Study to Assess the Awareness and Perception of Healthcare Service Providers towards use of Telemedicine

By

Chandresh Upadhyay

Dissertation submitted for the partial fulfillment of the

MBA Pharmaceutical Management

Academic year, 2016-2018

The IIHMR University, Jaipur

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INSTITUTE OF HEALTH
MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

TO WHOMSOEVER MAY CONCERN

This is to certify that **Chandresh Upadhyay** student of MBA Pharmaceutical Management from The IIHMR University, Jaipur has undergone internship training at IVC Advisory LLP. on topic To Assess the Awareness and Perception of Healthcare service providers towards use of telemedicine
from 5th Feb 2018 to 4th May 2018.

He has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific, and analytical.
The Internship is in fulfillment of the course requirements.

I wish him all success in all her future endeavors.

Dr. Ashok Koushik
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Date:05/05/2018

To Whomsoever It May Concern

This is to certify that Mr. Chandresh Upadhyay, a student of MBA, Pharmaceutical Management at School of Pharmaceutical Management (The IIHMR University, Jaipur) has successfully completed three months of dissertation from 5th February 2018 to 5th May 2018 at IVC advisory LLP Gandhinagar **(M/s MJ Solanki Group),**

During his dissertation Mr. Chandresh Upadhyay has worked as a **Project Manager** on various projects.

Apart from general understanding of company, he has undertaken following projects:

1. A Study to Assess the Awareness and Perception of Health Service Providers towards use of Telemedicine.
2. Tender Document Preparation for Manpower Outsourcing.
3. Telemedicine Project Handling and Profile preparation for various states under Medireach India Pvt Ltd.
4. Service Audit for various government hospitals under MJ Solanki group.
5. Company Profile Preparation and Data Management.

He was sincere, hardworking, inquisitive and has successfully carried out the assigned task during internship.

We wish him success for his future endeavours.

For IVC Advisory LLP

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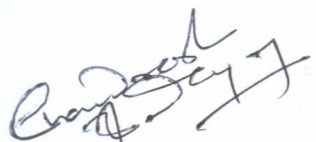
CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "To Assess the Awareness and perception of Healthcare Service Providers towards use of telemedicine has been submitted by Chandresh Upadhyay under the supervision of Dr. Saurabh Kumar Benerjee for award of MBA Pharmaceutical Management of the University carried out during the period from 5th February 2018 to 4th May 2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Signature

Contents

A brief Introduction of

M/s M J Solanki group

(Parent company of IVC advisory LLP)

M/s M. J Solanki is one of the biggest manpower outsourcing company of Gujrat and has a presence in more than 10 states in India.

The company has emerged as India's finest solution for Manpower Services, Mechanized Housekeeping, Engineering Services & Solid Waste Management. Our features services include equipping highly skilled manpower resources of Class - II, III & IV as per the rules of Labor Minimum Wages Act in addition to mechanized cleaning services on a par with international standards. The company dedicated to our client's satisfaction & their success. Our team of experts make every possible endeavour towards the growth of our clients.

Tagline: **'THEY' ARE YOUR PEOPLE'**

we, at M/s. M. J. Solanki have made this fact, our way of business! We know that the success of any business is not merely driven by infrastructure, technology or resources. It's largely driven by the dedication and determination of its people and thus, we provide innovative, talent-driven workforce solutions and models to bridge the gap between human potential and organizations across all industry sectors.

Fore-sensing the shortage of skilled talent in various organizations, a visionary, a technocrat and a farsighted businessman, Mr. Minesh Solanki, laid the foundation of M. J. Solanki in 2003. With a very firm metamorphosis and conscientious business attitude, the company has gained extreme trust and reputation in the various organizations within a very short span of time.

With a team of highly experienced personnel & experts, we have created a niche in the Manpower Outsourcing Industry by catering trained workforces of Class - II, III & IV as per the rules of Labour Minimum Wages act 1948 & ISO 9001:2008 standards.

MJ Solanki is also a one-stop solution for Mechanised Cleaning Services that rightly match the norms of ISO 9001:2008, ISO 14001:2004 Environmental Management System, and OHSAS 18001:2007 Standards

We cater to public & private sectors

- Healthcare Hospitals
- Airports
- Educational Institutes
- High court
- Corporate Industries (small & large scale) & counting

VISION

To empower individuals for the overall progress of the society and country.

MISSION

To be the national leader in manpower and service outsourcing.

Our Strengths

- More than 15 Years' experience
- 10 Cities across India
- 12,000+ Manpower strength
- More than 100 types of Paramedical staff
- Mechanized Housekeeping Services at 30+ Government Hospitals & Medical Colleges
- 350+ Urban, Community and Primary Health Centers

- Mechanized Housekeeping Services at 30+ Government Hospitals & Medical Colleges
- 350+ Urban, Community and Primary Health Centers

Key events and milestones:

1. FY 2003 - Begins operations in Bhavnagar with BSNL being the first client
2. FY 2005 - Expands operations to Rajkot and Ahmedabad
3. FY 2006 - Expands operations to Government Hospitals and Colleges
4. FY 2006 - Bagged Para Medical Staff supply in all Gujarat
5. FY 2007 - Secured industrial training institutes and expands to all Gujarat
6. FY 2009 - Bagged the contract for the entire Labor and emp. Department
7. FY 2010 - Secured First integrated service contract into Municipal Corp.
8. FY 2011 - Setup engineering division started working PIU's
9. FY 2013 - Diversified into Municipal solid waste management & Universities
10. FY 2013 - Diversified business into engineering projects
11. FY 2015 - Successfully implemented staff into more than 350 CHC & PHC
12. FY 2014 - Started staff management service revenue & crossed INR 70 Cr
13. FY 2016 - Successfully reached the mark of 8000+ employees
14. FY 2017 – Acquired speed rail & RailTel projects of PAN India Level & Secured contract into AIIMS Delhi
15. FY 2018- Acquired Prevention of Money Laundering housekeeping project

Medireach India Pvt. Ltd.

A telemedicine unit

Remedi-nova is a telemedicine kit designed by Neurosynaptic Communications Private Limited for Medireach India Pvt. Ltd.

Components of kit:

USB sensor:

A PC based diagnostic device with USB interface

Electronic Stethoscope

- Heart and Respiratory Sounds
- Innovative movement noise reduction techniques
- Supports bell and diaphragm frequency ranges
- Low bandwidth output for high quality sound, ideal for telemedicine applications

12 Channel ECG

- Simultaneous 12-channel acquisition
- Frequency response of 0.05 Hz to 40 Hz
- Diagnostic quality output
- Innovative baseline stabilization algorithm
- Filters for removing power-line interference and muscle tremor
- Probe with identifiable standard color codes

Semi-Automatic Blood Pressure

- Semi-automatic
- Calculates Systolic, Diastolic and Pulse Rate using oscillometric algorithm
- Supports a range of 50 mmHg to 220 mmHg for Systolic and Diastolic Pressure
- Accurate: Mean error in Systolic and Diastolic within + 5mmHg

Temperature

- Clinical range of 94 0F to 108 0F
- Accuracy of + 0.2 0F
- Settling time of less than 1 min

Oxygen Saturation measurements (Pulse Oximeter)

- Entire range of 0-100% saturation
- Accuracy: + 2% for 70-100%, + 3% for 50-69%
- Fingertip probe
- Dual wavelength measurement

List of Tables and Figures

Acronyms/Abbreviations

MD	Doctor of Medicine
MS	Master of Surgery
BDS	Bachelor of Dentistry
WHO	World Health Organization
ICT	Information and Communication Technology

Executive Summary

Origin of Telemedicine

Telemedicine, a term coined in the 1970s, which literally means "**healing at a distance**

It Signifies the use of ICT to improve patient outcomes by increasing access to care and medical information. Recognizing that there is no one definitive definition of telemedicine – a 2007 study found 104 peer-reviewed definitions of the word.

The World Health Organization has adopted the following broad description:

The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities". The many definitions highlight that telemedicine is an open and constantly evolving science, as it incorporates new advancements in technology and responds and adapts to the changing health needs and contexts of societies. Some distinguish telemedicine from telehealth with the former restricted to service delivery by physicians only, and the latter signifying services provided by health professionals in general, including nurses, pharmacists, and others. However, for the purpose of this report, telemedicine and telehealth are synonymous and used interchangeably.

Telemedicine is used as an umbrella term that refers to the remote delivery of health-care information using electronic telecommunication and information technology. In other words, there is a transfer of medical and health information between distant sites/participants using telecommunication and information technology as a substitute for personal contact.

Telemedicine technology can be utilized for a wide range of health-care needs. These fall into three major categories including :

(a) Tele-consultation where the local doctor consults the specialist on difficult cases and obtains the line of management;

(b) tele-monitoring and support which provides regular monitoring for intensive care and emergency units at district hospitals and also for support during disaster management;

(c) tele-education for the purpose of training doctors and paramedics from a higher level specialty hospital.

Telemedicine in the public sector has the potential for ameliorating these seemingly intractable and serious problems in our health-care delivery system such as the uneven geographic distribution of health-care resources and the ever escalating cost of care.

Health Care Providers

Under federal regulations, a "health care provider" is defined as: a doctor of medicine or osteopathy, podiatrist, dentist, chiropractor, clinical psychologist, optometrist, nurse practitioner, nurse-midwife, or a clinical social worker who is authorized to practice by the State and performing within the scope of their practice as defined by State law, or a Sciencepractitioner. A health care provider also is any provider from whom the University or the employee's group health plan will accept medical certification to substantiate a claim for benefits .

Research Objectives

The objectives of this study are

a. To understand the (Healthcare Providers) Perception towards use of Telemedicine.

Literature Review

In this report the term telemedicine term is often used which can be defined as the telecommunication technology to support education and healthcare across some distance, where explaining perception of healthcare providers includes multiple perspectives including Doctors and other healthcare providers.

Perception and Awareness id define as that encompasses a customer's impression, awareness and consciousness about something related to subject and its offerings, A customers perception is typically affected by reviews, Public relations, Social media, personal experiences and other channels.

In reviewing of literature there are various outcomes and conclusions which are extracted.

In a literature review of Patient and providers satisfaction with the use of telemedicine: Overview and rationale for cautious enthusiasm by Whitten P, Love B they conclude that with the technology the acceptance of telemedicine is improved where more effective examinations of patient and service providers satisfaction could pay a major role to develop telemedicine concept, also understanding what users want and why they want it can guide future projects and improve patient outcome. (whitten P, 2005)

In American well "Telehealth Index 2017 consumer survey found that consumers are delaying needed care also while video conferencing offers a viable solution to the patient, patients are willing to see physician who offer video consultation and consumers see many application for telehealth. (TELEHEALTH INDEX 2017 CONSUMER SURVEY, 2017)

In a literature from ABTms e-health: A step towards the universal health coverage in developing countries by Malina jordanova, Leonidandrouchko, Isao Nakajma. From this investigation, there is by all accounts clear advantages of conveying physiotherapy at a separation with a telemedicine method that enables patients to get to physiotherapy at home. Six-week tele-physiotherapy enhanced QoL in patients with knee OA, equivalent to centre based treatment. phone based physiotherapy ought to be fused into the recovery program of patients with knee OA. (Malina Jordanova, 2017)

An Article of Andrea gaggioli, et al:, 2005 "A telemedicine Survey among milan doctors" and they found that reposes calculated and concluded that the majority of physician moderately agreed that telemedicine has potential to enhance the quality of care. And the most of the benefits noted by respondents were immediate response, also supporting low cost of consultation and saving the time, also most of the doctors underlined the potential shortcoming of telemedicine and supporting the face to face interaction with patients is more important. (Andrea Gaggioli, 2005)

Research Methodology

STUDY SETTING–Ahmedabad, Delhi

STUDY DURATION-Three Months

STUDY DESIGN– Descriptive Cross-Sectional Study

STUDY POPULATION – Healthcare Providers (Doctors)

SAMPLE SIZE –260

SAMPLING METHOD– The sampling technique used in the study will be Purposive Sampling.

- **DATA COLLECTION–**In research the data primarySource. The primary data was collected through Structured questionnaires (Mixed) and structured interviews. Questionnaires will have the advantage that the respondent will have adequate time to respond to questions

- **DATA ANALYSIS–** The data analysis would be done with the help of MS Excel.

- **DATA COLLECTION INSTRUMENT-** Data collection would be collected from interview and a set of structured questionnaire.

Results and Findings

On the basis of the Survey following question asked from the healthcare providers including their Age their educational qualification, Specialization in respective segments and in which income group they fall.
Based on the their responses the following interpretations are made. Which are of following

Question 1. Do you think telemedicine Reducing cost of care delivery?

Response are calculated and interpretations are –

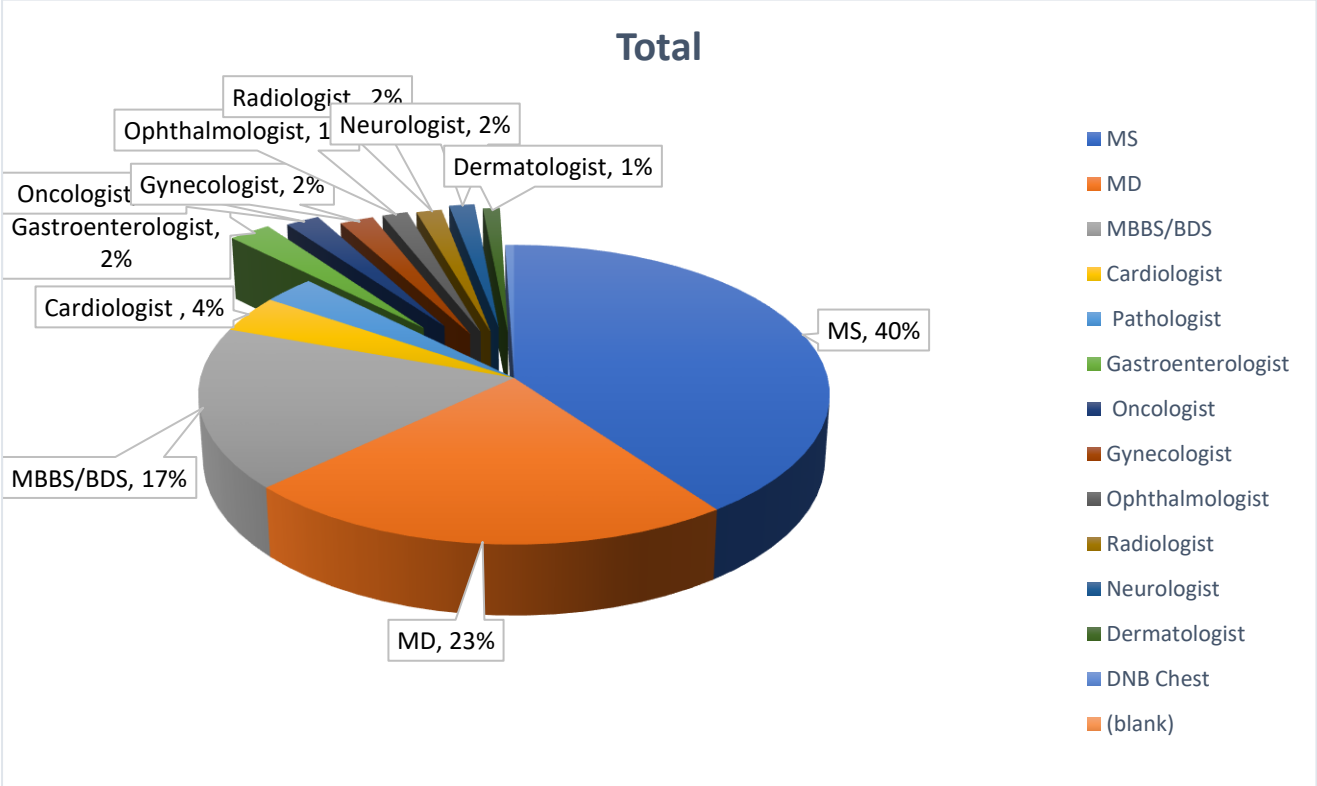


Fig 1: Pie Chart representation of telemedicine Reducing cost of care delivery

From the above figure of pie chart, it is observed that –

40% of Healthcare providers who their specialization in MS (Master of Science) thinks that the telemedicine is reducing cost of care delivery.

Followed by **23%** who did their specialization in MD (Doctor of medicine) thinks same about the telemedicine is useful in reducing the cost of care delivery.

17% MBBS/BDS also responded same.;

Where response of rest of the Healthcare providers with different specialization are categorized in the table form.

S no.	% Response	Specialization

1	4%	Cardiologist
2	2%	Gastroenterologist
3	2%	Oncologist
4	2%	Gynaecologist
5	2%	Neurologist
6	2%	Radiologist
7	1%	Dermatologist
8	1%	Opthalmologist

Table 1.1 – Shows the Responses of various Healthcare Providers with reference to question no 1.

Question 2: Do you think Telemedicine enhance quality of care?

Response are calculated and interpretations are –

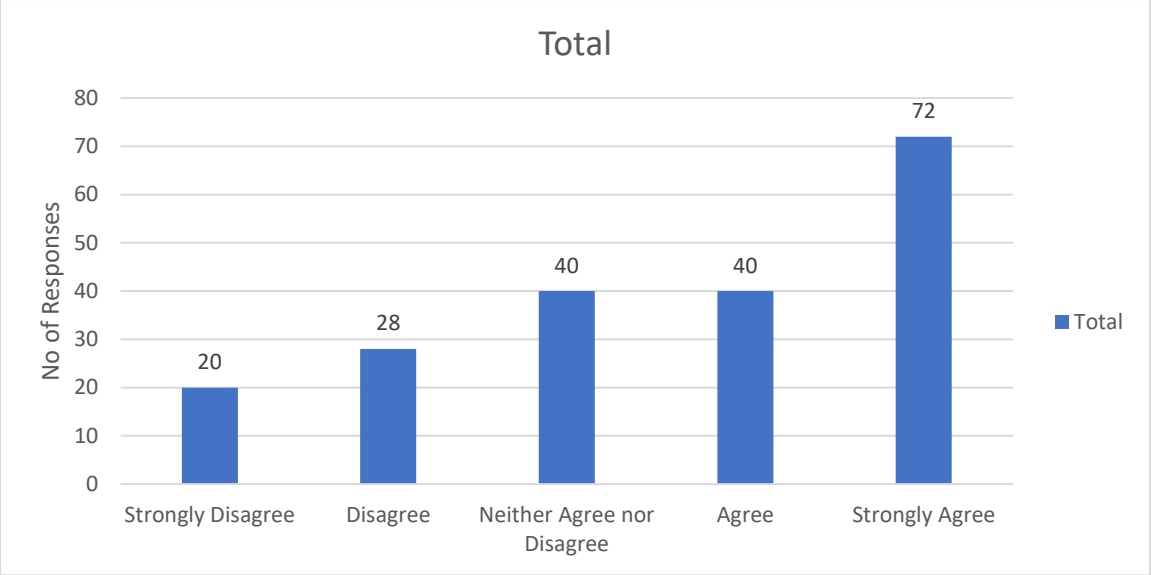


Figure 2: No of responses of Healthcare Providers with reference to question 2 in Bar Graph.

from above figure 2 it is observed that 72 of heathcare providers Stongly Agrees that telemedicine enhance the quality of care. where 40 healthacre provider responded Only Agree with the same.

Where 28 of the healthcare providers are disagree with this. Simillarly 20 of people reponded that they are strongly disagree with telemedicine enhancing the quality care of life.

And 40 of repondents shows that they are neithere agree or disaree.

Question 3: Do you think that telemedicine system will replace the Conventional system of patient consultation service?

Response are calculated and interpretations are –

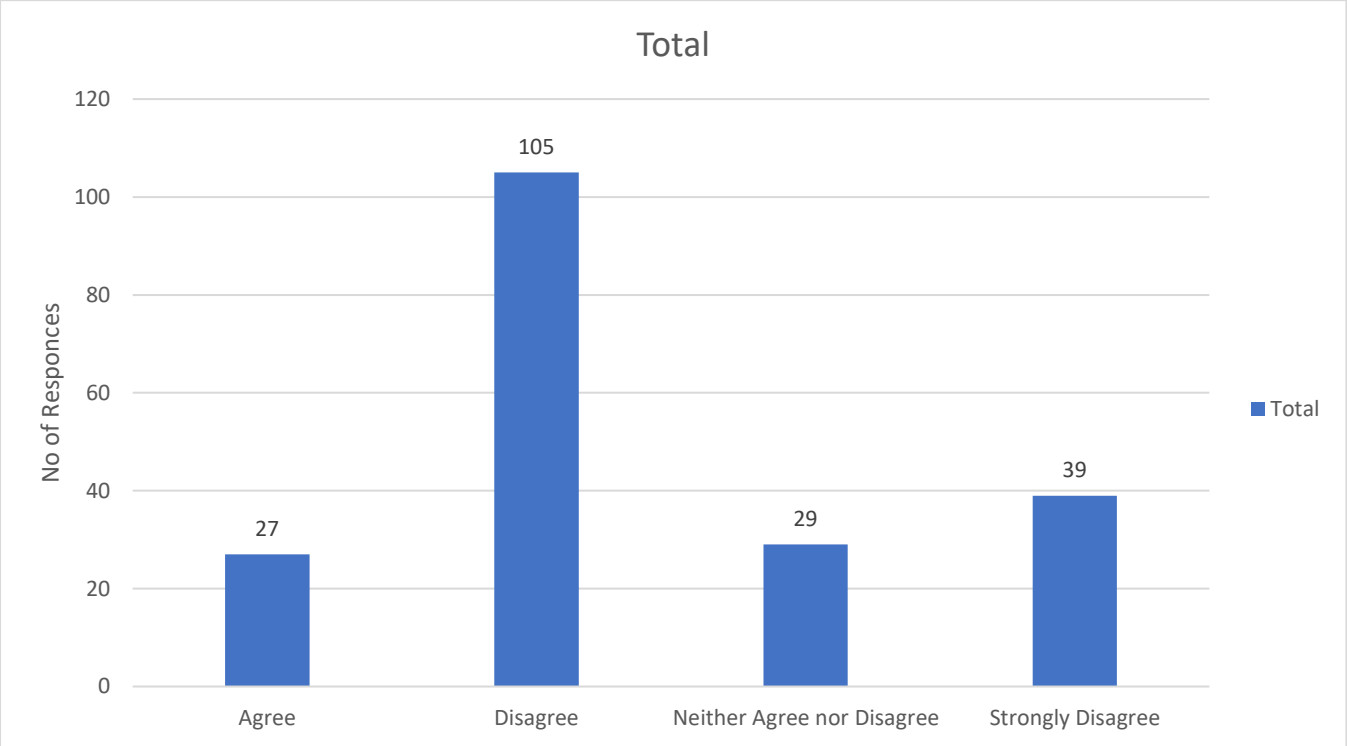


Figure 3: No of responses of Healthcare Providers with reference to question 3 in Bar Graph.

from above figure 3 it is clearly observed that 105 of heathcare providers Disagree with that the telemedicine system will replace the convetional system of patient consultation service. Where 39 of the healthcare providers are Strongly disagree.

And 27 of people responded that they Agrees with telemedicine will be replacing the convantional system of patient consultation services. while 0 of repondents shows that they are strongly agree with that thinking.

Where 29 of the respondents are neither agree nor disagree with this fact.

Question 4:Do you think Telemedicine improves effectiveness of Therapeutic intervention?

Response are calculated and interpretations are –

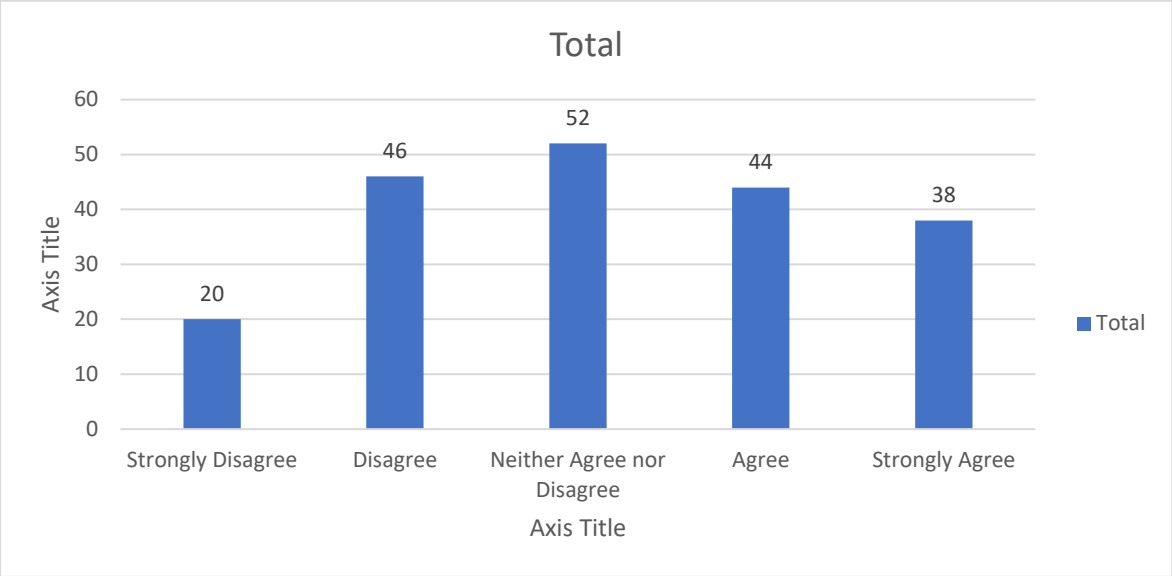


Figure 4: No of responses of healthcare providers for Telemedicine improves effectiveness of Therapeutic intervention.

from above figure 4 it is observed that almost 52 of heathcare providers neither agree nor disagree with that the telemedicine system will improve effectiveness of therapeutic intrvention. Where 38 of the healthcare providers are Strongly agree. And also 46 of the respondents are disagree with the same thinking

And 44 of people responded that they Agrees with telemedicine will telemedicine system will improve effectiveness of therapeutic intrvention.

Where only 20 of the healthcare providers strongly disagree with this fact.

Question 5: Do You Think Telemedicine improves patients access to healthcare services effectively and efficiently?

Response are calculated and interpretations are –

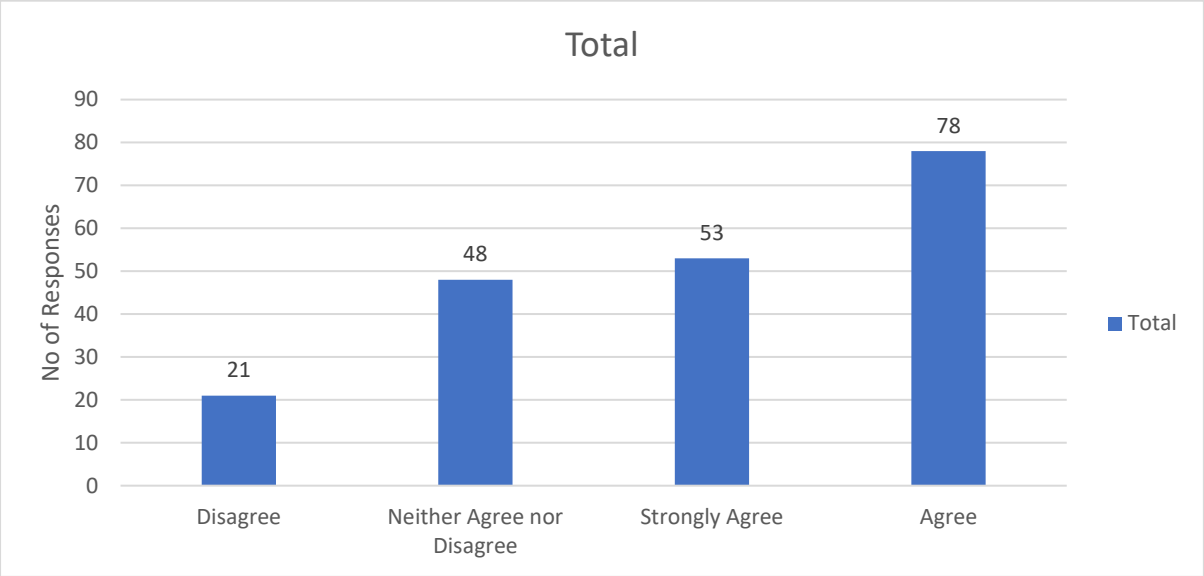


Figure 5: No of responses of healthcare providers for Telemedicine improves patients access to healthcare services effectively and efficiently.

from above figure 5 it is observed that out of 200 respondents 78 of heathcare providers agree with that the telemedicine system improves the patients access to healthcare effectively and efficiently,Where 48 of the healthcare providers are neither agree nor disagree. And also 53 from 200 of the respondents are Strongly agree and support the thought.

And 78 of people responded that they Agrees with telemedicine will telemedicine system will improve effectiveness of therapeutic intrvention.

Where only 21 respondents whole of the healthcare providers strongly disagree with this fact.

Questions 6: The Telemedicine Consultation saved time for doctors as well as to patients?

Response are calculated and interpretations are –

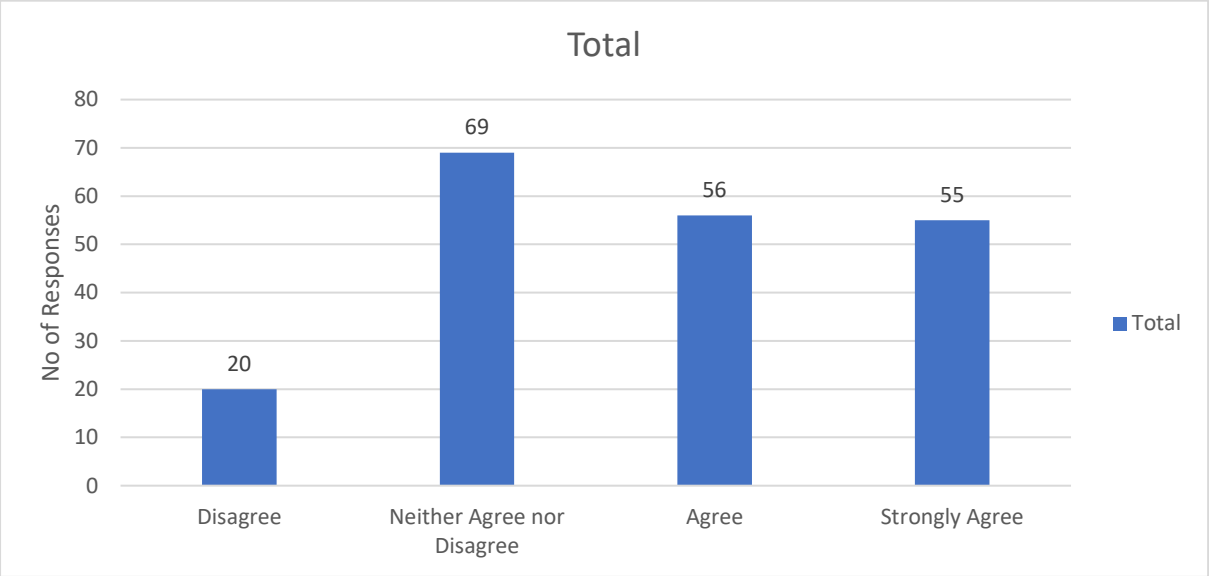


Figure 6: No of responses of healthcare providers for Telemedicine Consultation saved time for doctors as well as to patients.

from above figure it is observed that out of 200 respondents 55 of heathcare providers Strongly agree with that the telemedicine system saves time for doctors as well as for patients while doing the online consultation,Where 69 of the healthcare providers are neither agree nor disagree. And also from 200 results 56 of the respondents are Agree with this.

Where only 20 respondents which is 10% whole of the healthcare providers disagree with this fact.

And 0% of healthcare providers are strongly disagree which shows they cant deny that thought completely.

Questions 7: Do you think telemedicine Improves patient compliance?

Response are calculated and interpretations are –

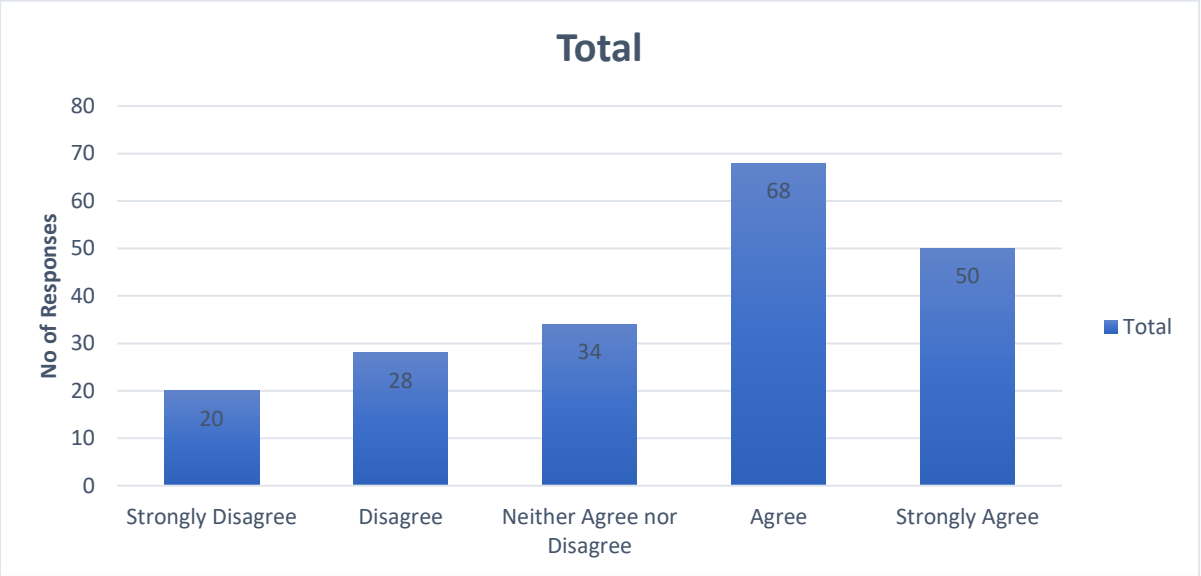


Figure 7: No of responses of healthcare providers for telemedicine Improves patient compliance.

from above figure it is observed that total no of reponses in likert scale shows that 68 of healthcare providers are Agree about that telemedicine improves patient compliance and itshould be promoted actively. While 50 respondents are Strongly agree.

Where respondents 50 of heathcare providers Strongly agree with that the telemedicine system saves time for doctors as well as for patients while doing the inline consultation,Where 34 of the healthcare providers are neither agree nor disagree. And also 68 from 200 of the respondents are Agree with this.

Where only 28 respondents which is 10% whole of the healthcare providers disagree with this fact.

And 0% of healthcare providers are strongly disagree which shows they cant deny that thought completely.

Questions 8: Do you think telemedicine increasing patient engagement and satisfaction?

Response are calculated and interpretations are –

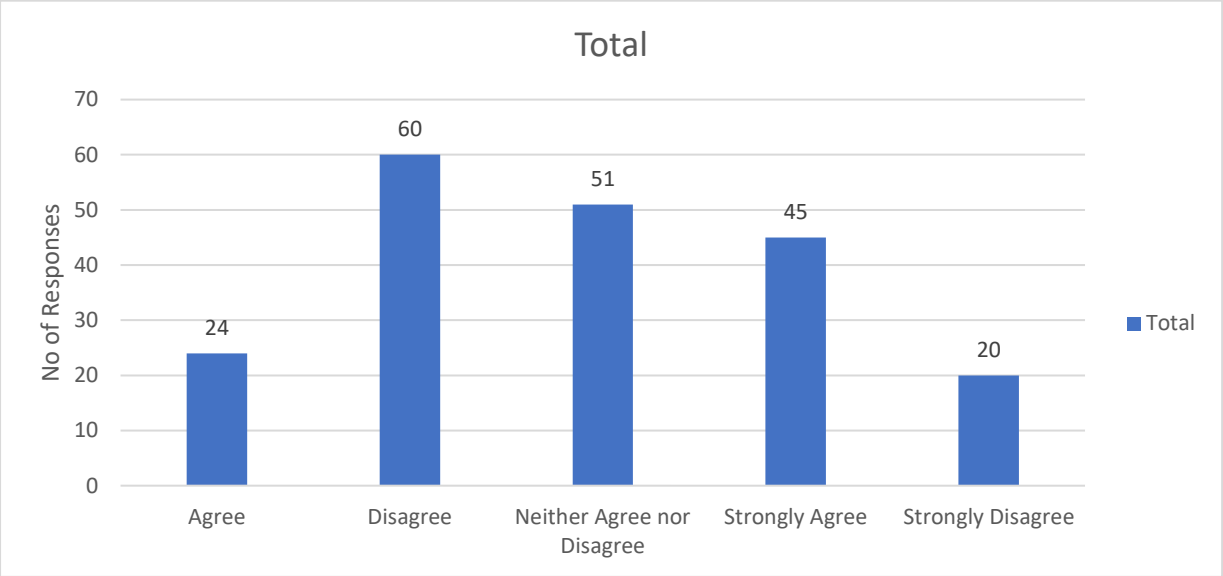
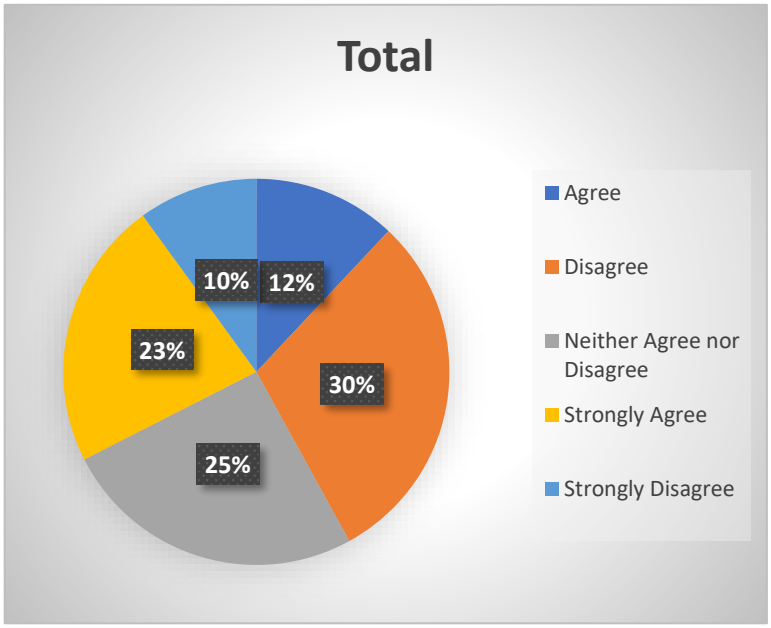


Figure 8: No. of responses of healthcare providers for telemedicine increasing patient engagement and satisfaction.



from above figure 8 it is observed that 30% of heathcare providers Disagrees that telemedicine increses the Patient engagement and satisfaction. and 12% healthacre provider responded Only Agree with the same.

Where 23% of the healthcare providers are also strongly agree with this. Accordingly 23% of people reponded that they are strongly Agree with telemedicine increses paitient satisfaction.

And only 10% of repondents shows that they are Strongly Disagree and they recommend that patient feel more satisafaction and engagement during face to face consultation with the Doctors.

Questions 9: Do you think Telemedicine providing access to new specialties and new technological healthcare services to the patient?

Response are calculated and interpretations are –

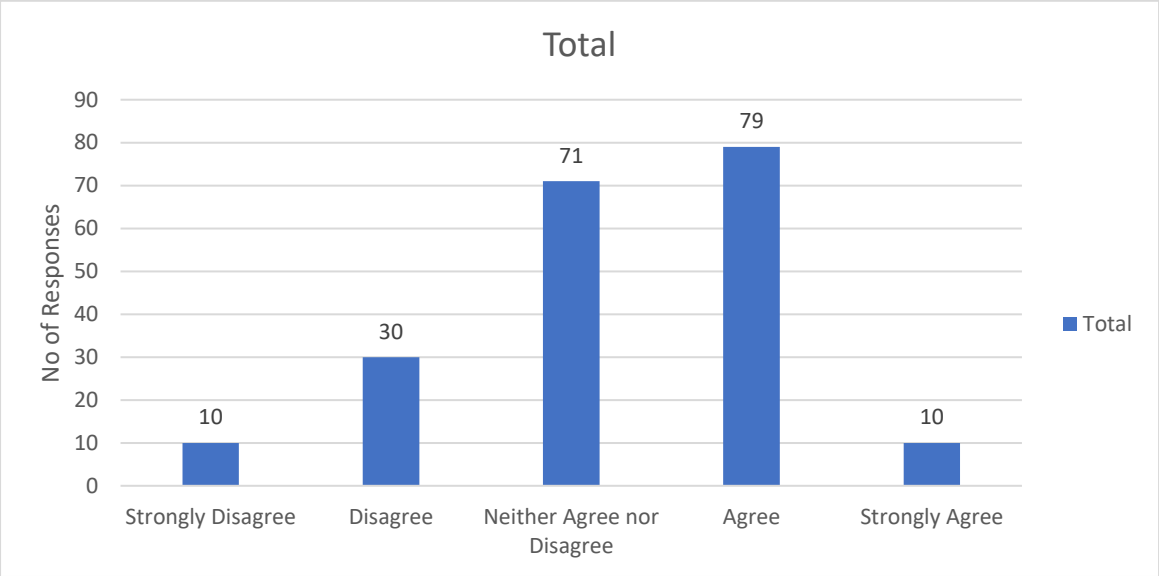
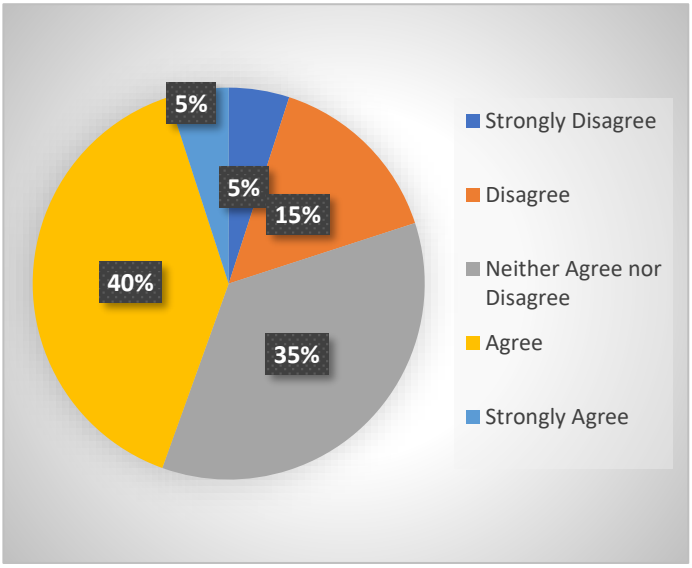


Figure 9: No. of responses of healthcare providers for Telemedicine providing access to new specialties and new technological healthcare services to the patient?



From above fig it is clearly showing that 40% of the doctors had perception that telemedicine is providing access to new specialities and new technological healthcare services to the patient. Also they supports the remote consultation through video conferencing in remote location will provide better technological access to heal the patients.

Where 35% of the healthcare providers neither agree nor disagree with this statement that they don't know much about telemedicine weather provide access to new specialities to the patients. And only5% of the respondents Strongly disagree with this fact.

And 5% of the healthcare providers are strongly disagree with this.

Conclusion and Discussion

Most of the respondents thinks that telemedicine is reducing the cost of care delivery from various levels of educational qualification and it involves most of the doctors did their specialization in MS. Doctors also supports the statement where they think that telemedicine enhances the quality care of life through online/Video consultation. Since some of the responded undertaking the telemedicine potential and says telemedicine will just support the patients based on regular health check-ups.

Most of the Doctors shows disagreement on that telemedicine will replace the conventional system of patient consultation service.

By asking the question that "Do you think Telemedicine improves effectiveness of Therapeutic intervention" most of the respondent's ticks that they neither agree nor disagree at this point.

Most of the Healthcare provider also thinks that telemedicine technology will improve patient access to healthcare service effectively and efficiently. where very few people choose different option apart from accepting this fact.

Most of the doctors Strongly agree with this thinking that telemedicine Consultation is saves time for doctors as well as to the patients.

Based on the respondents it is also conclude that telemedicine will improve patient compliance based on its cost effectiveness and home consultation services where they don't need to travel from one place to another place for getting the treatment.

We got mixed responses on the question no.8 where most of the reposes fallen under disagreement on telemedicine increasing patient engagement and satisfaction and they strictly stick to fact that the patient feels more patient feel more satisfaction and engagement during face to face consultation with the Doctors.

From the responses it is clearly showing that doctors had perception that telemedicine is providing access to new specialities and new technological healthcare services to the patient. Also, they support the remote consultation through video conferencing specially in remote location where unavailability of Hospitals and Health centres is high.

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whitten P, L. (2005). Patient and Provider Satisfaction with the use of Telemedicine: Overview and Rationale for coutious and Enthusiasm. pp. 294-300.

ANNEXURE

Healthcare Providers Perception towards Telemedicine

Instructions:

a. The Information provided by you is completely confidential.
b. Questions marked with (*) are compulsory & tick in appropriate box.
c. Maximum time for completion of Survey is 5 minutes.

---

1. Age _____

☐ 18 to 35 ☐ 36 to 45 ☐ 46 to 55

☐ 56 to 65 ☐ Above 65

2. Educational Qualification _____

☐ MBBS/BDS

☐ MS ☐ MD ☐ Endocrinologist ☐ Gynecologist

☐ Dermatologist ☐ Gastroenterologist ☐ Cardiologist ☐ Oncologist

☐ Neurologist ☐ Ophthalmologist ☐ Urologist ☐ Pathologist

☐ Rheumatologist ☐ Pediatricians ☐ Radiologist

Others (Please Specify)_____

3. Income Group (in rupees) _____

☐ Below 1,00,000 ☐ 1,00,000 to 4,50,000

☐ 4,50,000 to 8,00,000 ☐ Above 8,00,000

4. In which case would you like to recommend Telemedicine to patient (Choose maximum options that apply) _

☐ Post-Surgical Care ☐ Transplant Care ☐ Critical care

☐ Orthopedic care ☐ Tracheostomy & Ventricular care

☐ Cancer care ☐ Palliative Care ☐ Elder care

☐ Cardiac care ☐ Neuro Care ☐ Nursing services

☐ Bedside Attendants ☐ Other (_____)

5. For each question below, circle the response that best characterizes how you feel about the statement, where 1 = No, definitely not, 2 = I don't think so, 3 = I don't think so, 4 = Yes, I think so, 5 = Yes definitely

Statement	*No, definitely not*	*I don't think so*	*May be yes, may be no*	*Yes, I think so*	*Yes definitely*
Do you think telemedicine Reducing cost of care delivery.	1	2	3	4	5
Do you think Telemedicine enhance quality of care	1	2	3	4	5
Do you think that telemedicine system will replace the Conventional system of patient consultation service.	1	2	3	4	5
Do you think Telemedicine improves effectiveness of Therapeutic intervention.	1	2	3	4	5
Do You Think Telemedicine improves patients access to healthcare services effectively and efficiently	1	2	3	4	5
The Telemedicine Consultation saved time for doctors as well as to patients.	1	2	3	4	5
Do you think telemedicine Improves patient compliance.	1	2	3	4	5
Do you think telemedicine increasing patient engagement and satisfaction.	1	2	3	4	5
Do you think Telemedicine providing access to new specialties and new technological healthcare services to the patient.	1	2	3	4	5