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TUBERCULOSIS PATIENTS' OPINION TOWARDS APPROACH

Authors: Anitha VN[1], Madhu B[2],Jayaraj BS[3], Balu PS[4], Sreemounika[5], Chaithra M[6], Sahana KS[7], Karthik CB[8]

Abstract

Introduction: Mobile phones have a greater potential in the treatment of Tuberculosis patients. They can play an important role in medication adherence. Health workers can follow up on the defaulting patients through mobiles, and remind them about the Directly Observed Short term (DOTS) medication. It is an easy and cost-effective way to communicate with and monitor hard-to-reach patients in remote locations. Short message services (SMS) texts can be used as reminders to take their regular medications.

Objective: The goal of the research was to obtain the opinion of tuberculosis patients' regarding approach.

Methods: Longitudinal follow-up of newly diagnosed Tuberculosis patients in selected Tertiary care teaching hospitals was adopted in this study. Out of 197 TB patients, based on availability and usage of mobile phones 22 TB patients were included in the mHealth Intervention. mHealth Intervention group TB patients received Phone calls and SMS reminders once in two weeks, whereas standard care group patients received routine treatment for DOTS.

Results :

Conclusions:

Keywords: mHealth, Standard Care, Compliance to Anti Tuberculosis Treatment.

Introduction:

The World Health Organization (WHO) strongly advocates the use of digital technologies like SMS reminders, text messages, Voice messages, VDOT etc. for improving adherence and treatment outcome. Among the digital health approaches, mHealth is a more cost-effective option for enhancing and supporting treatment adherence. mHealth approaches can effectively advance the quality and coverage of health care and improve health information access. Even though digital technology is used widely, there is a dearth of literature on the use of mHealth to support TB adherence in this region.

Mobile phones' SMS text messaging capabilities are used in health promotion programmes all over the world. A study on the mobile initiative project in Cape Town, South Africa, observed that cellphones are more effective than standard care like DOTS[15]. TB health workers and DOTS providers are supposed to monitor patients regularly, but it is unrealistic to expect health workers to do so daily. Health workers can use mHealth approaches to follow up on defaulting patients and remind them about the DOTS medication. It is a simple and cost-effective method of communicating with and monitoring patients. SMS texts can be used to encourage them to stick to the treatment plan, and their queries can be answered over the phone[1].

Existing stigma of TB disease makes patients to prefer phone calls rather than health care workers direct visits to their home. Hence, mHealth approaches can overcome the stigma, loss of privacy and transportation constraints associated with routine TB management interventions[2]. A study conducted in Delhi revealed that mHealth intervention is a useful mechanism for providing adherence support to TB patients, particularly in a daily regimen scenario[3].

During the first phase of the DOTS course, some patients may experience nausea and vomiting, which may discourage them from continuing with the medication. Patients can contact their health care provider and seek suggestions to manage the side effects. Therefore, mHealth interventions are useful to get immediate answers to questions about side effects, food and other aspects of the disease. Health professionals also can counsel patients at a convenient time and educate patients' family members about TB management that can help to prevent further infection within the family and community[4].

The global nursing workforce is made up of approximately 27 million which represents nearly half of the global health workforce. We find nursing educational institutions are minimally engaged in any of the National TB control programmes except participating on World Tuberculosis Day activities. The National Tuberculosis Programme has better collaboration with medical colleges and non-governmental organizations. From the womb to the tomb, a nurse is the patient's first and often last point of contact, as well as the patient's family. This large workforce must be used at all stages of detection, diagnosis, treatment, and adherence. Nurses, with their medical and paramedical backgrounds, can understand the complex TB treatment, and nurses can also act as counsellors to improve treatment adherence and the management of adverse drug reactions[5]. Programs for continuing education can help nurses become more competent and aware of the value of adherence in patient care.

Even though trainee nurses' number is more there is shortage of nurses in India. It is impossible for nurses to provide individualized home care for TB patients. By keeping in touch with patients and their families frequently, nurses can develop interpersonal relationships with them and continuously motivate them to take their medication as directed[5]. Non-compliance with treatment regimens is an ongoing challenge for Nursing staff and other medical professionals. Nurses are aware of the negative consequences non-compliance has on patients, communities, and the healthcare system. Additionally, nurses are all too familiar with the challenges associated with unsuccessful treatments, unsatisfactory health results, and patients who are dissatisfied as a result of non-compliance[6,7]. While using mHealth approach in TB management nurse will be able to understand patients and situations, able to provide patient centered care, able to build inter personal relationship, able to provide needed nursing care and able to collaborate with other health care professionals[8] which is very essential to improve compliance to TB treatment.

Methodology

Longitudinal follow-up of newly diagnosed Tuberculosis patients is adopted in this study. The study is conducted in Tertiary care Teaching Hospital, Mysuru city. The population consists of newly detected TB patients. All enrolled patients during the study period from December 2019 to December 2020 are included in the study. Out of 197 TB patients, based on availability and usage of mobile phones 22 TB patients were included in the mHealth Intervention. These TB patients received Phone calls and SMS reminders once in two weeks, mHealth counselling was provided every week and as and when needed.

Table 1: mHealth Counselling schedule

Month and frequency	Counseling content
1st month ➢ 2nd week ➢ 4th week	❖ Prevention of the spread of TB and need for adherence to the treatment regimen. ❖ Need for investigations he/she needs to undergo while on treatment
2nd month ➢ 3rd week	❖ Identifying side effects and reporting them to healthcare professionals
3rd month ➢ 3rd week	❖ Importance of adhering to the treatment and follow up ❖ Identifying the health-seeking behavior
4th month ➢ 3rd week	❖ Maintaining good nutrition
5th month ➢ 3rd week	❖ Importance of adherence to TB treatment
6th month ➢ 3rd week	❖ Identifying the facilitating and hindering factors of compliance with treatment and the need for follow up

- Along with the counseling being done weekly once following reminder messages were sent to the patient's mobile. To sustain their attention and interest, these messages were changed every two weeks (for example, 'Hello, it is good to take your TB drugs every day', 'Namaskara, taking drugs daily improves your chances of healing', and so on). Every two weeks, extra inspiring messages were sent (for example, Congrats! The first month of treatment has finished, and so on).

- Seven VDOT patients uploaded their videos in Active Compliance Patient Tool Kit every day from the 2nd month to the 6th month.

Results:

1. Personal characteristics of Tuberculosis patients in mHealth intervention

Table 2: Personal characteristics of Tuberculosis patients in mHealth intervention.

Personal Characteristics	mHealth Intervention (n=22)	
	Frequency	Percentage
Age in years		
20-30	6	27.27
31-40	8	36.36
41-50	3	13.63
51-60	2	9.09
61-70	3	13.63
Gender		
Male	12	54.54
Female	10	45.45
Marital status		
Married	18	81.81
Unmarried	4	18.18
Type of family		
Nuclear	22	100

Joint	0	0
Residence		
Urban	17	77.27
Suburban	5	22.72
Religion		
Hindu	19	86.36
Muslim/Christian	3	13.63
Education		
Illiterate	1	4.54
Primary/middle school	7	18.18
High School/diploma	8	36.36
Graduation	6	27.27
Occupation		
Homemaker/ Unemployed	4	18.18
Student	6	27.27
Coolie worker	2	9.09
Farmer	6	27.27
Other	4	18.18
Socioeconomic class		
Middle	3	13.63
Lower	19	86.36

In **Table 2,** the personal characteristics of the mHealth intervention group information are presented. From the table, it is observed that 12(54.54%) patients were males and 10(45.45%) patients were females. Majority of them were in the age group of 21-30 years. Out of the 22, 18(81.82%) are married. Majority of TB patients 19(86.36%) belong to lower socioeconomic status and they were either completed 10 years of schooling or had completed diploma and the majority were students and farmers.

From this analysis, we conclude that the education, occupation, and economic status did not influence on the use of mHealth intervention for TB treatment.

2. Clinical characteristics of patients in mHealth intervention

Table 3: Clinical characteristics of TB patients in mHealth intervention.

Clinical Characteristics	mHealth Intervention (n=22)	
	Frequency	Percentage
Family history of TB		
Yes	3	13.63
No	19	86.36
Site of TB		
Pulmonary	14	63.63
Extra Pulmonary	8	36.36
Case Definition		
Microbiologically confirmed	14	63.36
Clinically diagnosed	8	36.36
Method of diagnosis		
ZN	11	50
CBNAAT	11	50
Treatment regimen		
New	21	95.45
Previously treated	1	4.54
Weight category		
< 49 kg	3	13.63
≥49 kg	19	86.36

Drug Sensitivity Test status		
Rifampicin sensitive	21	95.45
Rifampicin Resistance	1	4.54
HIV Status		
Nonreactive	22	100
Liver Function Test		
Normal	20	90.90
Elevated	2	9.09
History of Diabetes		
Yes	5	22.72
No	17	77.27
History of Smoking		
Yes	8	36.36
No	14	63.63
History of Alcoholism		
Yes	2	9.09
No	20	90.90

The fifteen important clinical characteristics were considered for diagnosing and managing TB patients like family history of TB, site of TB, method of diagnosis, treatment regimen followed along with drug resistant status. The history of diabetes, smoking, and alcohol consumption were also noted. Co-existing HIV infection status and Liver Function Test was also noted. Majoritiy i.e.,14 were having Pulmonary TB and were confirmed through microbiological analysis and remaining eight were clinically diagnosed as Extra Pulmonary TB. The weight of the patient was also used as one of the parameter contributing to TB as well as to start the medication. Out of 22, 1 patient was treated for TB earlier, and the remaining 21 (95.45%) patients are newly diagnosed and one case of extra-pulmonary TB was found to be Rifampicin resistant. All were HIV nonreactive. History of diabetes, smoking and alcoholism was found to be 22.72%, 36.36%, and 9.09% respectively.

3. Opinions of patients in intervention

Table 4. Opinions of patients in intervention (n=21)

Intervention opinion	Frequency	Percentage
1.Was intervention was convenient for you?		
1.1 Yes	21	100
1.2 No	0	0
2. Do you feel that intervention protects your confidentiality?		
2.1 Yes	10	47.61
2.2 No	11	52.38
3. How easy has it been to utilize the intervention system?		
3.1 Very easy	21	100
3.2 Not easy	0	0
4. How would you rate your overall satisfaction with intervention ?		
4.1 Excellent	1	4.76
4.2 Good	20	95.23

5. Do you feel that is an improvement over traditional DOT?		
5.1 Yes	21	100
5.2 No	0	0
6. Would you recommend to another patient?		
6.1 Yes	21	100
6.2 No	0	0
7. Do you feel that intervention (video uploading) saved your time?		
7.1 Yes	4	57.14
7.2 No	3	42.85

Intervention opinionnaire was administered to 22 TB patients who opted for intervention. **Table 4** shows that all participants (100%) gave the opinion that Intervention was convenient, it helps in maintaining confidentiality, easy to use, it was an improvement over traditional DOT and they would recommend it to other TB patients. Out of seven patients who opted VDOT 57.1% patients agreed that intervention saved their time. Most of the study subjects (95.23%) was satisfied with the intervention.

Discussion and conclusion:

Adherence is a dynamic process that varies with time since diagnosis, particularly in chronic diseases requiring long-term drug administration, indicating the need for more frequent monitoring. In the absence of direct observation of treatment, a mHealth intervention is a useful mechanism for providing adherence support to TB patients, particularly on a daily regimen scenario. The study recommends investigating the role of divergent mHealth packages, taking into account intervention feasibility and cost-effectiveness. Nurses must have accurate knowledge and skills in identifying non-adherence patients in order to provide individual support and protect the community from the spread of TB[9]. Because DOT may be stigmatized by requiring health personnel to be present in patients' workplaces and communities, which may result in unwanted disclosure of disease status.

In the present study, the main enhancing component for compliance to TB treatment was mHealth intervention where the counseling offered by the nurse researcher and the provision of VDOT facility is Active compliance patient tool kit has motivated and made them be consistently adherent to TB treatment. Other studies that used mHealth approaches like sending SMS reminders, VDOT, and tele counseling also showed significant improvement in compliance with TB treatment[10,11].

Therefore, when using mHealth Counselling and VDOT in TB management, potential concerns such as stigma and privacy must be carefully considered. Patients in our study expressed concern about their family members, friends, or neighbors finding out about their TB status, which could indicate a deep-seated fear of being stigmatized. This stigma would disturb the individuals, including delays in seeking care, delays in TB diagnosis, and noncompliance with treatment.

A VDOT study conducted in California found comparable results, such as patients perceiving VDOT to be more private in terms of their TB status and the video call service improved patients' privacy.To respect the patient autonomy better and to enhance mHealth services which is complementary to standard care. As TB control becomes more urgent, proper treatment adherence is critical, and we must recognise that the barriers to adherence are numerous and diverse. As a result, well-established mHealth interventions should be considered in Tuberculosis management. mHealth could provide an alternative approach to health-care utilisation, particularly in settings where face-to-face interactions are difficult by assisting in screening and notifying cases, patient referral and follow-up, monitoring TB medication adherence, data management, and TB education, mHealth interventions can improve public and private hospital collaboration for TB.

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