

Review Article

TELEMEDICINE AND PATIENT SATISFACTION: ANALYZING THE FUTURE

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ABSTRACT

Telemedicine has the ability to bridge gaps and overcome barriers between the patient and the doctor. Physicians today are confronted with increasing demands to ensure and improve care of their patients. Previous research data suggests increasing and improving patient satisfaction above the expected rate. By summing up reviews, clinical trials and various researches in this field, this article critically reflects on the patient satisfaction with telemedicine, limitations and challenges in telemedicine. But one must be careful about the fact that given the complexity of improvement and changes in patient care, it is unrealistic to expect satisfaction with only one approach to solve health care problems. Even though data from patient satisfaction research suggests overwhelming response for this delivery modality, this review highlights some of the challenges and limitations in telemedicine related to methodology, data collection instruments, designs and approach. The field of telemedicine has developed tremendously in the last 50 years as technology and acceptance have improved. More effective examinations of patient satisfaction could play a role in moving telemedicine forward over the next 50 years. Understanding what the patient wants and the reason behind it can guide future projects of Telemedicine for a better outcome.

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INTRODUCTION

Telemedicine is the use of telecommunications and information technologies to provide clinical health care at a distance. It helps to eliminate distance barriers and improves access to medical services in remote areas which helps in saving lives critical care and emergency situations. The most crucial area of research in Telemedicine is patient satisfaction. However, most of this research lacks any consistent methodological approach which makes it difficult to conclude whether patients and providers are satisfied with telemedicine. 2

Telemedicine has played a significant role in spreading health care to unreachable populations since 50 years. 3 Since the beginning of Telemedicine, researches have been focused to analyze patient satisfaction, a key challenge that still remains for today's healthcare organizations. 4 Insights supplied by patients still remain crucial across the medical fields served by Telemedicine, especially as the number outgrows. 5,6

As the expansion of Telemedicine will continue a better understanding of how satisfied patients as well as the providers feel will become increasingly important. 7,8 Studies across several medical fields have demonstrated that the attitudes of patients play a significant role in health outcomes which further emphasizes the need to understand satisfaction. 9,10.

Through this research paper we plan to focus on specific questions of interest rather than continue the tradition of generic satisfaction. The use of telemedicine is increasing nowadays. This may be because of technological advances that have progressively made the equipment cheaper, simpler and affordable to use. Also, the healthcare costs have increased and so patient expectations. Patients are continuously searching for alternatives of healthcare delivery. Various methods like telemedicine, interactive video consultations have been tried in different parts of the world. But there is still a need for research to highlight the safety, efficacy and cost effectiveness.

Telemedicine research has shown and proved patient satisfaction but the researches have failed to demonstrate the real reason behind it. There seems to be still some error in communication. The following article will review patient satisfaction, limitations and challenges necessary to overcome in order to expand good health care.

METHODOLOGY**Search Strategy**

To identify telemedicine satisfaction studies the following electronic databases were searched: Medline, Pubmed, Science citation Index were used for referencing. The period chosen for the review article was 1998 to 2015.

Information was also inspired from TIE (Telemedicine Information Exchange) database. Words such as 'patient satisfaction, consumer satisfaction, telecommunication, telemedicine were used to find the database.

We have included patient satisfaction examples from various centers and clinical trials that explored patient satisfaction. Those review or research papers were excluded in which telecommunications technologies were primarily used for educational or administrative purposes and were not directly linked to patient care.

Selection criteria

It is an acknowledged fact that well designed and executed randomized control trials provide the most reliable evidence for inclusion in any systematic review.¹¹ The data was analyzed from all the clinical trials and research articles irrespective of the sample size or methodologies used. Titles, abstracts and full articles were read for their relevance.

Results

A study by Susan et al in July 2004 stated overall patient satisfaction results as 98.3%. The study was conducted on 495 real-time interactive telemedicine clinical consultations at the Telemedicine Center at East Carolina University School of Medicine in Greenville, NC. Patient satisfaction was noted in relation to patient age, gender, race, income, education, and insurance. Very few patients were dissatisfied with their telemedicine consultation and therefore correlation with the socio-demographic variables was limited. The sample size in this study was larger as compared to other studies. In non-telemedicine, factors like appointment scheduling, travel time, and patient involvement in the physical examination were some reasons for patient dissatisfaction unlike telemedicine.¹²

Agha Z et al. worked on whether physical separation and technology used during telemedicine have a negative effect on physician-patient communication there by affecting patient satisfaction. A validated self-report questionnaire consisting of 33 items measuring satisfaction with visit convenience and physician's patient-centered communication, clinical competence, and interpersonal skills was used. Patients reported greater satisfaction with convenience for Telemedicine as compared to interpersonal consultations but were equally satisfied with physician's ability to develop rapport and shared decision making. The study concluded that despite physical separation, the telecommunication was as effective as any other communication.¹³

From previous studies, the reasons behind patient satisfaction were: easier access to specialists, reduced/no travel cost, shorter waiting times for appointments, improved effectiveness, financial effectively, a broader interaction system, accurate diagnoses and personalized care.¹⁴

According to Carr-Hill, more than 80% of consumers find their healthcare to be satisfactory, a number that fits with statistics provided by hospital systems and research foundations.^{15,16}

Another study by Made et al focused at rural primary care where patients reported satisfaction scores of 5.7 on a six-point scale for video-based specialist consultations.¹⁷ In response to a 12-item survey, oncology patients using interactive videoconferencing conveyed high levels of satisfaction both at the time of the visit and at follow-up appointment which was similar to Dick et al.

study, where 71% of patients responded with scores of five on a five-point scale.^{18,19} Hicks et al. reported that 227 out of 258 patients claimed that they were satisfied with dermatological consultations completed by telemedicine.²⁰ On a seven-point Likert scale, almost all of these responses were in the top two categories.

Some Telemedicine projects undertaken outside the US have produced similar results. A Spanish study also reported increment in the number of patients opting for telemedicine. The study provided televisits from two specialists and a nurse to 15 patients dealing with kidney, heart, or chronic pain issues. The patients reported convenience and satisfaction.²¹ Some studies also researched on older age patients to determine patient satisfaction. Older populations are less comfortable with technology as compared to the younger groups. The result of the study reported that there was a positive response from the older age group patients as well. This can be attributed to the ease of access to medical care.²² A Florida-based study researched on effect of Telemedicine on doctor patient relationship. It reported that using technology to consult doctor resulted in a positive impact on the doctor-patient relationship.²³ The same result was also seen in more than 60% of the groups responding to the questionnaire.²⁴

On the other hand, Brennan et al.'s study noted equivalent levels of satisfaction between telemedicine and traditional care where telemedicine patients were treated by a nurse in person and a doctor via telemedicine while traditional patients were diagnosed and treated by a physician. Apart from the equal satisfaction rates, the follow up rates were also similar. In addition, the average time from admission to discharge was 177 min for the traditional group and 106 for the telemedicine patients.²⁵

A study in rural environment was undertaken by Woods et al. They assigned patients with sickle cell disease to telemedicine or standard encounter groups and provided treatments. The patients were then directed to complete a questionnaire and were offered open-ended comments, which were recorded verbatim. Responses across the two 60-person groups were routinely positive, as well as comparable. 95% of patients in the face-to-face group offered positive open-ended comments vs 70% in the telemedicine group. Despite these concerns, the patients' high satisfaction rates stemmed from their appreciation of better access and continuity of care.²⁶

A Swedish study reported another interesting aspect of telemedicine. The study noted that some patients appreciate the opportunity to have the general practitioner present while consulting a specialist.²⁷

Currently, the researchers are now focusing on the reason behind patients' satisfaction. In 18 rural California counties, researchers developed a standardized questionnaire for patients' satisfaction which was made using a five-point scale. They collected data from patients receiving consultations in 27 specialties. The score for mean satisfaction with telemedicine among the 793 respondents was 4.5 out of 5. Patients also showed a willingness to continue using telemedicine and believed that they obtained the necessary information from specialists and felt their questions were adequately answered by a primary care provider or nurse.²⁸ The travel time and cost was also reduced. These factors favored Telemedicine.

Another example from the oncology field is a study by Mair et al. They found patients satisfaction with their teleconsultations, though half of this group qualified their approval with two factors: seeing the specialist in person from time to time and viewing the clinic as serving a monitoring function. 29

Studies have shown that while patients have appreciated the advantages of Telemedicine but they have also noticed its limitations for example when nurses filled in for doctors during certain parts of examinations. Patients' satisfaction is of course a matter of great deal but recently the researches are beginning to determine the significance of health care providers as gatekeepers and barriers to effective telemedicine applications. Even when the patient feedback is generally positive, concerns come up as well, especially regarding privacy and the potential lack of a relationship with a provider.

The studies have mainly used simple survey instruments/questionnaires to ascertain patient satisfaction. But firm conclusions are still limited by difficulties in methodology. Patients found teleconsultations acceptable with definite advantages in terms of increased accessibility of specialist expertise, less travel required, and reduced waiting times; but also had some doubt about the mode of healthcare delivery, particularly relating to communication between provider and client via this medium and privacy.

Shortcomings of Telemedicine Patient Satisfaction Research

Some studies were done on less than 100 patients. Also, the criteria for the selection of patients were not clearly defined. It is somewhat difficult to discount selection bias in favour of those likely to be positive about teleconsultation. Some studies did not clearly define their methodologies to account for patient satisfaction. Most studies sought to measure whether patients would use the systems again or were "satisfied" with the service.

Most importantly, the cost factor which is a major concern for the patients was not addressed. The US system of healthcare delivery is a fee based system, yet the US studies failed to mention about the cost of seeing the doctor. Since many US telemedicine projects are primarily grant funded, it could be possible that in some studies participants received free teleconsultations, which could affect their satisfaction with the service provided.

The available data on patient satisfaction tells us about the positive response regarding patient satisfaction but does not help us to understand the reasons underlying satisfaction or dissatisfaction. Studies did not follow up the patient to explore their long time satisfaction thereby making it possible that the novelty value of the technology resulted in a positive bias.

On the other hand, the type of survey and the type of questions tried to define patient satisfaction. Any single question containing two constructs cannot identify the reason behind the patient satisfaction making the data difficult to interpret.

Solving the above issues could clarify more on the guidelines of patient satisfaction which can increase the use of Telemedicine.

Challenges in Methodology

There are challenges in Telemedicine technology which still needs to be solved. For instance, Instruments used to collect patient satisfaction data are often invalidated or untested. 30,31 Methods to measure

satisfaction need to be standardized in order to get an accurate picture of user satisfaction. Tools that are standardized and measure what they should can be optimum for providing accurate results. A better means of evaluation of hypotheses and research questions can be done if the questionnaires are tested. 32 A questionnaire/instrument should measure at least: technology use, future adoption, and perceived risks and benefits. 28

The word "patient satisfaction" should be clearly defined. The very meaning of the word "satisfaction" can be a challenge. According to an interview conducted as part of Collins and O'Cothain's study, they reported that for some individuals satisfaction means receiving adequate care. 33 For some patients, satisfaction referred to care that was less than optimal which could be better than average" to "outstanding. Allen et al. used satisfaction and confidence with a telemedicine application to indicate acceptance. 34 Satisfaction word was used in another aspect of telemedicine.

Considerations of these challenges can remove differences and which can help researchers address topics of patient concern by developing more refined instruments capable of better determining patient opinions.

LIMITATIONS

There are limitations of Telemedicine in three aspects: at the level of consumers, providers and health care organizations.

At the level of consumer:

- Lowers level of trust between patient and provider
- Users may be intimidated by the technology (such as the elderly population)
- The uncertainty of their medical consultation privacy

At the level of providers:

- requires a new design on the risk management
- practitioner-patient relationship with various patient populations in face-to-face consultation is now potentially further complicated by communication technology due to the change in dynamics in delivery
- clinicians with superior expertise in ethics and practice may lack technical expertise or perspective
- May have difficulty in communicating with seniors who have an increase in dementia and sensory impairment.

At the level of health care organization

- requires to develop a telemedicine specific policies and procedures
- increased risk of liability
- limited technological support in rural areas
- The pace of development and capability of technology will force telehealth 'solutions' upon us.

As telemedicine continues to evolve, these limitations must be addressed to improve on the overall experience for all.

DISCUSSION

The published researches have put forward the advantages and easy usage of telemedicine that is acceptable to the patients superficially but these researches have opened up more doubts and questions as compared to the answers. Currently, acceptance, utilization, future adoption, risks and benefits, effectiveness and efficiency are all at some point mixed with satisfaction despite obvious practical differences amongst them. 34, 35

Most researches have focused on technology but have not highlighted patient dimensions which are the essence of telemedicine. The issues which still put researches in dilemma are the effect on the doctor patient relationship, type of consultancy, the reason behind patient satisfaction, limitations and challenges. 36

The instruments used should be validated for better outcome. The methodologies should also be clearly defined to set aims and objectives for future researches. Patient sample size is also crucial to improve the usefulness of results.37, 38

Rural population is a challenge for telemedicine. Part of the high satisfaction levels reported by rural patients could stem from a perceived increase in quality of care that comes with telemedicine.39 Health care providers can access fewer patients and are not large enough to cover up all the patients.This can negatively affect the practice of Telemedicine and patient satisfaction among rural population. 40

This review highlights methodological deficiencies, limitations and challenges in published researches.A wider introduction to this new technology is required to overcome the obstacles in its foundation.The needs of the patients' should be understood to guide the development of Telemedicine for a better outcome.

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