

# Study of Awareness and Attitude of Staffs in Treatment and Health Service Centers Affiliated to Kerman University of Medical Sciences Towards Telemedicine

Seyed Mojtaba Mir Hosseini, Dina Ziadlou, Nasim Nasiri, Amin Sayerinia

**Abstract** — *By incidence of modern technologies in different areas such as medicine which has been recognized as Telemedicine. This technology can play important role in increases quality level of medical services and health treatments. The successful increase of implementation and development of this technology in Iran needs to provide cultural, legal, political, social and technological atmosphere. Therefore assessing awareness volume of people and their attitude toward telemedicine can be an important factor in accepting this technology which indicated in this research. This research was done in 2011 with sectional and descriptive study on 276 persons from employees of 30 centers which provide health and treatment services at Kerman University of Medical Sciences and Staff of Kerman University of Medical Sciences with random and questionnaire method including 3 sections, demographic specifications, awareness level assessment and attitude. Awareness on telemedicine, patients consultations, promoting educational services, nursing services and treatment from patient and studying attitude volume of questioned people on cultural impact of technology, decision making and medical diagnosis , fair distribution of health services providing in deprived areas, reducing financial costs of patients, preventing from unnecessary travels, reducing medical errors, improving and increasing quality of services based one extracted replies from completed questioners with SPSS software aid<sup>1</sup>.*

**Keywords** — *Telemedicine, attitude, awareness*

## I. INTRODUCTION

Telemedicine is called for using information technology and communication for providing health and medical services in which communication technology causes to provide medical services to places which are geographically far away from services providing centers, all people can enjoy medical services.

The goals of telemedicine is importing patient care, improving access and medical treatment for deprived rural areas, better access to specialized physicians for seeking consultation, providing facilities for physicians for supporting automatic examinations, reducing medical treatment costs, establishing medical treatment services (in geographical level and expanded population), reducing transfer of patients to treatment centers.

Kerman province by holding geographical vast area and many different and expanded rural and urban areas faces with lack of specialists in different medical fields and on other hand most

of available areas in the provide consider as deprived areas in which some of them located in remote areas and direct referring of patients to specialists and in general visiting patient with therapeutics faces with problems. Due to important, privileges, features and special methods for using this technology and necessary infrastructure for developing cyber space in hospitals needed cultural and technical atmosphere. Therefore for performance and exploitation of remote medical projects initially needs to study and analyze available status in different dimensions such as awareness and attitude to telemedicine technology in order to calculate acceptance volume of this technology for commissioning project management and preventing from strength of human resource for entering into new technology with schedule. The present research evaluates the awareness and attitude of managers and personnel regarding this technology (telemedicine) in present conditions at Kerman University of Medical Sciences ultimately based on attained information,

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proper solutions shall submit for correct, effective and efficient usage of telemedicine.

## II. THE GOAL OF PERFORMING PLAN

The major goal of this plan is determining awareness volume and attitude of personnel of treatment and health services providing centers of Kerman University of Medical Sciences concerning telemedicine in 2011-2012 in order to reply to this question that does successful performance of telemedicine at treatment and health services providing centers of Kerman University of Medical Sciences connects to awareness volume and attitude of treatment and health care for preventing from uncertain with low degree or not.

## III. EXECUTIVE METHOD OF PLAN

This qualitative research was sectional and descriptive and analytic which was done for evaluating awareness volume and attitude of personnel of Kerman University of Medical Sciences concerning telemedicine. Research society includes all staff who provide treatment and medical services at Kerman University of Medical Sciences including senior managers, managers, matrons, nurses, nurses assistants, practical nurse, physicians, specialists, reception personnel and medical deeds of hospitals, employees and experts of health centers where include Shafa hospital, Afzali pour, Shahid bahonar, Shahid beheshti, Emam reza sirjan, Pastor bam, hazrat ghaem bardsir, Sina zarand, Valiasr shahre babak, khatamolania baft, aliebn abitaleb ravar, arzoieyeh with medical university of kerman.

At beginning based on sample volume 276 personnel work for 30 centers, cluster sampling was done in some processes and after situating on clusters, simple selection was done randomly. Among considered indexes in plan, age, sex, education, service records, type of employment and educational deed were included. The information was gathered by using interview technique and encouragement of participants for partnership with telemedicine technology performance by using data gathering in this research which was questionnaire.

## IV. DATA COLLECTION INSTRUMENTS

The ascertaining instrument and questions of questionnaire have been prepared with method of brain storming by the executives and colleagues of the plan by using reviewed studies and using latest scientific issues and Persian and Latin essays in three sections.

First section includes demographic features including sex-age (below 20 years old with 5-year classification and maximum up to 60 years old in 9 branches), marital status, education, place service, type of employment, service records (less than 5 years with 5-year classification up to more than 30 years with 7-year classification), second section consists of 10 questions for determining awareness volume concerning the object and third section consists of 18 questions for determining attitude volume with regard to the object. For determining awareness manner, awareness evaluation questions have been used and

repliers expressed their answer through (true, false and no information) and for determining attitude manner, attitude evaluation statements designed based on 5 degree scales were used and repliers expressed their ideals through (full agreement, agree, nor agreement or disagreement, disagreement and full disagreement).

For determining validity of Questionnaire, books, similar articles and polling from some clear-sighted persons (scholar and faculty members of Kerman University of Medical sciences) were used.

Reliability of Questionnaire was determined by using introductory study and determination of Alpha Kronbakh with SPSS software in which it is 0.88 as indicates proper internal affiliation.

## V. SPECIFICATION OF INTERVIEWERS

Some educated persons in field of computer software and nurses were used for interviewing with research society and before interview; interview technique and other required training were provided to them. The interviewers with necessary coordination and refer to centers submitted the said

Questionnaire to the personnel and asked them to reply their information and personal comments in same time to

Questionnaire. The place of interview was place of their service and at hospitals in clinical wars and health centers at same place. Interview technique was based on two persons in presence of questioners (person who fills out the Questionnaire) and interviewer and the interviews refer to individual of repliers.

## VI. CALCULATING METHOD OF SAMPLE VOLUME AND ITS NUMBER

The volume of sample or statistical society was considered treatment and health services providing centers of Kerman University of Medical Sciences and Central Staff of Kerman University of Medical Sciences by using Morgan formula.

$z=1.96$ ,  $p=q=0.5$ ,  $d=0.06 \Rightarrow n=276$  Confidency level :95%

Here Z is for Reliability level and normal variable volume of standard unit, P expected prevalence volume, d accuracy or authorized error volume, n volume of sample in which by calculating sample volume includes 267 persons among 30 personnel of health and treatment centers of medical sciences university by their random selection after locating in cluster.

## VII. DATA ANALYZING AND CALCULATING METHOD FOR REACHING TO GOALS OF PLAN

This plan tries to extract awareness volume and people attitude to modern technologies in telemedicine, therefore by designing questionnaire and analyzing information resulting from it, in two awareness indexes and attitude by using SPSS software, descriptive and deductive statistics concerning X ,

multivariable analyze and distributing fisher and K test, the results are as follows:

- 1- Awareness concerning telemedicine technology and efficiency of its usage.
- 2- Awareness for performing consultation of patients with telemedicine
- 3- Awareness for using telemedicine for providing training and information to patients
- 4- Awareness for providing nursing services and treatment by using telemedicine

**Table 1. The results of Telemedicine Awareness**

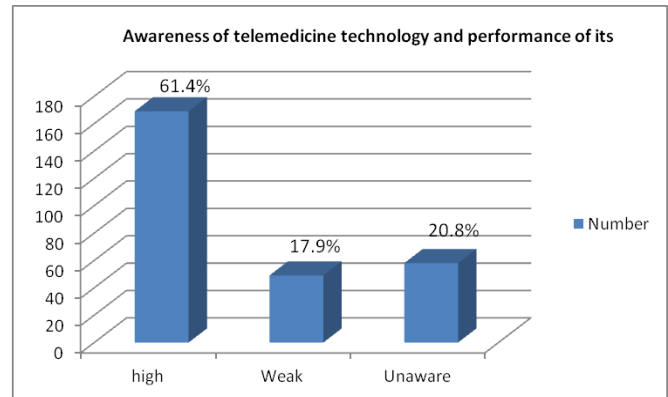
unaware		poor		good		Kind of service
Percent	number	percent	number	percent	number	
(20,8)	58	(17,9)	49	(61,4)	169	Awareness concerning telemedicine technology and efficiency of its usage
(22,8)	63	(15,9)	44	(61,3)	169	Awareness for performing consultation of patients with telemedicine
(10,1)	28	(10,9)	30	(79,0)	218	Awareness for using telemedicine for providing training and information to patients
(17,8)	49	(15,3)	42	(67,0)	185	Awareness for providing nursing services and treatment by using telemedicine

In attitude field, results of attitude of questioned people with regard to cultural impact for using modern technology titled telemedicine in medicine, attitude of aforesaid mentioned people on remote medical role in making decisions and medical diagnosis, attitude of people in relation to impact of telemedicine on fair distribution of health services, health system in deprived and remote areas, attitude of people on telemedicine impact on reducing financial costs of patients for treatment and health services, people attitude for preventing from unnecessary travels for treatment and health services by using telemedicine, attitude of people on impact of telemedicine on reducing mistake in medical affairs and attitude of people on impact of telemedicine performance in

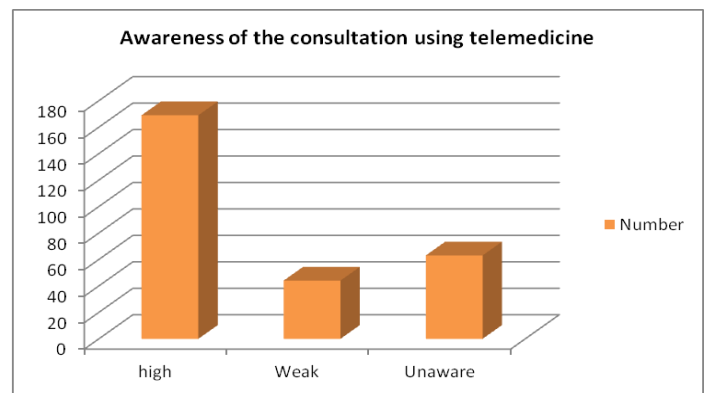
improving and increasing quality of provided services in treatment and health section.

**VIII. FINDINGS AND RESULTS OF PLAN**

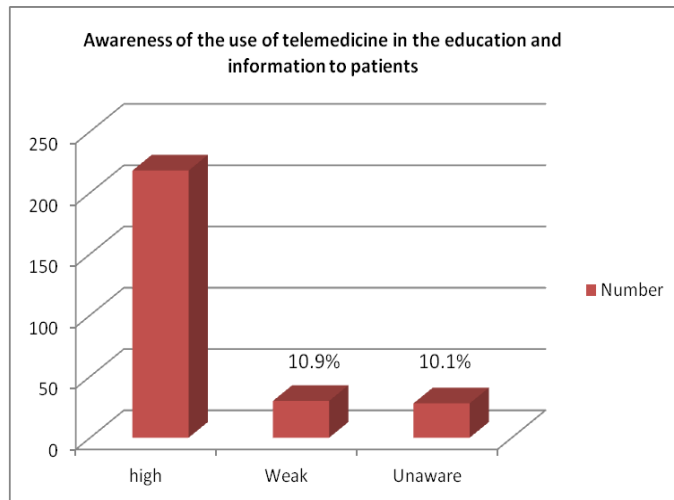
In awareness section based on results it was observed that awareness volume enjoyed higher level for using educational issues and information of patients in higher level from other remote medical applications in this province. Awareness for providing health services ranked 2<sup>nd</sup> place in results nevertheless that uninformed people from capability of using telemedicine in nursing services was approximately about 1.75 fold more than educational issues through telemedicine. Therefore awareness evaluation section indicates the need for attention to 3 basic issues. First necessary training shall be provided for increasing awareness level from telemedicine technology. All kinds of presentable services by this technology shall be informed and based on awareness of personnel in training and informative issue, 79% can launch this project for submitting E-learning issues for personnel and SMS data center' patients then we can enter to treatment issue.



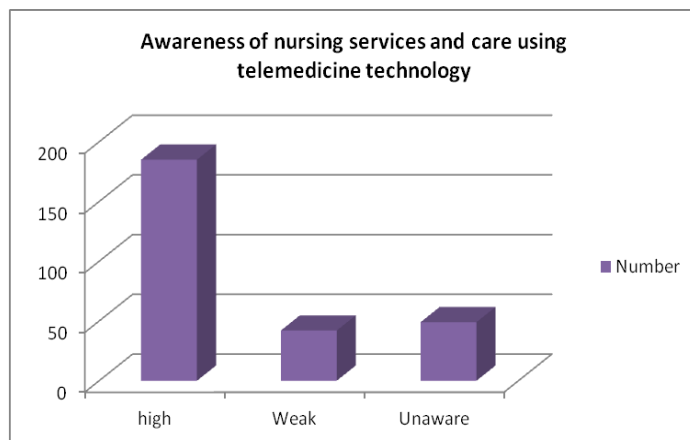
**Figure 1. Awareness concerning telemedicine technology and efficiency of its usage**



**Figure2. Awareness for performing consultation of patients with telemedicine**



**Figure3. Awareness for using telemedicine for providing training and information to patients**



**Figure4. Awareness for providing nursing services and treatment by using telemedicine**

## IX. THE CONCLUSIONS AND RELATED DIAGRAMS TO ATTITUDE EVALUATION

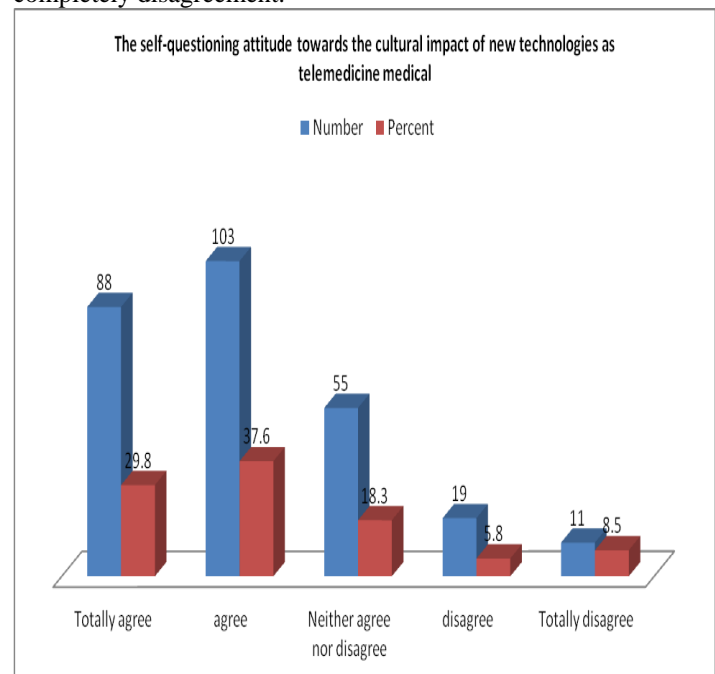
We have higher statistics of fully agreement in telemedicine impact section on medical making decision and diagnosis, after this statistic respectively culture of using modern technologies and reducing road ply located. In quality improvement section we have highest disagreement comment (141 persons), highest disagreements decrease were 32 persons in comparison with other indexes. Since the highest full disagreement votes is in financial costs decrease section of patients by using telemedicine, therefore it is needed to have proper planning in implementing plan in this province and its effectiveness cost shall extract in order to convince senior managers for performing this project, then further actions shall be done based on budget that concerning human power preparing infrastructure, facilities and necessary medical equipments also executive guarantee shall be done.

In this statistic, remote medical capability in treatment and diseases prevention with 53 disagree votes were highest statistic, therefore it is needed to provide information on

conducted treatments in the world through telemedicine to the people such as conducted treatments on Teleradiology, Telepathology, Teledermatology, Telecardiology or on issue of preventing from diseases in selecting randomly plan in different areas based on epidemiology research which submitted by acceptable percentage in order to achieve better attitude . minimum disagree statistics were reelected to using capability attitude from telemedicine for deprived areas with one disagree vote and reducing medical errors with 3 disagree votes which indicated the people intendency of deprived areas for enjoying specialized medical services by modern technologies and tendency volume to reduce errors resulting from seeking consultation.

### 9-1-The self-questioning attitude towards the cultural impact of new technologies as telemedicine medical

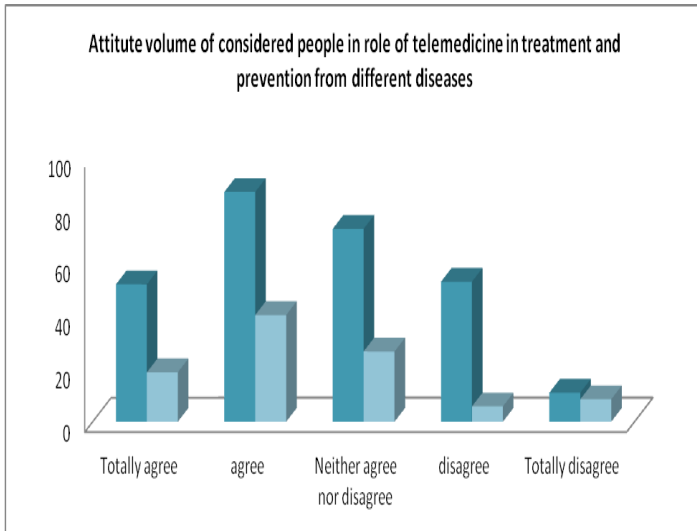
88 persons (29.8%) agreed completely, 103 persons (37.6%) agreed, 55 persons (18.3%) nor agreement or disagreement and 19 persons (5.8%) disagreement and 11 persons (8.5%) completely disagreement.



**Figure 5. The self-questioning attitude towards the cultural impact of new technologies as telemedicine medical**

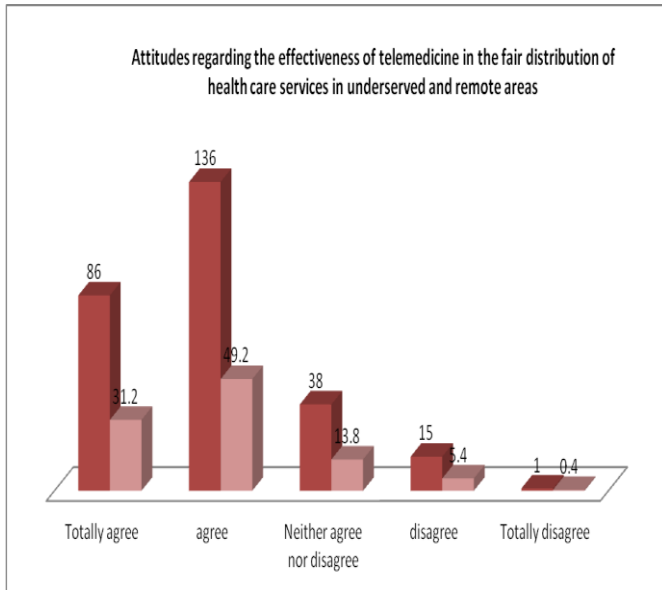
### 9-2- Attitude volume of considered people in role of telemedicine in treatment and prevention from different diseases.

52 persons (18.7%) agreed completely, 87 persons (40.4%) agreed, 73 persons (26.6%) nor agreement or disagreement and 53 persons (5.8%) disagreement and 11 persons (8.5%) completely disagreement



**Figure6.**Attitude volume of considered people in role of telemedicine in treatment and prevention from different diseases

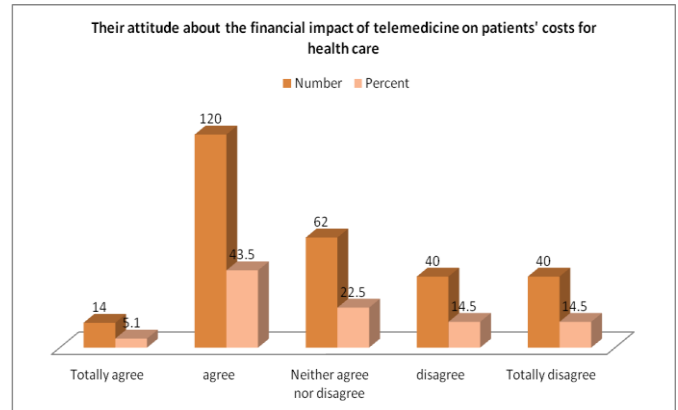
9-3-Attitude of people on telemedicine in justice distribution of health services in remote and deprived areas  
 86 persons (1.2%) agreed completely, 136 persons (49.2%) agreed,38 persons (13.8%) nor agreement or disagreement and 15 persons (6.4%) disagreement and 1 persons (0.4%) completely disagreement



**Figure7.** Attitude of people on telemedicine in justice distribution of health services in remote and deprived areas

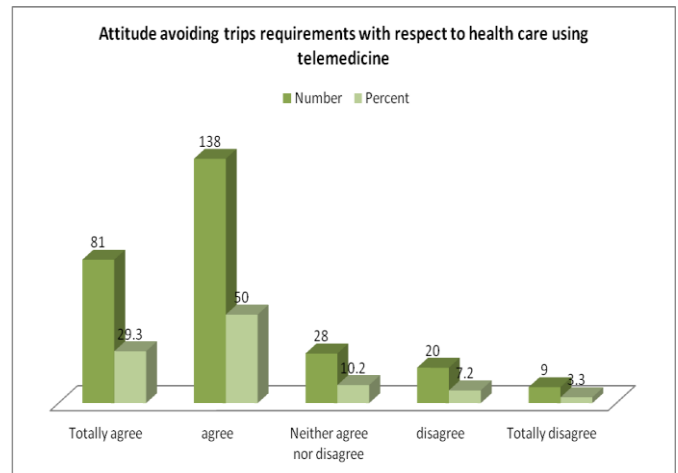
9-4-Attitude of people on impact of telemedicine in reducing financial costs of patients for treatment and health services  
 14 persons (5.1%) agreed completely, 120 persons (43.5%) agreed, 62 persons (22.5%) nor agreement or disagreement and 40 persons (14.5%) disagreement and 40 persons (14.5%) completely disagreement

and 40 persons (14.5%) disagreement and 40 persons (14.5%) completely disagreement



**Figure8.** Attitude of people on impact of telemedicine in reducing financial costs of patients for treatment and health services

9-5-Attitude of people for preventing from required travels for treatment and health services by using telemedicine  
 81 persons (29.3%) agreed completely, 138 persons (50%) agreed, 28 persons (0.2%) nor agreement or disagreement and 20 persons (7.2%) disagreement and 9 persons (3.3%) completely disagreement



**Figure9.** Attitude of people for preventing from required travels for treatment and health services by using telemedicine

9-6-Attitude of people on impact of telemedicine in reducing arise mistakes in medical affairs  
 58 persons (21%) agreed completely, 109 persons (39.5%) agreed,103 persons (12.2%) nor agreement or disagreement and 17 persons (6.2%) disagreement and 3 persons (1.1%) completely disagreement

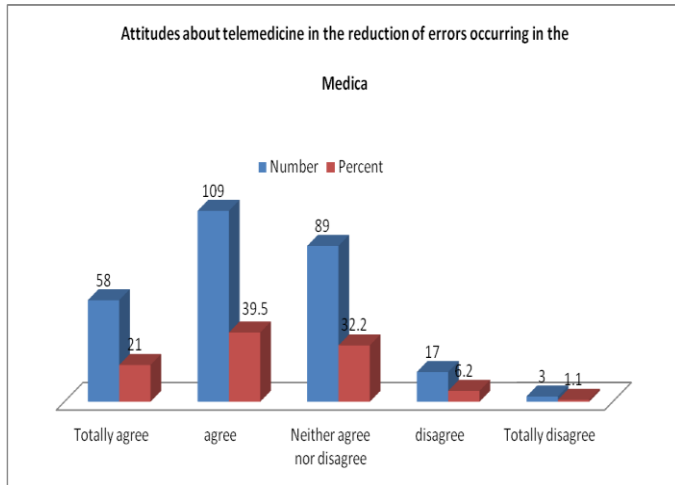


Figure10. Attitude of people on impact of telemedicine in reducing arise mistakes in medical affairs

**9-7-Attitude of people on impact of telemedicine performance for improving and increasing quality of provided services in health and treatment section**

29 persons (0.5%) agreed completely, 141 persons (1.1%) agreed, 46 persons (16.7%) nor agreement or disagreement and 29 persons (10.5%) disagreement and 31 persons (1.2%) completely disagreement

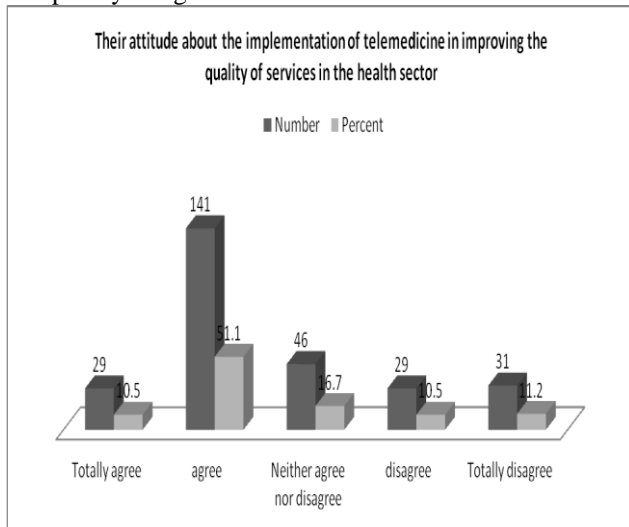


Figure11. Attitude of people on impact of telemedicine performance for improving and increasing quality of provided services in health and treatment section

**X. SPECIFICATIONS OF PEOPLE WHO FILLED OUT QUESTIONNAIRE**

From total 276 persons who filled out questionnaire, 200 persons (72.5%) were female, 76 persons (27.5%) male, 196 persons (71%) married and 80 persons (29%) single. Most age range was between 25-30 years old with 86 (31.2%), and minimum range 35-40 years old with 4 persons (1.4%). Education were respectively 137 persons hold Bachelor's

Degree (49.6%), Professional Doctorate Degree (16.3%), then Associate's Degree with 39 persons (14.1%), Master's Degree 19 persons (6.9%), Specialty Board 12 persons (4.3%), PHD 10 persons (3.6%), High School Diploma 9 persons (3.3%), Fellowship Degree 5 persons (1.8%) who were participated. Most of service records were relegated to 5-10 years range with 78 persons (28.3%), minimum to range more than 30 years just 2 persons (7%), 29 contractual persons, 122 contractual staff, 16 faculty members, 89 tenured employees and 20 persons on plan performance basis, all participants were from 30 centers affiliated to Kerman University of Medical Sciences. 85 persons (42.5%) in centers of province and 191 persons (57.5%) in citifies of Kerman Province were involved in providing medical services.

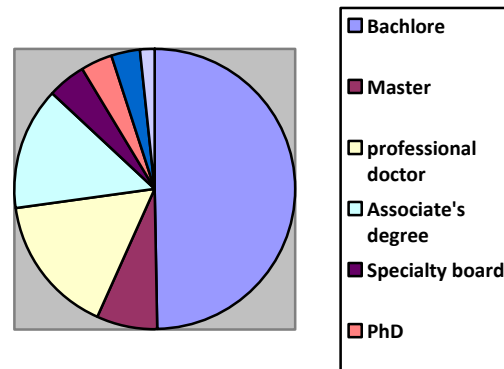


Figure12 .Education of persons who filled Questionnaire out

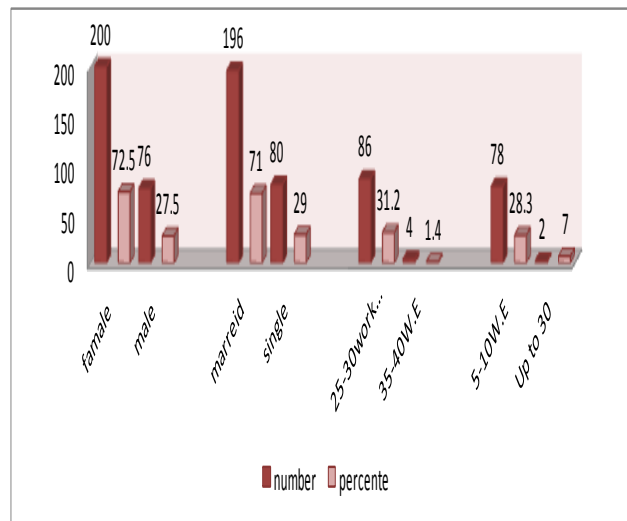


Figure13. Sex, marietal state and work experience of people who filled out questionnaire

**XI. CONCLUSION**

According to the statistics resulted from this research, it is understood that intendency volume from this technology and its entrance to this Province accepted by many peoples. Awareness volume and attitude of people to telemedicine in this province is in a way that in case of implementing

telemedicine, It is expected that it has developmental procedure in its reception and can be used properly with educational schedules and has economic effective benefits.

## XII. DISCUSSION

According to conducted investigation on results resulting from questionnaire for implementing telemedicine project in this province requires to perform necessary training for familiarity with telemedicine services based on good statistic of people to telemedicine also high statistic of positive attitude to E-learning also high statistic for positive attitude to use this technology in medical diagnosis, E-learning can be implemented in this province between Kerman and deprived cities for holding medical educational classes, nursing and treatment from patient.

Since there were many disagreed votes in treatment and prevention from diseases by telemedicine technology, it is necessary to submit treated samples by telemedicine and capability of patients treatment by telemedicine. In phase of acting for implementing telemedicine needed to submit strong proofs for economic description in order to make senior managers understood in financial affairs as this factor can be mentioned by preferences measurement (tangible, intangible and hidden). By submitting economic analysis such as cost analysis, benefit and cost analysis, effectiveness, determining remuneration volume, specialists situated on deprived areas, ply costs between city, specialists also patients, residence costs of people considered as tangible benefits of this technology and by reducing road accidents, enjoying deprived people in more areas of this province from specialized medical facilities and increasing level of providing health services can be mentioned as intangible and hidden benefits of telemedicine technology.

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