EVALUATION OF MANAGEMENT AND HUMAN RESOURCE CHALLENGES IN THE ESTABLISHMENT OF TELEMEDICINE IN BANDAR ABBAS SOCIAL SECURITY HOSPITAL, 2017

MAHNAZ KHANEFFARDA, ABBAS GHAVAM* SOMAYEH HESSAM
Department of Healthcare Management, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran,  Assistant Professor, Department of Environmental Science, Institute of Sciences and High Technology and Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran, Assistant Professor, Department of Health Services Administration, South Tehran branch, Islamic Azad University, Tehran, IranEmail:ghavam39@gmail.com

ABSTRACT

Objective: The emergence of internet and its development has made a lot of changes in every science and industry, medical science is not an exception, and the internet, in addition to the effects it has made on its own development, has also had significant effects on the development and improvement of medical services. Research method: This research is descriptive-qualitative with a phenomenological approach, which has been carried out in 2017 at Bandar Abbas Social Security Hospital (Persian Gulf). The information has been collected through a semi-structured interview with nine hospital staff. Results: The maxqud10 software was used to encode the collected data. As a result, 76 codes have been extracted out of two main components of management and human resource factors affecting on the establishment of telemedicine, which have been grouped into eight main categories. Discussion and conclusion: The results of this research can be used to identify managerial and human resource barriers in organizational planning for healthcare organizations.

Keywords: remote treatment - telemedicine - challenges of telemedicine establishment - remote medicine

INTRODUCTION

The advent of the internet and its development has made a lot of changes in every science and industry, medical science is not an exception too, and the internet, in addition to the effects it has made on its own development, has also had a profound effect on the development and improvement of medical services. [1] Since telemedicine is used in patient-doctor relationships, technology plays a very important role in creating this relationship. Telemedicine technology issues can be divided into telecommunications, technology for video, sound and network. The first and hardest step for telemedicine programmers is the selection of telecommunication type that includes various types of bandwidth and a variety of telecommunication technologies such as microwave satellite, wireless, cable, and internet. It is beneficial to use it in Iran due to geographical conditions, the existence of impassable mountainous and desert regions, deprived areas with limited medical facilities, the concentration of health and medical facilities in metropolitan areas, the high costs of patient's transfer to healthcare facilities and can fulfill Iranian health needs in deprived areas. [2] The qualitative study of Grindle et al. indicated a decrease in the number of physician and patient's travel, as well as more temporal and spatial access compared to on-site visits [3]. The qualitative study of Hiratsu kau et.al also found that telemedicine complements the relationship between the patient and the physician. [4] Although telemedicine systems have many benefits, such as the distribution of high-quality medical services to remote areas, the failure to comply with the underlying conditions leads to low efficiency and quality of the services they provide, the followings are among the challenges:

• High technical costs, including high cost of equipment, high cost of preparing telecommunication infrastructure for this purpose, and high costs of the information exchange.
• Legal constraints and legal arguments that include internal permissions, medical credentials, liability for negligence in treatment, and controversies related to compensation and reimbursement.
• Cultural factors that include physicians' resistance, resistance of health care providers, and patient resistance. [5]

Today, telecommunication & information technology is widely used in medicine and its related sciences. Every day, doctors consult each other on their patients with their cell phone. Specialists train specialized points to general practitioners or students through video conferencing systems or internet sites. Physicians store the information of patients' records on personal computers and review them if necessary or send them to a physician. In hospitals, central information systems, vital signs monitoring system and medical paging systems are being commonly used. [6]

It seems that the use of telemedicine in countries such as Iran, due to geographical conditions, the existence of impassable mountainous and desert areas, poor transportation networks, population dispersion, deprived areas with limited medical facilities, the concentration of health and medical facilities in metropolitan areas, and the high cost of transferring patients to these areas can help quickly diagnose a disease, adopt proper medical tactics, reduce time waste, reduce diagnostic costs, and make the relationship between specialized hospitals in different cities. However, remote counseling and diagnosis are still unknown and despite many benefits, they have many challenges, the barriers that stop some of the telemedicine projects. Telemedicine is a new approach in providing diagnostic, therapeutic and health care services that is supported by electronic and communication processes. Telemedicine may be a suitable alternative to some common forms of health care services, but there are important barriers to the proper use of this technology. [7]

The findings of the research show that the majority of specialists, lack of technical staff, initial costs, lack of medical personnel and insurance problems and reimbursement are the main obstacles to the establishment and application of this system in hospitals, the order of the services used in telemedicine from the specialists' point of view, is as follows: providing training, counseling, purchasing equipment, providing care, referring patients. [2]

In her article, Elaeh Rhashedi, quoted from Ekeland et al that they have evaluated all of the telemedicine implementations that had taken place until 2010 and measured their effectiveness. The results of this review indicated that:

64% of implementations indicated that telemedicine in chronic diseases can be well implemented and has positive effects. These
effects increase the impact of treatment, the efficiency of providing health services and the usability of the service. 36% of implementations also indicated that the effectiveness of telemedicine in some diseases is limited [8].

If seniormanagers do not look at this technology as a tool for earning money, it will help treat patients with a better understanding of the health needs of the area and its implementation in the appropriate infrastructure and training of specialized human resource. Many medical trips to other provinces will be reduced in order to receive the same treatment, and will result in patients' satisfaction.

**METHOD**

This research is descriptive-qualitative with a phenomenological approach that was carried out at the Social Security Hospital [Persian Gulf] in 2017. Having used interviews with open and semi-structured questions, 9 people from hospital staff were interviewed purposefully. The maxqda10 software was used for open and axial coding. Totally, 76 codes were obtained in eight main categories out of the two main components of managerial and human resource factors. The only tool used to collect information was digital voice recorder.

**RESULTS**

This interview was carried out with 9 staff including three physicians, two general practitioners, one MSc in health service Management, one BS in nursing, one computer engineer and one medical document expert. Following table shows what was done after open and axial coding.

**Table 1: Managerial factors affecting establishment of telemedicine.**

| Row | Main component | Main category | Subcategories |
|-----|----------------|---------------|---------------|
| 1   | Managerial factors | Support of senior manager | Providing required resources |
|     |                 | Organizational issues | Codification and correction of processes |
|     |                 |             | Lack of certain instructions from the organization |
|     |                 | Organizational culture | Resistance against technology |
|     |                 | Legal issues | Lack of legal methods to pursue medical errors |

**Managerial factors**

Managerial factors are a main component abstracted in this research. This component includes categories: senior manager's support, organizational issues, organizational culture, and legal issues.

**The support of senior manager**

From views of participants, senior management has an important supporting role by providing the necessary infrastructure, such as the allocation of appropriate internet lines, or the allocation of financial sources and other necessary infrastructures for the implementation of telemedicine.

"In fact, the senior manager should be able to provide it with a lot of supports from both the financial and other sources, and the facilities that we must have here to do the operation well. In my opinion, if it is supported, the hospital will be very good and it can actually exchange information with large hospitals " participant No. 7 said.

**Organizational Issues**

One of the most basic challenges of remote treatment establishment is the organizational issues such as lack of specific guidelines from the central social security organization for the establishment of telemedicine. Because without the permission of the central organization, implementation of the project will not be possible. After that, it can be possible to correct and codify the existing processes for the establishment of this technology.

"In our hospital, the Persian Gulf, some effective factors that can play a role, are its managerial factors meaning that we now have this tool and we want to implement it. The organization is the most important. Everywhere, we engage organizational problems. For example, if the head of our hospital was to take action in this regard, the first thing would be organizational permission " participant No. 1 said.

**Organizational Culture**

Among the issues expressed by the participants was resistance to changes. Especially in remote treatment that requires technology learning, while some people have not learnt new technologies. By expressing the positive features and privileges of telemedicine, senior managers are encouraged to implement it.

"There is resistance to any change. Telemedicine may also be present in some of our colleagues, especially those who less engage themselves in modern technology. Also, some physicians with more work experiences who are not very up-to-date but welcome it”

**Legal issues**

What is important from the point of view of participants in the interview in terms of legal issues related to the establishment of telemedicine is the ability to refer to information in this regard in the judicial field. Some problems will be created due to the lack of legal procedures for tracking medical errors.

"It is difficult to establish it because it cannot be referred to legally” participant No. 8 said:

**Table 2: Human factors affecting establishment of telemedicine**

| Main component | Main category | Subcategories |
|----------------|---------------|---------------|
| Human factors | Educational issues | Lack of knowledge on using telemedicine |
| Cultural context of the society | The trust rate of patient in efficiency of telemedicine system |
| Human resource | Motivational issues |
| Applied medical issues | Lack of human resource |
|               | Using face-to-face and traditional methods |

**Human factors**

Human factors are the second main component abstracted in this research. This component includes following categories: educational issues, cultural context of the community, human resources and applied medical issues.

**Educational issues**

Given the fact that remote treatment is a new phenomenon in medical science, the issue of education is crucial for accepting this knowledge from the participant's point of view. It is possible that the physicians may feel at risk because they are not familiar with it and consider it as their successor because of their inadequate knowledge. It can be solved by training.

"We do not want to replace it with doctors. If Doctors know that nobody wants to replace it with them, certainly they will not resist against it. They resist against it because they do not know it well”, the participant No.1 said.

"System managers are fully aware of telemedicine. I think that there is no awareness at the manager level yet. Or no awareness
has been given to them about the benefits the telemedicine can have for the hospital and patients. If these so-called system benefits are explained to all managers in a seminar, they will understand that this system can really be helpful in all aspects, in terms of exchanging information between doctor and patient*, the participant No. 2 said.

"It's 100 percent necessary for doctor, nurse, be trained in this regard. However, this is a separate field and cannot be presented with this knowledge and this level of education with the best quality and quantity. Certainly, you need to get the necessary training. It is possible with the present staff but it is necessary for the staff to be trained and reinforced. That is, the specialist who work in these areas and doctors or specialists from other fields train the staff and thus the system will be completely established" the participant No.5 said.

Cultural context of the community

One of the challenges facing this technology is to prepare the community for accepting this method of treatment. Participants believed that at first, patients should be assured of the efficiency of this type of treatment and then it should be initiated.

"Some resistances are cultural, those that can be created by people, they may not trust in such treatment. It takes time to provide the context and change the culture in order that it is accepted by people" the participant No.4 said.

The participant No. 8 on the relationship between the establishment of remote therapy and its cultural context told that the cultural context of society was the biggest challenge.

Human resources

Regarding the human resources, paying attention to the lack of specialized human resources and making people motivated can delay the implementation of this technology.

"Regarding lack of human resources in healthcare, in the Social Security Hospital, or generally in our country, the number of doctors is not large to respond the population issue " the participant No.4 said.

"Regarding motivational issues, some points [rewards] should be considered for them to encourage to it " the participant No.1 said.

Applied medical issues

In this regard, participants believe that many diseases cannot be treated with this method, and patients should be treated in the same way as in the traditional and face-to-face methods.

" But we should remember that the most important thing is in fact face-to-face treatment rather than telemedicine. It is very important for us" the participant No.9 said.

" It is practical in some aspects but it is not practical in many surgical issues because the surgeon must visit his patient. It is not practical to trust in sonography or laboratory. The surgeon may have a wrong diagnosis. Therefore, we have to visit the patient. It may be practical in medical issues such as infants rather surgical ones" the participant No.3 said.

"Sometimes, the patient has to be hospitalized and cared for. Therefore, we cannot use telemedicine. The patient has to visit his doctor so as to be examined or a procedure must be done on the patient" the participant No.4 said.

DISCUSSION

The findings of this study are illustrative of the problems of telemedicine establishment in Bandar Abbas Social Security Hospital. The components and subgroups extracted from the text of interviews are the main obstacles to the establishment of telemedicine technology at this health center. Management is one of the factors affecting on the implementation of new phenomena and the lack of leadership support is a serious and effective barrier to its implementation [9].

From the participants’ point of view, senior management plays an important role in providing technical infrastructure or supplying financial sources related to it. Data analysis suggests that managerial factors, such as support for senior executives, organizational issues such as permissions and existence of clear and necessary policies for the implementation of new technologies, the lack of legal rules regarding with or without reference to the digital medical documents produced in telemedicine, the existence of an appropriate organizational culture that reduces the staff's resistance against changes, especially in the field of technology will make it easier. All of these issues are necessary to determine as the managerial or organizational barriers that impede the implementation of telemedicine technology.

The reluctance of patients' is another important factor in the acceptance of telemedicine. Participants believe that many diseases cannot be treated with this method, and patients should be treated in the same way as in the traditional and face-to-face methods.

"Regarding lack of human resources in healthcare, in the Social Security Hospital, or generally in our country, the number of doctors is not large to respond the population issue " the participant No.4 said.

"Regarding motivational issues, some points [rewards] should be considered for them to encourage to it " the participant No.1 said.

Applied medical issues

In this regard, participants believe that many diseases cannot be treated with this method, and patients should be treated in the same way as in the traditional and face-to-face methods.

" But we should remember that the most important thing is in fact face-to-face treatment rather than telemedicine. It is very important for us" the participant No.9 said.

" It is practical in some aspects but it is not practical in many surgical issues because the surgeon must visit his patient. It is not practical to trust in sonography or laboratory. The surgeon may have a wrong diagnosis. Therefore, we have to visit the patient. It may be practical in medical issues such as infants rather surgical ones" the participant No.3 said.

"Sometimes, the patient has to be hospitalized and cared for. Therefore, we cannot use telemedicine. The patient has to visit his doctor so as to be examined or a procedure must be done on the patient" the participant No.4 said.

DISCUSSION

The findings of this study are illustrative of the problems of telemedicine establishment in Bandar Abbas Social Security Hospital. The components and subgroups extracted from the text of interviews are the main obstacles to the establishment of telemedicine technology at this health center. Management is one of the factors affecting on the implementation of new phenomena and the lack of leadership support is a serious and effective barrier to its implementation [9].

From the participants’ point of view, senior management plays an important role in providing technical infrastructure or supplying financial sources related to it. Data analysis suggests that managerial factors, such as support for senior executives, organizational issues such as permissions and existence of clear and necessary policies for the implementation of new technologies, the lack of legal rules regarding with or without reference to the digital medical documents produced in telemedicine, the existence of an appropriate organizational culture that reduces the staff's resistance against changes, especially in the field of technology will make it easier. All of these issues are necessary to determine as the managerial or organizational barriers that impede the implementation of telemedicine technology.

The reluctance of patients' is another important factor in the acceptance of telemedicine. Participants believe that many diseases cannot be treated with this method, and patients should be treated in the same way as in the traditional and face-to-face methods.

"Regarding lack of human resources in healthcare, in the Social Security Hospital, or generally in our country, the number of doctors is not large to respond the population issue " the participant No.4 said.

"Regarding motivational issues, some points [rewards] should be considered for them to encourage to it " the participant No.1 said.

Applied medical issues

In this regard, participants believe that many diseases cannot be treated with this method, and patients should be treated in the same way as in the traditional and face-to-face methods.

" But we should remember that the most important thing is in fact face-to-face treatment rather than telemedicine. It is very important for us" the participant No.9 said.

" It is practical in some aspects but it is not practical in many surgical issues because the surgeon must visit his patient. It is not practical to trust in sonography or laboratory. The surgeon may have a wrong diagnosis. Therefore, we have to visit the patient. It may be practical in medical issues such as infants rather surgical ones" the participant No.3 said.

"Sometimes, the patient has to be hospitalized and cared for. Therefore, we cannot use telemedicine. The patient has to visit his doctor so as to be examined or a procedure must be done on the patient" the participant No.4 said.

CONCLUSION

In line with the establishment of remote treatment, management and human resource factors are two very strong levers. This is not possible without the existence of management factors such as the necessary regulations to provide the necessary infrastructure for the establishment of this technology. A major challenge in this regard is the lack of legal rules in complaints and pursuits. Prior to starting this program, cultural issues should be addressed and the social context should be prepared in order to accept this treatment

REFERENCES

1. Amirani, Hossein 2015, "The Principles of Telemedicine ", Informational educational-research quarterly NoandishSabz., ninth year. No. thirty four and thirty five. Summer and fall 2015
2. Rahimzadeh, E. et al. 2012 “Feasibility study on the use and establishment of telemedicine in Imam Khomeini Hospital”, Ardebil, Kadouseh scientific-student quarterly, period 2, No. 2, Summer 2012
3. GRINDLAY, K., LANE, K. & GROSSMAN, D. 2013. Women's and providers' experiences with medical abortion provided through telemedicine: a qualitative study. Women's Health Issues, 23, e117-e122
4. HIRATSUKA, V., DELAFIELD, R., STARKS, H., AMBROSE, A. J. & MAU, M. M. 2013. Patient and provider perspectives on using telemedicine for chronic disease management among Native Hawaiian and Alaska Native people. International journal of circumpolar health, 72
5. Parsaei, MR et al. 2016 "Presentation of a new method for improving network monitoring in telemedicine applications using software-based networks". The first international conference on the new research achievements in electrical and electronic engineering, 2016.
6. Moeini, Ebtragh-BakhhtiariZohreh 2010 "Identifying and Investigating Effective Factors in the Application of Telemedicine Technology in Iranian Hospitals" The Fourth National Conference on Technology Management of Iran 2010
7. Ehsani, Saffura-ZargarSeyyed Mohammad 2015 "Identification and prioritization of barriers to the use of telemedicine technology in medical centers [Case study: ShahidBeheshti University of Medical Sciences] The first congress of applied research in Industrial Management of Azad University of Semnan, 2015
8. Rashedi, E-Barati, Allah, 2013 "Remote technology and its effectiveness" Scientific-research Journal of Pajuhan, period 11, Spring 2013
9. CECILIE Varsi, MS Mirjam Ekstedt, PhD Deede Gammon, PhD Elin Børøsund, MS Cornelia M. Ruland, PhD "Middle Managers’ Experiences and Role in Implementing an Interactive Tailored Patient Assessment eHealth Intervention in Clinical Practice" CIN: Computers, Informatics, Nursing & Vol. 33, No. 6, 249–257
10. Nazli Bashir1, , RN, MAppSc; Mohanraj Karunanithi1, PhD; Farhad Fatehi1, , MD, PhD; Hang Ding1, PhD; Darren Walters, MD, PhD "Remote Monitoring of Patients With Heart Failure: An Overview of Systematic Reviews" 2017 JOURNAL OF MEDICAL INTERNET RESEARCH
11. SaeidiTehrani, S-Nowruz M 2015 "Remote Medicine: A Review of Benefits, Disadvantages and Ethical Challenges" Iranian Journal of Medical Ethics and History, Period. 8, No. 2, July 2015
12. Curtis L. Lowery, Janet M. Bronstein, Tina L. Benton, and David A. Fletcher "Distributing Medical Expertise: The Evolution And Impact Of Telemedicine In Arkansas" 2015-HEALTH AFFAIRS 33, NO. 2 [2014]: 235–243.

© 2018 by the authors; licensee MJPMS, India. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (http://creativecommons.org/licenses/by/4.0/)