



Patient Preferences Regarding Telemedicine to In-person Consultation: A Questionnaire-Based Survey

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Abstract

Introduction Telemedicine has been evolving over the last two decades; however, with the advent of the COVID 19 pandemic, its utility and acceptance have drastically increased. Most studies report increasing acceptability and satisfaction rates. This study aimed to assess patient preferences regarding telemedicine to in-person consultations and to attempt to assess the factors driving these preferences.

Material and Methods A questionnaire-based cross-sectional study was conducted for patients who had both teleconsultation and in-person consultation in the orthopedic outpatient. After obtaining consent to participate in the study, the patients were divided into broad clinical categories and responses were recorded regarding the treatment of illness by the doctor and opinions regarding telemedicine. Most questions were in yes/no or a Likert-based questionnaire. Mean, median, percentage and proportions were used for statistical analysis of the data.

Results The study group included 264 patients, with the majority with fractures and dislocations. Most patients (55.7%) were comfortable using the software for teleconsultation, and half the respondents found telemedicine convenient. A large percentage of the study group preferred in-person consultation to teleconsultation (58.7%), and the primary reasons for discontinuing teleconsultation were dissatisfaction during the interaction with the doctor and poor connectivity to telecommunication networks.

Conclusion Telecommunication has high acceptance and satisfaction, but many factors limit its acceptance in developing countries.

Keywords Telemedicine · Teleconsultation · Patient preferences · Questionnaire-based study

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Introduction

Telemedicine has been evolving over the last two decades with improvements in telecommunication. The advent of the COVID 19 pandemic has led to increased acceptance of conducting consultations via telemedicine among most practicing doctors. Conducting a teleconsultation is cost-effective and time-saving [1–4]. Good patient satisfaction rates have been reported for teleconsultation [1–8]. Due to its relatively recent nature, the issues regarding patient confidentiality, privacy and consent need to be addressed [3]. The inability to perform a detailed physical examination is also limiting for many physicians, which may lead to an incomplete diagnosis and management and, consequently, suboptimal response to treatment by the patient. There are few studies that have assessed the outcomes and satisfaction of patients with orthopedic complaints in an urban setting [3–5, 7–12].

This study aimed to assess the satisfaction, acceptability and preferences of patients who have utilized telemedicine and traditional in-person consultations in a tertiary care center in North India. We also attempted to identify the challenges faced by patients while using teleconsultation and factors limiting its incorporation in routine practice in our setting.

Material and Methods

This questionnaire-based cross-sectional study was conducted over a period of 4 months (November 2021–February 2022) after obtaining clearance from the institutional ethics committee. A sample size of at least 450 patients was calculated for the study. In our institute, 910 proactive teleconsultations were provided to different follow-up patients between March 2020 and December 2020. Assuming 50% of all patients would not be available for a follow-up, this sample size was calculated. This study included patients who had taken a teleconsultation appointment in the department of orthopedics during the period March 2020 to November 2021 and followed up in person in the outpatient for the same ailment. Appointments were scheduled as per the convenience of the patients and physicians for teleconsultations after contacting the hospital help desk. The in-person appointments were based on a “walk-in” basis on the doctor’s outpatient clinic days. Patients not meeting the criteria, those who were not reachable by their registered number after three separate attempts or individuals not giving consent to participate in the study were excluded. All patients were contacted on phone and enquired if they had an in-person teleconsultation for the same illness. If they met the inclusion criteria, written and informed consent was obtained in a language the patients understood by email or via WhatsApp for all participants. In case the participant presented in outpatient for follow-up, a signed consent was obtained from them. Audio consent was obtained from all patients who were not able to present to the outpatient department during enrollment or were unable to give consent via electronic media. Consent forms were prepared in Hindi or English, and in case the patient is not comfortable with these languages, Google Translate was used to translate the consent form to the preferred language. The teleconsultations were done using a web RTC video conference using “Jitsi Meet” [13]. All consultations were conducted by six orthopedic faculty members and followed the national guidelines outlined by the appointed regulatory committee [12]. After obtaining consent, a questionnaire was filled up by two evaluators (two faculty members who were not part of teleconsultations) to record the answers of each respondent. The patients were divided into broad clinical categories based on their presenting complaints [3]. The questionnaire assessed the ease, mode of travel and approximate time to

reach the hospital (Table 1). Patient opinions regarding the treatment of illness by the doctor and opinions on telemedicine were also recorded in the questionnaire. Information regarding the ease of getting laboratory and radiological investigations without visiting the hospital was also included in the questionnaire. The questionnaire was developed by the faculty members of the department of orthopedics at our institute. The method of questionnaire formulation was literature review [1, 14]. The questionnaire was validated through the Delphi method. The questionnaire design was approved after mutual discussion and consensus among the orthopedic faculty and institutional review board members over a series of meetings. The mean agreement per question was 92.3%. Most questions were answered in Likert-based five-point objective responses (between 1: strong agreement and 5: strong disagreement) or a “yes/no” format. Prior to the implementation, the questionnaire was subjected to pilot testing on a group of 30 patients that met the inclusion criteria. The internal consistency for closed ended questions was high, with a Cronbach’s alpha of 0.82.

Collected data were entered in Microsoft Excel 2019 and converted to SPSS version 25 for statistical analysis. All answers and personal records of the respondents were kept confidential. Descriptive analysis was done, and proportion, percentage, mean, median and standard deviation were calculated for the data.

Results

A total of 750 records were obtained, of which we were able from the telemedicine patient database to include 482 (64.3%) patients in the study. Two hundred and sixty-eight patients ($n = 268$, 35.7%) were not included in the study. Of these, one hundred and fifty-four patients ($n = 154$, 57.4%) did not follow-up in the outpatient for the same illness. We were unable to contact 61 (22.7%) patients as their contact numbers were incorrect or their phones were unreachable. 53 (19.7%) patients refused to give consent to participate in the study.

The study group included 264 (54.7%) males and 218 (45.2%) females. The most common mode of transport was using a personal vehicle (60%, $n = 290$) or taxi (18.5%, $n = 89$) to reach the hospital. The average time to reach the hospital was 1.84 h, and the median was 1 h.

Most of the patients included in the study followed up with complaints of fractures and dislocations (28.6%, $n = 96$), followed by cervical and back pain with or without radicular symptoms (20%, $n = 96$). Patients with complaints of large joint degenerative disorders and inflammatory arthropathies also constituted a significant portion of the study (Table 2).

Table 1 Questionnaire to assess the patients' perception of telemedicine compared to conventional outpatient visits

<p>A) Demographics</p> <ul style="list-style-type: none"> a. OPD number : c. Sex: f. Age g. Time taken to reach hospital (minutes): h. Mode of travel to hospital <ul style="list-style-type: none"> a. Personal Vehicle b. Taxi c. Public transport d. Walking e. Train f. Airplane i. Diagnosis of the patient: <ul style="list-style-type: none"> 1. Cervical and back pain with or without radiculopathy 2. Fractures and dislocations 3. Soft tissue injuries 4. Large joint degenerative disorders 5. Inflammatory arthropathy 6. Non traumatic soft tissue disorders 7. Chronic infection 8. Deformities 9. Tumors 10. Joint instability 11. Other disorders
<p>B) Satisfaction regarding treatment of illness (tick appropriate)</p> <ul style="list-style-type: none"> a. My doctor explained the nature of illness <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree b. I understood the treatment I will need for my illness <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree c. My doctor answered all of my questions that I had <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree d. On average, my doctor spent enough time with me during each visit <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree e. On average, I was satisfied with my doctor during each visit <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree f. I had to take time off of work for my appointments (Yes/No)
<p>C) Your opinions on telemedicine</p> <ul style="list-style-type: none"> a. I felt comfortable using the software for my visit <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree b. Was scheduling of the appointment appropriate? <ul style="list-style-type: none"> 1. Yes 2. No c. Was a detailed medical history taken <ul style="list-style-type: none"> 1. Yes 2. No d. Were you advised an Xray for further assessment? <ul style="list-style-type: none"> 1. Yes 2. No e. Getting the x ray done on my own was better than going to the hospital <ul style="list-style-type: none"> 1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree f. Were you advised laboratory investigations? <ul style="list-style-type: none"> 1. Yes 2.No g. If yes then did you opt for home collection of samples:

During the in-person visit, most patients agreed that the doctor had explained the nature of the illness to them (61.4%, $n = 296$), and after their visit, they understood the treatment for their illness (67.1%, $n = 323$). Most respondents agreed

that the doctor answered most of their questions during the visit (62.9%, $n = 303$) and spent enough time attending to them (61.4%, $n = 296$). Most of the respondents (62.9%, $n = 303$) agreed they were satisfied with their doctor during

Table 1 (continued)

	1. Yes	2.No
h.	Getting sampling done on my own was better than coming to the hospital	
	1. Strongly Agree 2. Agree 3. Undecided 4. Disagree 5. Strongly disagree	
i.	Are you satisfied with the treatment advice through telemedicine?	
	1. Yes	2. No
j.	I would agree to have another follow-up visit through a telemedicine call	
	1. Yes	2. No
k.	If yes, did you find telemedicine	
	1. Feasible	2. Convenient 3. Both. 4. No response
l.	Did you have any difficulty in understanding the process of telemedicine?	
	1. Yes	2. No
m.	Would you recommend this service to your friends?	
	1. Yes	2. No
n.	Would you opt for another appointment via telemedicine?	
	1. Yes	2. No
o.	If no choose the best reason for discontinuing telemedical consultations	
	1. Not satisfied with the interaction with doctor on teleconsultation	
	2. Poor connectivity	
	3. Difficulty in obtaining radiological and laboratory investigations	
	4. Had to take time off from work from consultation	
	5. Other: Please specify	
p.	Given a choice which method of consultation would you prefer	
	1. In person consultation	2. Phone consultation

Table 2 Division of patients in broad clinical categories

S no.	Complaint	Number (%)
1	Cervical and back pain with or without radiculopathy	96 (20)
2	Fractures and dislocations	138 (28.6)
3	Soft tissue injuries	27 (5.7)
4	Large joint degenerative disorders	50 (10.3)
5	Inflammatory arthropathy	46 (9.5)
6	Non traumatic soft tissue disorders	40 (9.5)
7	Chronic infection	38 (7.8)
8	Deformities	7 (1.4)
9	Tumors	7 (1.4)
10	Joint instability	14 (2.9)
11	Other disorders	19 (4)

the outpatient visit (Fig. 1). A large proportion (82.9%, $n=400$) of the patients had to take time off work to attend the in-person visit.

During the telemedicine consultation, 55.7% of patients ($n=268$) were comfortable using the software or device used for teleconsultation. 21.4% ($n=104$) were not sure if they were comfortable using the software, and 22.9% ($n=110$) were not comfortable using the software or device used for teleconsultation. 81.4% ($n=392$) were satisfied with the

scheduling of the appointment, and 91.4% ($n=440$) reported that a detailed medical history had been elicited (Fig. 2).

Radiological investigations were advised for 87.1% ($n=419$) of patients during teleconsultation. However, 73% ($n=351$) had to come to the treating hospital to get the test done. The remaining patients got the radiological test done on their own from another center and did not find it easier than coming to the treating hospital for the tests. Laboratory investigations were advised for 74.3% ($n=358$) of the patients via telemedicine, and 61.3% ($n=295$) agreed that getting the laboratory sampling done at home was better than at the hospital.

67.5% ($n=325$) had difficulty understanding the process of telemedicine; however, 64.3% ($n=310$) would recommend telemedicine to a friend. A high overall satisfaction rate (64.3%, $n=310$) was reported by the patients for teleconsultation. 50% ($n=241$) of all the respondents said that telemedicine was convenient as compared to in-person visits. 52.9% ($n=255$) agreed to follow-up with more teleconsultation appointments for the same illness (Fig. 3).

The primary reason for declining further telemedicine follow-ups was reported to be dissatisfaction with the interaction with the doctor (36.4%, $n=83$) and poor network connectivity (27.3%, $n=62$) (Fig. 4).

The study group preferred in person consultation (58.7%, $n=283$) as compared to teleconsultation (41.3%, $n=199$).

Fig. 1 Patients' perception of physical outpatient visits in orthopedics

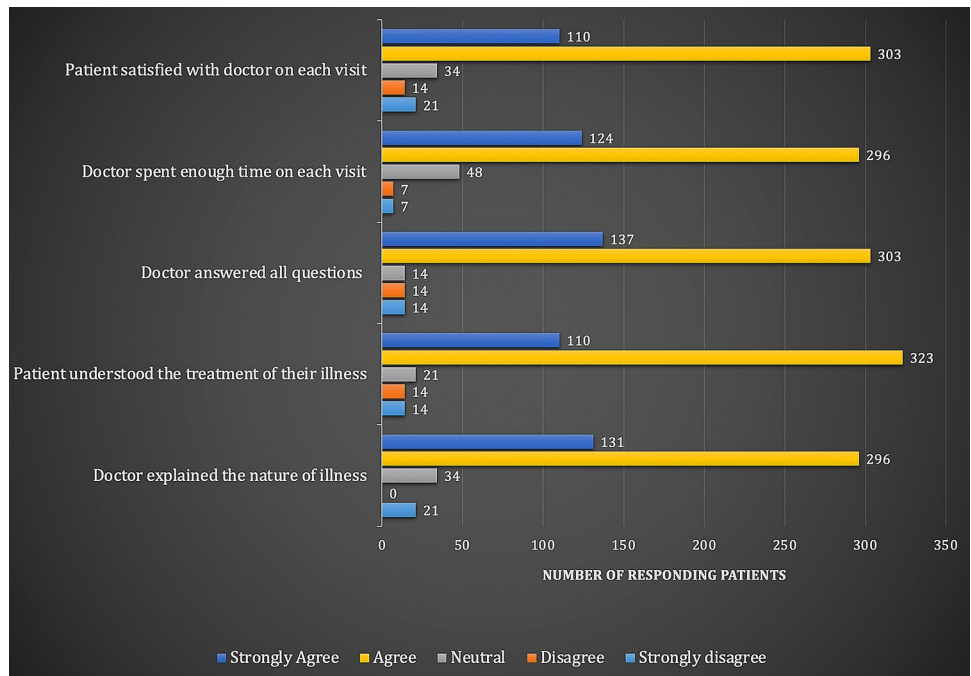
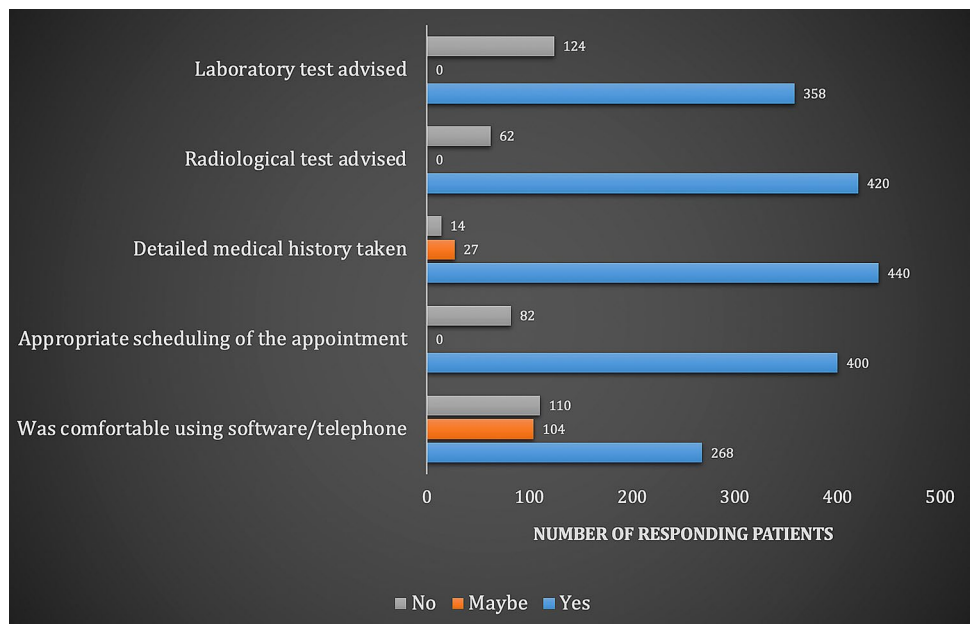


Fig. 2 Patients' perception of telemedicine consultations in orthopedics



Discussion

Telemedicine has been evolving progressively over the last decade, from the use of telephone and video cameras to the age of high-speed internet, where obtaining a consultation on the move is now possible. The acceptance and adoption of telemedicine as a tool to provide health care to individuals has increased with the advent of the COVID-19 pandemic. Studies before the pandemic concluded

telemedicine was feasible but did not have enough evidence to show the effects on health outcomes and costs [15]. Many authors have reported effectively treating postoperative cases of carpal tunnel syndrome, patients who underwent anterior cruciate ligament reconstruction, management of patients on anticoagulation and many other illnesses [11, 15, 16].

The demography of the study group was similar in pattern to most other studies where the outpatient mostly

Fig. 3 Patients' satisfaction toward telemedicine consultations in orthopedics

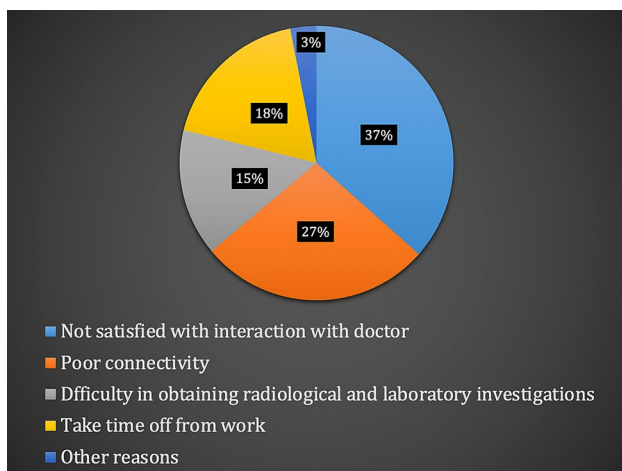
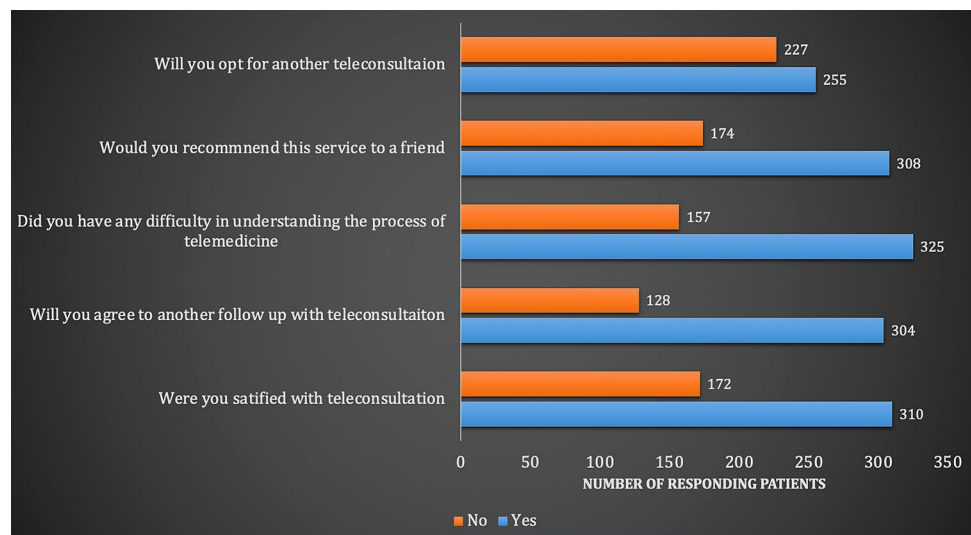


Fig. 4 Reasons for discontinuation of telemedicine consultations among orthopedic patients

consisted of patients following up for fracture/dislocations and cervical or back pain with or without radiculopathy [3].

In this study, most patients were satisfied with the in-person consultation, with most understanding of the nature of illness treatment and the time given by the physician for the consultation. However, 82.9% had to take time off from work to attend the in-patient consultation. The time commitment was shorter with telemedicine consultation, and most patients did not have to take time off from work, whether they were going to their workplace or working from home. Most of the patients were visiting the hospital by personal vehicle or taxi, which would add to the financial cost to the patient. Chaudhary et al. and Viruskala et al. also noted that there was a significantly less personal cost and inconvenience associated with teleconsultation [4, 5].

55% of the patients were comfortable using the software for teleconsultation, and most were happy with the scheduling of the appointment (81.4%). 91.4% were satisfied with the history taken by the attending physician and had high overall satisfaction (64.3%). This study reports a lower satisfaction with scheduling and satisfaction as compared to Kumar et al. (100 and 92%, respectively), who used a similar questionnaire [3]. Possible reasons for a lower rate of satisfaction for telemedicine could be due to the ease of lockdown and social distancing norms at the time of data collection which allowed more patients to visit the outpatient and get a more conventional doctor's appointment. Lower satisfaction from teleconsultation could also be due to the inability of the patient or relative to express themselves adequately on a virtual platform [17, 18]. Despite many authors attempting to describe a virtual examination for teleconsultation, the incorporation and streamlining of these processes will take time and practice [19, 20]. Orthopedic services rely on a detailed physical examination as well as radiological tests of the patient to assess the disease and pathology, which may not be possible in all cases leading to further dissatisfaction.

Many studies have assessed the preferences of patients regarding in-person or teleconsultation [1, 3, 5, 15, 16]. Chaudhary et al. in their meta-analysis concluded that there was no difference in the odds of satisfaction of a teleconsultation to an in-person consultation [5]. Haider et al. also concluded that all the randomized controlled trials did not show a significant statistical difference in the rates of satisfaction between the two [10]. Kumar et al. reported a higher satisfaction rate of 92% than this study, and about 7.2% had difficulty following the telemedicine process [3]. Their findings are in relative contrast to our study. This study shows that 58.7% would still prefer an in-person consultation despite high satisfaction rates for telemedicine consultation (62.9%

of respondents were satisfied with their teleconsultation, and 64.3% would have recommended it to a friend).

Davis et al. postulated that acceptance of new technology is determined strongly by the perceived benefits and ease of use to the consumer [21, 22]. This has been proven accurate due to the sudden increase in the adoption of telemedicine by both doctors and patients from the onset of the COVID 19 pandemic as it provides safety from exposure and may be considered a virtual personal protection equipment [23]. There are many challenges to the adoption of telemedicine in a developing country. Limitations to cellular and internet connectivity, the ability to own or access a device that enables telemedicine consultation and the education/ ability to operate a device that enables consultations are some factors that can limit teleconsultations to individuals. These limitations were also faced by the study group leading to a decreased satisfaction with the teleconsultation, especially following a prolonged lockdown period.

Reasons for high satisfaction from telemedicine include convenience, reduced appointment delays, decreased traveling time, cost-effectiveness and less time off work [3, 4, 9, 10, 12, 24, 25]. High satisfaction rates recorded with telemedicine were recorded in studies conducted before the pandemic, indicating it is a reliable and reproducible model for certain situations [26–34]. Our study also reflects high satisfaction rates with teleconsultation. Most patients agreed to another teleconsultation citing that it was convenient. However, when given a choice, most will still prefer an in-person consultation because of the interaction during the consultation. A large proportion of patients were also advised radiological tests which would require them to visit a hospital or radiological center, which may have influenced their preferences. This contrasts with the laboratory investigations where home sampling services are provided by many laboratories. The accurate communication of these reports to the doctor by the patient is also limited by the technical knowledge of the patient, which can limit communication and satisfaction.

This study was limited by a relatively low response rate (64.3%). We did not separately analyze the satisfaction levels in operated and non-operated patients. Analysis of quality-of-life scores and/or pain scores to assess the progress of treatment was not done to assess the effect of both consultations.

Conclusion

Telemedicine in an urban setting has high acceptance and satisfaction. Despite high satisfaction rates, there are multiple factors that are limiting its acceptance in developing countries including the availability and knowledge of the

technology to be used. More studies identifying regional factors are required to address these drawbacks.

Declarations

Conflict of interest The authors do not have any conflict of interest to declare.

Ethical standard statement This article does not contain any studies with human or animal subjects performed by the any of the authors.

Informed consent For this type of study, informed consent is not required.

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