



A STUDY OF VIRTUAL ASSISTANTS IN PATIENT ENGAGEMENT ENHANCEMENT IN INDIAN HEALTHCARE ORGANIZATIONS

Priyanka Jose

Department of Management, OPJS University, Churu, Rajasthan

Dr. Amit K Srivastav

Department of Management, OPJS University, Churu, Rajasthan

ABSTRACT

Healthcare virtual assistants are primarily used in the healthcare industry to improve clinical workflows and assist healthcare professionals with low-value administrative tasks such as accessing patients' records, delivering therapy guidelines and information to patients, improving patient discharge and following up on the treatment process, and effectively providing non-clinical guidance. It allows healthcare practitioners to concentrate on the most important aspects of care delivery, increasing the total productivity of healthcare systems. With Intelligent Virtual Assistants (IVAs) or Medical Virtual Assistants, the healthcare sector is ready to take patient involvement to the next level (MVAs). One option for improving health outcomes and providing better patient care at reduced costs is to involve virtual assistants. Medical virtual assistants (MVAs) support a healthcare institution in gathering demographic data, insurance information, patient health history, finance/costing procurement information, data mining, and analysis of all records. MVAs also make it easier for healthcare businesses to reallocate their IT and human resources in order to combat escalating health IT expenses. As a result, enterprises may improve healthcare quality, patient happiness, and patient outcomes while keeping the same or fewer personnel staff. The objective of the study was to gather data on the benefits of using virtual assistants in Indian healthcare organizations which can enhance patient engagement. The study is a Non-experimental research design which uses the descriptive survey approach. The method used in the research is the quantitative method. The research included a sample size of 200. The study included survey which was conducted across Indian Hospitals (Pune, Hyderabad, Chennai). Cluster and convenience sampling methods are used in the study. The study concluded that there are many benefits of using virtual assistants in the Indian healthcare organizations as it enhances patient engagement. The significance of the study is that it will help the healthcare professionals to make use of the virtual assistants which utilizes patient-centric approach and provides maximum patient satisfaction.

Keywords: *Medical virtual assistants, descriptive survey approach, non-experimental research, patient-centric approach.*

I. INTRODUCTION

1.1. Virtual assistants

Voice is seen as the next greatest interface in the IT sector, with speech being a more convenient, quicker, more engaging method to communicate. Furthermore, it is versatile. VAs is the technology to watch, with major companies like Amazon, Apple, Google, and Microsoft investing heavily in AI and intelligent virtual assistants. The goal of these behemoths is to boost the use of virtual assistants (VAs) as a preferred



manner of doing business, communicating, and interacting with companies. The life sciences and healthcare businesses are no exception to the trend of investing in technology to achieve a competitive edge. Through the use of AI-driven virtual assistant services, the sector is attempting to increase patient involvement. John et. al in 2019 conducted a study on the role of virtual assistants in the healthcare industry which concluded that the virtual assistants contribute in providing quality care to the patients as well as enhance the services rendered by the healthcare professionals to the patients.

1.2. Different ways by which virtual assistants can enhance patient engagement are as follows:

- **Interactive voice response and automated calling systems:** Virtual assistants are becoming more popular for keeping track of patients' pre- and post-treatment progress. VAs may prevent cancellations and lower overdue payments by including SMS and phone confirmation to a previous appointment. Due to the growing use of AI, Deep Learning, Natural Language Processing, and voice recognition apps on smartphones, healthcare companies are using MVA in clinical settings utilising Voice over Internet Protocol (VoIP).
- **Use of health apps:** Patients are being encouraged to utilise their smart devices to monitor their fitness progress, make payments, and arrange many of their daily activities. Patients are encouraged to utilise their mobile devices to purchase refills, confirm appointments, follow their health, and fill out any paperwork before their visits using mHealth applications on platforms like Amazon Echo, which are equipped with VAs.
- **Patient health portals:** Patient health portals are still being adopted at a slow pace. Patients should be able to use speech and text recognition technology to confirm appointments, fill out medical and social history forms, update health records, examine lab results, and settle any outstanding amounts via online portals with virtual assistants.
- **Discrete information:** MVAs are capable of interacting with patients and digitally capturing their data. Using cloud technology and IoT linked devices, the information can be repeated and confirmed in real time. When a patient interacts with the virtual assistant, a query to a medicine hub is verified, and any previously recorded information in the facility's database is compared. After everything is validated, all of the data is processed and entered into the EHR system, eliminating the need for paper records.
- **Access at any time and from anywhere:** Having verbal and visible engagement, rather than a phone call or computer communication, is considerably more beneficial for many persons in the ageing population. Websites, cell phones, tablets, and PCs may all be used to access MVAs. Returning patients are recognised by these systems, and recent contacts are remembered.

II. RESEARCH METHODOLOGY

2.1 Research Approach: The study was conducted using a descriptive survey technique and a non-experimental research design. Non-experimental research is generally descriptive or correlational in nature.

2.2. Population and Sample: A population is defined in statistics as a group of recognized people who are brought together for the purpose of extracting data from them. A sample is a subset of a population that is selected for the purpose of gathering, measuring, and collecting data so that reliable information may be provided. The target population in the study group were healthcare professionals, nurses,



researchers and medical students from cities like Pune, Hyderabad and Chennai. The sample size used in the study was 200 people which helped to gather data on the benefits of using virtual assistants in Indian healthcare organizations which can enhance patient engagement.

2.3. Research Tools: Cluster sampling was used in the research, in which the samples were clustered together based on age, gender, and history of kidney stones. This is a real-world illustration of probability sampling. Using this form of sampling approach, the researchers split the population into external homogeneous and interior heterogeneous groups, known as clusters. These clusters have been grouped together based on their shared characteristics. This approach is more practical since grouping the population into homogenous groups boosts the sample's feasibility and the sampling procedure requires less resources. In order to give more reliable data, convenience sampling was also employed, in which samples were taken from a larger population. This method of sampling is more practical, cost-effective, straightforward, and precise. This is the simplest kind of sampling since it does not need the research to include a specified criterion.

2.4. Data Collection Method: The study was purely descriptive in nature. Descriptive studies are observational studies that gather data on a condition or phenomena in relation to a variety of variables such as background, geography, ethnicity, gender, or time. This method comprises using surveys to collect information from a variety of individuals. This made it easier to collect data or information from research participants in a variety of scenarios. It also discusses and focuses on the reason of a certain phenomenon's occurrence. Primary data collection was used, in which the patient's data was obtained via the use of questionnaires, which assisted the researchers in comprehending and establishing the presence of a link between the two. These are first-hand experience data that has never been utilized in a prior study. Secondary data collection, on the other hand, collects information from previous research, financial records, and the media. This means doing research using data that has already been obtained. It was received by someone other than the researcher for whatever reason, and statistical analysis for this sort of data has already been done.

2.5 Statistical Analysis: The data was analyzed using the Statistical Package for the Social Sciences (SPSS). This will aid in the evaluation of the qualitative data acquired via the use of patient questionnaires.

III. RESULTS AND DISCUSSION

3.1. Virtual assistants are key to the future of healthcare in India

By enhancing medical results, patient experience, and access to care, AI has the potential to revolutionise healthcare delivery in India. Care might shift from curative to preventative in nature. Healthcare providers can increase productivity and efficiency in care delivery, allowing them to serve a bigger population with high-quality treatment. Healthcare providers will be able to spend more time on patient care and less time on burnout.

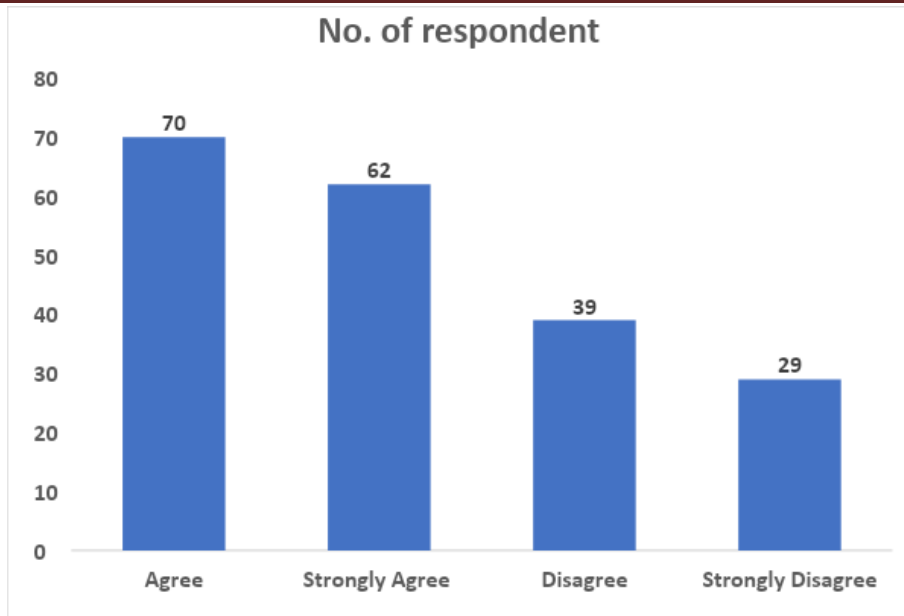


Fig 1: Virtual assistant is the future of healthcare

According to conducted survey, 70 respondents agreed, 62 respondents strongly agreed, 39 respondents disagreed and 29 respondents strongly disagreed.

3.2. Virtual assistants provide consistent information and aims at enhancing consumer experiences.

These virtual assistants help the healthcare professional to focus on the patient's health and the interaction between them as it reduces the pressure of other administrative tasks. Thus, this helps the healthcare professionals to focus on the patient which in return provides consumer satisfaction.

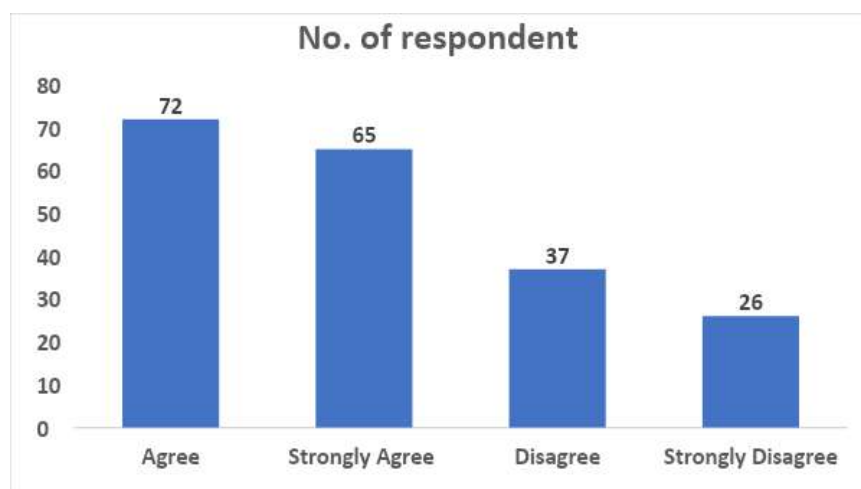


Fig 2: Enhanced consumer experiences through virtual assistant

According to the conducted survey, 72 respondents agreed, 65 respondents strongly agreed, 37 respondents disagreed and 26 respondents strongly disagreed.

3.3. Artificial intelligence can help to enhance the healthcare ecosystem

Several healthcare providers are using artificial intelligence to diagnose illnesses such as cancer earlier and more precisely. Consumer wearables and other medical equipment, paired with AI, are assisting individuals in leading better lives. Many AI applications assist healthcare staff in better understanding the requirements of the patients they care for on a daily basis. They are able to give greater feedback, advice, and support to their patients as a result of these insights. AI has the capacity to gather and analyse data, as well as provide a well-defined output to the user.

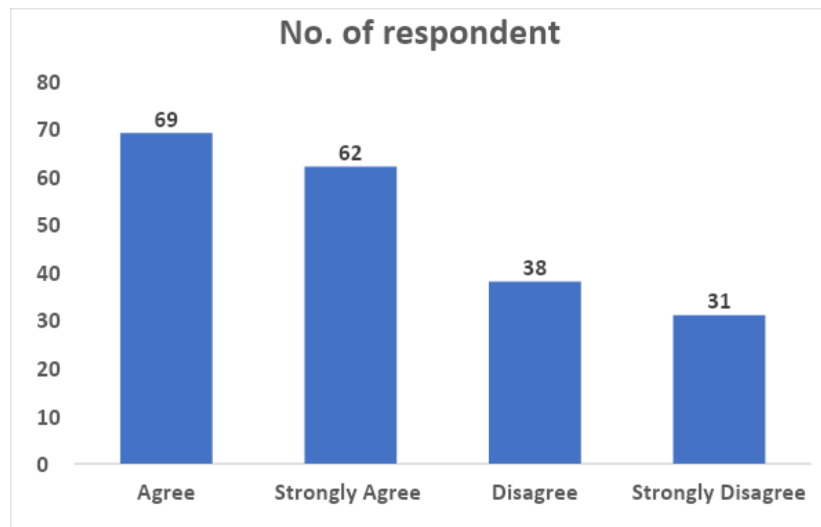


Fig 3: Artificial intelligence enhances healthcare ecosystem

According to the conducted survey, 69 respondents agreed, 62 respondents strongly agreed, 38 respondents disagreed and 31 respondents strongly disagreed.

3.4. Virtual assistants help to access consultation anytime and from anywhere which is convenient for elderly and severely-ill patients

For many individuals in the aging population, auditory and pictorial engagement is far more beneficial than a telephone conversation or electronic conversation. MVAs may be accessed from websites, smart phones, tablets, and PCs. These systems recognise returning patients and keep a record of recent interactions.

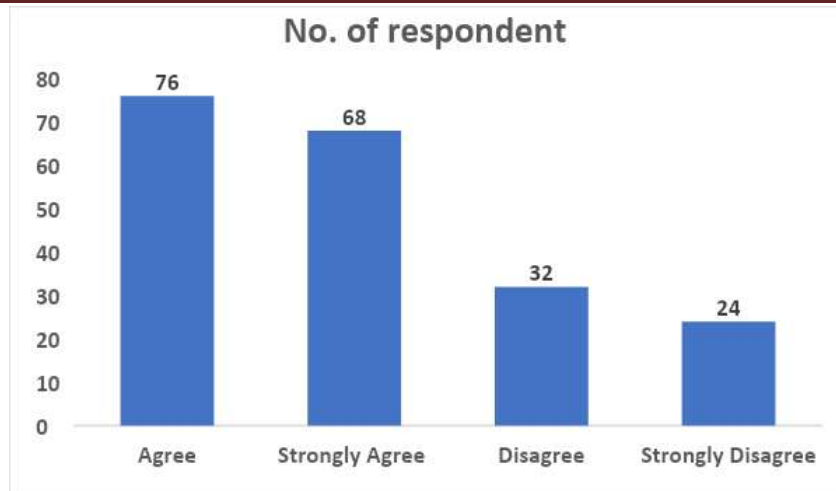


Fig 4: Virtual assistants are convenient for elderly and severely-ill patients

According to the conducted survey, 76 respondents agreed, 68 respondents strongly agreed, 32 respondents disagreed and 24 respondents strongly disagreed.

A similar study was conducted “About the role of virtual assistant in providing care to the patients who requires postoperative care” by Aaron M. Williams in 2018 which discussed how virtual assistant helped the patient to get high degree of satisfaction and it helped to reduce cost savings as well as wait times. This clearly states that the study conducted is in concordance with the previous conducted research.

IV. CONCLUSION

The main focus of the study was to gather data on the benefits of using virtual assistants in Indian healthcare organizations which can enhance patient engagement. The study concluded that with the use of virtual assistants the services become more patient-centric, enhances customer satisfaction and provides flexibility to the elderly as well as severely-ill patients to discuss their issues from the comfort of their home.

V. IMPLICATIONS OF THE STUDY

The focus of the study was to understand the benefits of using virtual assistants in Indian healthcare organizations which can enhance patient engagement. The other important part of the study was to collect data from the medical professionals, researchers, nurses and medical students to understand their view point on the benefits of using these virtual assistants in Indian healthcare organizations. The study clearly stated that there are many benefits of using virtual assistants and by making use of these in the Indian healthcare industry it will help the industry to grow in an effective manner.

VI. RECOMMENDATIONS

1. There is a need to gather data from small cities of India which will help to obtain actual benefits of using virtual assistants.



2. There is also a need to discuss about the technical issues faced by the small and remote areas of India and to overcome that such that they can also have access to this digital healthcare from the comfort of their place anytime.

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REFERENCES

1. Wand D, Rong R, Khurana KK. (2012). Telecytology in the diagnosis of pancreatic masses. *J Telemed Telecare*. 18:253-9.
2. Hwa K, Wren SM. (2013). Follow-up through telehealth post-surgery. *JAMA Surg*. 148:823-7.
3. Sathiyakumar V, Apfeld JC, Obremsky WT. (2015). Follow-ups through telemedicine in orthopedic care. *J Orthop Trauma*. 29: e139-45.
4. Capomolla S, Zanelli E. (2005). Home-based telecardiology on chronic heart failure. *J Telemed Telecare*. 1:16-8.
5. Antoniotti NM, Berg RL. (2011). Telemedicine an effective and cost-effective approach. *Laryngoscope*. 121:1422-5.
6. Torrent J, Lupianez F. TIC. (2008). Integrated care improvement. *International Journal of Integrated Care*. 14: 1-10.
7. Dieppe P, Michie S. (2008). Development and evaluation of complex interventions. *BMJ*. 337: a1665.
8. Phillips CJ, Chaves NJ, Rees G. (2015). Use of theoretical framework. *J Multidiscip Healthc*. 8:139-46.
9. Aas IH. (2001). Organizational consequences of telemedicine. *J Telemed Telecare*. 2:1-2.
10. Grigsby WJ. (2002). Assessment of growth and distribution in telemedicine. *J Rural Health*. 18(2): 348-58.
11. Broens TH. (2007). Successful telemedicine implementation determinants. *J Telemed Telecare*. 13:303-9.
12. Dunn K, Aoki N. (2003). Methods and outcome in evaluation of telemedicine. *Telemed J E Health*. 9(4): 393-401.
13. Satya Shreenivas, Michal Tendra, Timothy D Henry. (2021). Improvement in patient management through artificial intelligence. *J Med Internet Res*. 23(5): e22959.
14. Alexander Seifert, Anthony C. Smith. (2020). Role of telemedicine in long-term care. *Front. Public Health*.
15. Zank S, Scholmann A. (2020). Use of assisted technology in old age care. *Res Aging*. 42:163-73.
16. Gellert P, Hesse B, Moller S. (2018). Identifying healthcare professionals' attitudes towards ICT based interventions. *Contemp Nurse*. 54:13-25.
17. Nimrod G. (2014). Constraints and benefits upon participation in online communities. *Leis Stud*. 33:247-66.



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18. Wade VA, Hiller JE, Karnon J, Elshaug AG. (2010). A review on telehealth services. *BMC Health Serv Res.* 10:233.
 19. Mojdekar R, Afzal E, Arabloo J. (2017). Telemedicine. *Med J Islam Republic Iran.* 31:754-61.
 20. Cohen AB, Mathews SC, Dorsey ER, Bates DW, Safavi K. (2020). *Lancet Digit Health.* 2(4): e163-e165.