system within the home that is designed to meet the needs of people who require assistance with their health needs.

Telecare is often used to increase the access of patients to care, help patients with recovery and well-being at home and monitor risk or early warning signs of health conditions at a remote distance. The care can be delivered through a range of technology, including telephones, virtual online visits and remote patient monitoring centres.

Telecare also includes social and lifestyle monitoring. Telecare aims to assist elderly or disabled people in remaining independent in their homes for as long as possible.

Silver Genie has members from all over India, with majority of them based in West Bengal, Delhi/NCR and Punjab. Recently, the team decided to launch a 100-day Telecare program in collaboration with Fitbit, India.

It is a known fact that for any program to be a success, it is important to understand the knowledge and perceptions of the customer first and customize and design the intervention accordingly. Hence to evaluate the benefit and success of Telecare program, the Silver Genie team identified the need to gain a better understanding of the telecare service's perceptions, its health effect and the ability of patients to self-care and to investigate the tele-care adoption challenges.

## **1.2. Scenario of Ageing in India**

India, the second most popular country in the world, has undergone a dramatic transition over the last 50 years, bringing nearly threefold over 60 years of age (i.e., the elderly). This pattern is said to continue and it is projected that the proportion of Indians aged 60 and older will rise from 8 percent of the total population in 2015 to 19 percent by 2050. This might be a small increase in percentage, but in absolute terms a remarkable figure. The population structure estimates projected in 2025 retain a "pyramid" shape in Northern India, while the share of the elderly is projected to significantly increase in Southern India.

A few important characteristics of the elderly population in India are noteworthy. In India, the percentage of old age dependency is 14.2, and the number of elderly women over the past two decades has outweighed the number of older men, posing a significant risk for elderly women, since they are comparatively more dependent than the elderly. The southern states (Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu) are the greatest ageing drivers of India, while the elderly population is also growing in other Indian countries (particularly in Haryana, Himachal Pradesh, Maharashtra, Orissa and Punjab). Numerous studies have shown that this increasing elderly indigenous population pose a very little health behaviour.

Increase in Chronic non-communicable disease (NCD), which are mostly life-style-based diseases and disabilities, has emerged majorly as demographic transition continues. Indian elderly people are more prone to chronic disease than acute. Increased NCDs are particularly known to cause death among the elderly, with chronic Bronchitis, anaemia, high blood pressure, chest pain, kidney pain, digestive disorders, vision problems, diabetes, rheumatism and depression as the most common cause of death among the elderly.

“India is ageing much faster than previously thought, and by 2050, it is expected to have nearly 20% of the world's population aged 60 and up, with the largest number of older adults in the world,” said Prasun Chatterjee, Department of Geriatrics, All India Institute of Medical Sciences (AIIMS). He warned that the current health-care system for the elderly is inadequate in comparison to the perceived needs, particularly for actively screening and managing various age-related complex health problems such as falls, frailty, dementia, and multimorbidity. “There is no mechanism in place to prevent and deal with the menacing health problems of the twenty-first century, such as

dementia and loneliness,” he said. According to Dr. Chatterjee, preparation for active ageing in India is not given a priority. He noted that the dependency ratio would increase exponentially due to inaction as a result of an ageing population lead demographic dividend. In addition, a practical solution has not been discussed in our country to encourage our senior citizen to be active in later lives.

More people than ever are expected to be at risk of developing chronic conditions, ill health and dependence that are often associated with old age by 2030. This increase in the burden of illness from acute life threats to chronically disabled diseases that are not transmitted due to population ageing has led to limitations, including temporary or permanent functional disabilities and a lower standard of living. Due to the rising healthcare and long-term costs, rapid digitisation following the COVID-19 pandemic has been a major challenge to the healthcare system in treating elders with comorbidities.

Due to implementation of National Health Care of Elderly (NPHCE) across the country and rapid growth in digital healthcare, telemedicine sector poses a Parson great potential to meet the need of increasing demands of healthcare by old-age on the health systems and can prove to be an affordable solution enhancing the quality healthcare for the elderly.

### **1.3. Need of Telecare services for Elderly**

Because of the abovementioned scenario, the chronic incidence, the need for postoperative healthcare, high stress and the current nuclear family system, informal support structures fall and fail to take care of the elderly or chronically ill.

Health support structures are also collapsing.

The cost of healthcare continues to increase and the quality of services is not responding to modern society's needs. Telecare has the potential to solve these challenges in a possible way. "Constant health monitoring of seniors through wearables and fitness trackers has shown that EPI (Early Intervention practises) is facilitated by different avenues and the release rates are reduced; Surveys undertaken in Europe and the United States indicate that elders prefer to undergo treatment and healthcare monitoring in their own homes rather than being hospitalised."(1) "Monitoring elders remotely have several advantages, which include EIP, reduce relapse rates, while reduction in costs and convenience become a possible outcome."(1)

Telemedicine refers to the delivery of clinical services at a distance usually through various communicating devices. "The practice of telemedicine largely breaks down into three types of solutions, store-and-forward, tele-monitoring and real-time encounters"(2).

Telecare is a way of tracking the vital signs and activities of people from a distance with advanced technologies and equipment. This kind of monitoring is often used to treat potential patients, such as those with heart conditions and recently released from the hospital.

Telecare is also very useful for preventing a variety of chronic conditions. For example, diabetics can use it to follow up on your level of glucose and to send data to your doctor. Elderly people can be conveniently and cheaply monitored at home or in assisted living areas. In the current situation, children are unable to spend quality time with parents, which has lead to social segregation and depression amongst the seniors, and that is why home telecare services such as teleconsultation, medicines procurement and reminder, diagnostic tests, the use of therapeutical devices and monitoring facilities, mobility devices, medical supplies can prove to be a long-term cost-effective solution in providing essential health services to the elderly at comfort of their homes.

After COVID-19 pandemic, a growing trend to improve home monitoring services in order to meet the demand for elderly care can be clearly seen. An automated process for the transmission of data to the respective healthcare provider/doctor on senior's health status is increasingly used to intermittently track their vitals, sleep pattern etc. and capture clinical parameters to support patient care.

Telecare can reduce mortality, emergency hospitalisation and visits to the healthcare clinics as well as improve patients' perceived quality of life, evidence-based prescribing, and overall disease management.

As the world moves toward remote monitoring technologies, continuous and rapid disease recognition, remote healthcare is a growing research field. The advantages of Telecare patients include: early and ongoing detection of ailments, the ability to consistently screen patients, the avoidance of exacerbating illnesses and less than ideal passing, a cost decrease in hospitalizations, a decrease in the number of hospitalizations, the acquisition of increasingly exact readings while allowing patients to engage in regular daily exercises, and the improvement of elders' quality of life, improve productivity in medical services by utilising communication technology, crisis restorative consideration, administration for elder patients with mobility issues, crisis care for car accidents and various wounds, and utilisation of non-obtrusive therapeutic mediations.

Telecare focuses on certain subgroups, such as patients with chronic diseases, patients after getting medical procedures and the elderly people. All of these conditions need to be regularly monitored. Good telecare services are aimed at ensuring that every patient is as pleased with the customary life as possible. There is a great opportunity and profitability in setting up telecare at the comfort of home under individual circumstances that benefit elders rather than just to be confined to a costly emergency visit or hospitalization. As a consequence, complete structures are created to support the concept through various advances. Older people can take part and measure their daily exercises, sleep pattern, nutrition, water intake etc, with the help of a family member with these new systems at home. As a result, these applications make it easy to sit, stand, use the toilet, play and sleep while causing the user the least discomfort.

The Indian home Telecare market is expected to reach \$6.21 billion in 2030. In India, the adoption of home Telecare solutions is still in its early stages. India is far behind,

representing just 2% of total Health expenditure. In India, however, growth rates are much higher, driven by a number of key factors.

The main objective of this system is to alleviate the anxiety of elderly individuals and their families. It is the State's responsibility in India to make medical care available and affordable to individuals from all walks of life. Every human being has a health right. It is divided into primary, secondary and tertiary levels to ensure that every country has a custom system for health care.

The ageing population of India is a significant contributor to the development of India as a lucrative market for home telecare service providers. The types of service, the price of services and service packages vary from organisation to organisation. Silver Genie, Eldercare identified this and started operating as a viable business opportunity. Many other private players are also targeting the same in Indian market.



## **2. REVIEW OF LITERATURE**

In this paper, recent literature from year 2019-2021 was analysed. Reviewed literature had two main objectives, first is to review the benefits of use of at home-monitoring devices in predicting early detection of diseases and second is to review knowledge, perception and acceptance of Telecare in Indian adults of age 60 and above with co-morbidities. There has been a lot of research published in other countries on early prediction or maintaining co-morbidities using home monitoring systems.

Researcher Jain SH. stated, “In the world I work in senior-care, the dominant perception was that aging adult either couldn’t or wouldn’t use digital technologies to access care; but they proved us wrong.” According to the U.S. Department of Health and Human Services, 0.1 percent of Medicare primary care visits were provided through telehealth in February 2020. By April, 43.5 percent of visits were virtual. Older Americans used telehealth to access primary care, behavioural health care and cancer care.(3)

Researchers Carolyn M Astley, Robyn A Clarke, Susie Cartledge, et.al. concluded that implementation of adaptive models for healthcare delivery using digital platforms has been accelerated during the COVID19 pandemic to assist maintenance of senior care. Facilitating transition to digital healthcare delivery for the community and ensuring the digital divide is considered, is a crucial challenge, especially among vulnerable groups, such as the elderly. Quality of outcomes, both positive and negative from digital models of healthcare delivery, require ongoing evaluation and elderly end-user design and support are a priority.(4)

A study for the effectiveness and feasibility of home-based Telecare for rehabilitation purpose in elderly people in Southeast Asian countries said that although they could not obtain conclusive evidence due to limited relevant information with heterogeneity across the studies, findings suggest that home-based Telecare can be a strategy for rehabilitation service delivery with acceptable feasibility comparable to conventional rehabilitation for elderly people in the area(5).

Peeters et.al. showed that elders' perceived attributes - relative advantage, compatibility, complexity and observability have a significant effect on adoption of home telecare explaining 61% of the variance. The chance of adoption is higher when a client already receives long-term personal and/or nursing care, he/she lives alone and when there are

fixed daily contacts via the home telecare system. The perception of possible benefits can still be enhanced(6).

Markert C, Sasangohar F, Mortazavi BJ, Fields S. et.al. concluded that Telecare systems including health coaching have been implemented in older populations as a viable intervention method for managing chronic conditions had mixed results. Health coaching combined with Telecare may be an effective solution for providing healthcare to older adults. However, health coaching is predominantly performed by human coaches with limited use of technology to augment or replace the human coach. The opportunity exists to expand health coaching to include automated coaching(7).

Jana et.al. found that telecare can improve seniors' confidence in evaluating and addressing their symptoms in relation to heart failure. This patient management approach should be coupled with targeted education geared toward self-maintenance and self-management practices(8).

Al-khafajiy et.al. findings of study conducted to analyse the effectiveness of Telecare of elderly through wearable sensors reveals that the proposed system can improve clinical decision supports while facilitating Early Intervention Practices. Extensive simulation results indicate a superior performance of the proposed system: low latency. Thus, the system runs efficiently and is cost-effective in terms of data acquisition and manipulation(1)

Le Deist F, Latouille M et.al. said that telecare appears to be a future solution to this problem, while improving comfort of life, management, autonomy and eliminating the constraints of travel and distance. While the utility of this technology has been demonstrated, the focus here is on the fact that the conditions for development and use of this technology involve user acceptability and the ability to meet their expectations(9).

Bujnowska-Fedak and Grata-Borkowska conducted a study in Poland that reveals that if technologies are introduced that are familiar, usable, desirable, and cost-effective, and able to be adapted to seniors' lives and plans, then telecare would become an integral part of the lives of the elderly in the near future, allowing them to function independently in a friendly home environment(10).

Matheus et.al. studied usefulness of Telecare in type 1 diabetes patients during the COVID-19 pandemic in Brazil, showed that Telecare T1D patients during the pandemic

helped reduce the need for in-person consultations, detect clinical and psychological needs, and offer support to patients in addition to monitoring suspected COVID-19 cases and the adherence to protective measures(11).

Researcher Johan Lyth, Leli lynd, Hans Pearson et.al. studied a total of 36 COPD and 58 HF elder patients with advanced stages of disease. They concluded that the number of hospitalizations was significantly reduced for both HF and COPD patients participating in Telecare. Accordingly, hospitalization costs were significantly reduced for both groups, but the total healthcare cost was not significantly different from the expected costs(12).

According to Huygens et al. nationwide survey to assess the Uptake and Use of Telecare in Chronic Care Between 2014 and 2019 in the Netherlands both elder patients and professionals, Telecare improves the quality of life and quality of care. Although it was concluded that high level of skilled individuals is required for both monitoring implementation and sustainability of Telecare model(13).

Telecare was valued by patients who found it empowering and convenient. This, combined with initial professional concern that increased surveillance may create dependency led to the development of a more patient led service. However, despite a number of initial concerns being addressed as the service evolved, primary care professionals identified a number of barriers to widespread routine adoption of Telecare, many of which could be addressed by improved system design(14).

Ross, 2021 said, as the many different barriers to telehealth break and the industry sees rising acceptance and adoption, one thing has never been clearer: The future of health care is in the home, COVID-19 pandemic has shown the importance of in-home care and proven to be a strong catalyst for telehealth adoption. By getting accessible services to vulnerable populations and maintaining patient-provider relationships over distance, providers proved to the CDC that telehealth has become an essential element in maintaining continuity of care indicated in a survey conducted by CDC(15).

### **3. AIM OF THE STUDY**

While telecare has received considerable attention in terms of the efficiency of clinical outcomes and health care costs, their evaluations have to be expanded to include the effects perceived by users by organisational analyses. Telecare does not simply 'work' or 'not work' because its success relies on a variety of factors, such as telecare organisation, complex technology and user compliance, and the involvement of clinicians and users. Proper approaches are necessary to gain a better understanding of their technological, organisational and individual experience. The telecare studies can offer valuable lessons. Lessons learned from telecare-user perspective studies can be useful insights into Telecare's broader integration as a new care model.

This study focuses on better understanding of elder's acceptance of Telecare service, their perceived impact, and adoption challenges. It provides overview of the health status of the participants, followed by research settings and methods. Then the results of the knowledge and perceptions of participants are presented, followed by a discussion of the factors influencing the implementation and adoption of Telecare services.

#### **3.1. Research Question**

What is the perception of Elderly residents and Clinicians on Telecare Services and factors influencing its adoption?

#### **3.2. Research Objective**

- To assess the knowledge and gather perception of elderly on telecare services.
- To gather the perception of empanelled clinicians on telecare services.
- To analyse the challenges and factors influencing the adoption of Telecare services.

#### **4. METHODOLOGY**

Review of Literature included drawing upon key information available on internet through review of scholarly journal articles, presentations, and documents containing the keywords 'home health, home care, elderly healthcare, elder health trends in India, Silver tsunami ageing, Telecare in India, remote monitoring' and found in Google Scholar, PubMed and ResearchGate. All resources, including studies, reports, and policy briefs, were consolidated, summarized and discussed to determine key findings.

**RESEARCH STUDY-** Descriptive study

**DATA SOURCE-** Primary data

**DATA COLLECTION TOOL-**

- Self-Administered online questionnaire for elders.
- Qualitative Interview with empanelled clinician.

**SAMPLING TECHNIQUE-** Convenience Sampling

**TARGET POPULATION-**

- Elders whose health records were saved in Silver Genie, Eldercare data-base.

**SAMPLE SIZE-**

- The questionnaire was sent to 400 elders, out of which 230 responded. After exclusion of incomplete responses 200 responses were selected for the study.
- Qualitative interview was taken of the 5 empanelled general physicians.

## **5. RESULT**

Total number of participants were 200 elders who are members of the organization. The majority of the participants were located in 2 states that is Delhi/NCR and Punjab.

Average age of the respondents were 65 years and out of those only 32% were female participants. Common chronic illness in the respondents were seen to be Hypertensive (41%), Diabetes (40%), arthritis/joint issues (53%), urinary problems (5%), Parkinson disease (2%). Some elders (12%) were having anxiety and depression issues.

Results include elder's perspective on self-health using TCS, experience, interaction with GP, usability of technology and compatibility, previous experience and implementation barriers.

### **SET1: Elder's perceived Knowledge and acceptance**

It includes analysis of 200 responses to the online questionnaire. The respondents were located in Punjab and Delhi. Average age was 65.75 years old and 34% were female.

- **Perspective on Self-Health and experience**

59% of elders found that TCS had improved their knowledge about their symptoms to watch for. 69% of them felt were more involved in monitoring of their health conditions. A sense of assurance was reported by 49% of elders. 31% of them also felt that they were able to better manage their health condition and 30% reported improvement in their self-care as a result of telemonitoring.

- **Interaction with General Practitioner/Nurses and TCC**

Overall experience of interacting with empanelled GPs was positive. Majority (47%) of them reported that they were satisfied with their assistance and understanding their conditions online. 61% of seniors preferred in-person contact with their healthcare professionals, nurses, etc. However, 32% of reported their dissatisfaction with TCC. Only 24% agreed that TM improved their communications with their GPs.

- **Usability and Compatibility with Technology**

Elders were overall had mixed feelings of using the TMD. Participants found TMD easy to use (57%) and felt confident in using it despite 22% of them reported that sometimes there were occasions of frustration. Responses also showed that some elders 21% found the device unnecessarily complex, However, 42% said that they would need a technical person's support in using the device.

In terms of compatibility, 50% participants responded that using the monitoring device could be incorporated in their daily routine, and 76% replied as TCS can be the way they would like to manage their health.

- **TCS experience**

Majority of elders (59%) reported that they were satisfied with current TCS. Some of them (27%) answered that they wanted to continue using the service after the COVID-19 and 46% preferred Telecare services for short-term use. Few of them (12%) felt that seeing their vital signs every day and talking to TCC made them anxious or worried.

- **Cost**

66% perceived that the devices are costly and so are their repairs, if damaged.

- **Privacy and Confidentiality**

79% were concerned about the privacy and security of their health information.

## **SET 2: GPs perspective of eldercare through TCS and challenges**

The results in this section are based on qualitative interview with empanelled GP's

- **Perspective on eldercare using TCS**

Responses stated that TCS helps improving knowledge about the signs and symptoms of their nature of their chronic. All 5 of them agreed that consistent body vital monitoring improves the elders' self-care and make them feel more secure about their health conditions.

They agreed that TCS have potential to improve the overall quality of care and have positive impact on the care of chronic disease. The GPs we interviewed also pointed out that they prefer to educate the elders in their vicinity about their diseases and self-care during regular contact with the elders.

- **Interaction**

GPs reported positively about interaction with elders in the interview. However, the communications between GPs/specialists were not very efficient with some elders at some times.

- **Technology satisfaction and usability**

User interface is Easy to use, preferred WhatsApp video consultations but complained by the workload.

2 out of the 5 GPs, preferred face to face interaction with patients in case of multiple symptoms or complicated case, specially where elder is unable to tell symptoms clearly.

## **ADOPTION AND IMPLEMENTATION BARRIERS**

In-depth insights related to implementation barriers like collaboration with TCS providing organization, the need for a dedicated TCC, at-home nurse, technicians with good behaviour, doctors liability concerns, the need to engage with GPs, the need to integrate with clinical pathway and practices and Developing guidelines/protocols for telemonitoring.

Adoption Barriers like finance, technology, lack of skills, culture were seen.



## **DISCUSSION**

An application that analyses body-vital readings immediately and notifies medical staff for additional diagnosis is becoming necessary with an increasing number of non-communicable diseases such as hypotension and stress in the ageing patient population. Homestay health inspections are important and provide a handy solution to our health issues with busy working plans in our lives and our inability to meet health costs. Patients, technology and doctors can collaborate to improve healthcare accessibility, efficiency and affordability.

Popularity of wearables are increasing rapidly. However, usage in older people, who can benefit most from it, continue to remain low. While a wealth of research is underway to assess the performance, accuracy, specificity and sensibility of wearable devices, there are still many barriers which must be addressed to optimise telecare adoption. Factors that help to comprehend obstacles and facilitators to inform acceptability, adoption, wearability and durability of the use are lacking in research in India.

The study focused on the perspective of elders and empanelled GPs in using TCS for management of chronic conditions. The analyses can be summarized as follows.

Our results showed that elders had a positive attitude toward TCS. Several factors could affect their overall perception, including elders' self-health experience, doctors support, technology complexity, compatibility, privacy issues, financial issues.

**Knowledge & experience:** It is key factors for fostering self-management behaviors and the management of chronic diseases for elders living in the community. Improved knowledge about their conditions and the ability of managing their conditions were reported by the elders in the study. The clinicians' perceptions on patient empowerment were consistent with findings from elders' responses. They believed that telemonitoring has a role in improving the overall quality of care provided to elders.

**Doctor's support:** Besides improved knowledge, peace of mind and in-person communication with telemonitoring, care coordinators can also contribute to elders' acceptance. Elders' increased sense of security from being monitored and sense of reassurance with improved access to telemonitoring care coordinators have been reported as the perceived benefits of telemonitoring. The study elders reported a

positive experience in terms of the support. This positive interaction perception was also evidenced in the GPs responses.

**Technology Assistance:** Technology related barriers were prominent. Device usability and suitability play important roles in elders' acceptance and compliance. Small font size, multiple display, lack of guidance and protocols affects the adoption rate. Monitoring technologies must be specifically tailored to the cognitive and physical capabilities of older people.

### **Factors affecting healthcare professional's TCS adoption**

Although the GPs in our study believed that body vital monitoring had a positive effect on the elders, they also experienced challenges which impacted on their overall satisfaction. There were some reported issues like

**Workload:** For TCS to be a successful model, efforts must be made by the organizations and staff to shape the telemonitoring service on the top of their existing work. An increase workload for telemonitoring care coordinator (e.g. monitoring and telephone calls, follow-ups) represents a challenge. Supporting clinicians to manage the changes to workload and patient cases could improve clinicians' acceptance.

**Guideline:** Establishing guidelines and protocols to use TMD and supporting TCS coordinators to manage changes in work and routines is also important.

## **RECOMMENDATIONS**

### **Getting Elders involved, engaged and stay motivated**

- Offering support to each individual to meet their needs, not just when their readings are outside their parameters
- Enabling elders make informed choices since they can see their measurement readings
- Empowering self-management through awareness and education
- Giving elders confidence in taking care of their own health and peace of mind that there is someone to assist them if necessary
- Reinforcing their interest in their own health through the visual effect of seeing data, especially female elders
- Identifying deterioration or new issues

### **Motivation and encouragement in GPs**

- Raising motivation of GPs through periodic interactions and feedbacks with patients as well as collaborated organizations. Incorporating those feedbacks.
- Offering Financial benefits and perks.
- Sending reports on periodic basis regarding elders' monitoring results to their GPs.
- Involving GPs in awareness campaigns
- A dedicated TCC is required who can form bonds with elders, communicate effectively with GPs, telemonitor and take follow-ups of clients periodically. The majority of participants stated that Telecare was more than just making phone calls to patients and GPs. Face-to-face communication with a Telecare coordinator can also contribute to elder acceptance.

## **Recommendations for Organization**

- The concierge (dedicated customer coordination officer) must support each individual, not only when their reading is outside of their parameter, but at all times. Try to enable the elderly to make informed choices using their body-vital readings that can be seen, educate them to use medical devices along with their advantages.
- Give elders confidence to care for their own health and peace of mind that somebody is always present for their help whenever necessary.
- The acceptability and compliance are critical factors. The TCS must be specifically tailored to the cognitive, physical and living condition of each customer.
- Visual messages/instruction with elder friendly images and clear audio message in the language preferred by client must be sent accordingly.
- The activities of the client must be coordinated and properly documented.
- Strengthen their interest in their own health by showing them visual data, through appreciation remarks by doctor, etc.
- Identifying deterioration or new issues through periodic check-ups on their clients.
- There were also issues of interaction with General physician. Empanelled GPs must be educated about the process of Telecare and the access to monitoring data. There must be positive interaction between GPs and patients.
- Involving the family members of elders in their health can also provide a great support morally to their old parents.

## **CONCLUSION**

The study clearly shows the perception of elders and clinicians perceived impact of TCS on chronic care in elders and implementation of a service. Increased elder empowerment and satisfaction with the GPs and Nurses interaction, were perceived by both elders and GP's. Qualitative analysis of GPs showed that technology is biggest concern and sometimes it can cause dissatisfaction and also affect the efficiency of results. An adaptive approach is required for programs to become fully incorporated into routine TCS service delivery and part of long-term strategic planning. It is essential to address doctor's and TCC's challenges regarding increased workload, communication and guideline requirements. The collaboration of different clinicians from hospital, primary care and community services is required to realize the potential of TCS becoming a core part of care pathways for management of various chronic conditions and as a preventive Health model.

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