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Predicting Intentions to take Medication in Patients with Pulmonary Tuberculosis: Impact of Attitudes, Subjective Norms and Perceived Behavioral Control

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Abstract: The present study aimed to investigate role of Attitudes towards medication, subjective norms and Perceived Behavioral Control in predicting Intentions of patients to take Anti-TB medication. The sample comprised of 147 patients with pulmonary TB, recruited from Gulab Devi Chest Hospital, Lahore. Correlation Research design was used. Urdu translated version of Theory of planned behavior questionnaire was used for assessment. Results showed that, Distance to hospital and Attitude of doctors and staff negatively predicted Intentions. However, Monthly family Income, Attitudes towards medication and Subjective Norms positively predicted Intentions. Results also revealed that high and low intenders were significantly different in terms of Behavioral, Normative and Control Beliefs. Findings of the present study highlighted the importance of environmental and patient related factors influencing the decisions to take medication. These factors should be considered while developing interventions to promote future medication adherence behavior as intentions drives behavior and patients has to be motivated in order to perform the behavior.

Keywords: Intentions, Attitudes, Subjective Norms, Perceived Behavioral Control and Pulmonary Tuberculosis.

INTRODUCTION

Effective treatment launched by WHO and Pakistan National TB control program to eradicate the burden of TB has been available since 2006 in Pakistan [1]. However, nearly 500,000 of new cases continue to report annually and TB remains the most common cause of death in the country [2]. Non adherence to anti-TB medicines is the most significant factor responsible for complications such as treatment failure, relapse and MDR-TB, which in turn leads to higher prevalence rate [3]. Treatment for TB is a challenge to adherence due to its long duration with number of side effects associate with medicines [4]. In order to adhere to the treatment patients with Pulmonary Tuberculosis face many psychosocial constraints during their full treatment course [5]. Therefore, beside medical treatment there is need to evaluate determinants that might affect their decision to take medication.

Several studies have been conducted on patients with Tuberculosis to identify reasons for not taking medication despite availability of free of cost treatment. These studies identified some of the contextual and behavioral factors related to non-adherence among TB patients such as feeling better in symptom free period, lack of knowledge about disease, distance to hospital, poor attitude of doctors, use of alternative treatment, stigma, poor family support, long duration of treatment, negative attitudes towards treatment, low self-efficacy or motivation to adhere with treatment [6-11]. Because of such factors non-adherence with TB treatment continues worldwide with its serious consequences, like treatment failure and relapse, which results in morbidity, mortality and transmission of bacteria [12]. Despite the growing body of literature on identifying factors affecting adherence among TB patients, there is need to identify psychological factors that might influence patient's decisions to adhere with medication by systematic approach [13].

To explain the roles of psychological factors in changing health behavior, various Social cognitive theories have been developed that explain how these factors such as attitude and beliefs of individuals affect expectations, decision, motivation and intentions to perform behavior [14-17]. Among Social cognitive models, Theory of Planned behavior is widely used model, which proposed that person may intend to carry out any behavior, but there are some behavioral factors

that lower their motivation to complete behavioral action [18, 19]. According to the theory (TPB), these factors are attitudes, subjective norms, and perceived behavioral control over particular behavior that determines individual's intentions to perform specific action. Attitudes are influenced by favorable and unfavorable beliefs about the outcome of behavior. A subjective norm is the individual's belief that significant people in their life want them to perform specific behavior. Perceived behavioral control is perception that certain factors might assist or hinder their performance of behavior [20].

Theory of Planned Behavior is useful model in explaining and changing health behaviors that can be controlled by patients with little effort. Theory has been not only used on various health behaviors but also on social behaviors such as smoking, excessive alcohol use, and substance abuse), screening for cancer, HIV and other health problems, physical activity and exercise etc [21, 22]. Therefore, the present study aimed to investigate psychosocial factors based on theory of planned behavior with regard to intentions to take medication.

METHODS

A quantitative study with correlation research design was conducted on patients with Pulmonary Tuberculosis to identify correlates of intentions to adhere with treatment. Data was collected from 147, medically confirmed males (n=90) and females (n=57) with age range of 15 to 45 years old, registered Pulmonary Tuberculosis patients. Patients were screened based on their treatment characteristics categorized by National TB Control Program. From category one (CAT I); follow up (N= 40) who smoothly and regularly takes medicines from the hospital during their course were included. From the category two (CAT II) defaulter(N= 37, patients whose treatment has been interrupted for a period of at least eight consecutive weeks), relapse (N= 38, patients who presents with bacteriological smear positive TB after previous treatment with a successful outcome), treatment failure (N= 13, the patient who remains or becomes again smear-positive at the end of 2nd and 5th month of the treatment period) and Multi Drug-resistant TB (N= 13, TB caused by Mycobacterium tuberculosis strains which are resistant to at least one TB medicine). The sample was recruited from the outpatient department of the Gulab Devi Chest Hospital, Lahore. In order to conduct this research, the following ethical considerations were kept in mind:

Research started after the approval from the Department and Doctoral Committee comprised of University competent authority. The questionnaires were translated and used after the permission from the authors. Authority letters were presented to the Medical Superintendent and Deputy Medical Superintendent of the Gulab Devi Chest Hospital, Lahore. After ensuring the patients that their identity will not be disclosed to any one, written informed consent was taken. Information collected from participants was kept confidential.

Assessment measures;

Demographic Performa

Demographic characteristics of the patients included age, gender, level of education, marital status and monthly family income etc. Clinical data included: information about the age at diagnosis, type of patients, etc. Socio Cultural factors were distance to hospital, travel cost, waiting time and conduct of Doctors and staff etc.

Theory of Planned Behavior Questionnaire

Urdu translated version of theory of planned behavior a questionnaire was used [23]. In this questionnaire, intentions were measure by five items with alpha reliability was 0.85. The score range of the items was - 3 and + 3 with +3 indicate higher motivation to take medication. There were twelve items to measure attitudes towards Behavior and Behavioral beliefs with alpha reliability of 0.85. The score range of the items was – 3 and +3 (unlikely or bad, likely or good). Subjective norms and normative beliefs were comprised of nine items with alpha reliability. The score range of the items was - 3 and + 3 (higher scores indicate more pressure to take medication). Perceived behavioral control and control beliefs were comprised of fifteen items (alpha = .75). Score range of the items was 1 to 7 with higher scores depict greater behavioral control.

RESULTS

Demographic characteristics of the patients with Pulmonary Tuberculosis showed that Mean age of the patients was 25 years (M= 25.6, SD=7.76) and had average monthly family income (M= 20843.54, SD= 6532.9) PKR. The prevalence of TB was higher in males. Male patients reported their occupation as laborer and farmer. Majority of the patients were living at a distance of 10 km or more far from the hospital and they had to spend more than 100 Rupee on travel to take medicines from hospital. Most of the patients reported that waiting time to take medicines from the hospital was more than four hours. Majority of the patients perceived Doctors and Staff conduct as bad.

Table-1: Socio Demographic Characteristics of the Patients (N=147)

Variables	*f %*	*M*	*SD*
Age		25.6	7.76
Monthly Family Income (PKR)		20843.54	6532.9
Gender			
Men	90(61.2)		
Women	57(38.8)		
Education			
Illiterate	48(32.7)		
Primary	34(23.1)		
Metric	26(17.7)		
Secondary School	20(13.6)		
BA/BSc	19(12.9)		
Type of Patients			
Follow Up	40(27.2)		
Defaulters	37(25.2)		
Relapse	38(25.9)		
MDR-TB	13(8.8)		
Treatment Failure	19(12.9)		
Distance to Hospital			
Near (less than 10 km)	40(27.2)		
Far (more than 10 km)	107(72.8)		
Travel Cost			
Less than 100 Rupee	61(12.9)		
More than 100	86(58.5)		
Waiting Time in Hospital			
1-3 Hours	40(27.2)		
More than 3 Hours	107(72.8)		
Conduct of Doctors/Staff			
Good	44(29.2)		
Bad	103(70.1)		

Table-2: Clinical Characteristics of the Patients (N=147)

Variables	*f %*	*M*	*SD*
Age at Diagnosis(years)		24.6	7.2
Type of Patients			
Follow Up	40(27.2)		
Defaulters	37(25.2)		
Relapse	38(25.9)		
MDR-TB	13(8.8)		
Treatment Failure	19(12.9)		
Reasons of default from treatment			
Feeling symptoms free	12(8.2)		
Doctors confirmed cured	7(4.8)		
Too many tablets to take/side effects of medicines	6(4.1)		
Bad attitude of doctors	4(2.7)		
Belief in homeopathy/spiritual healing	3(2)		
TB can be cured if treatment is not completed	5(3.4)		
Not Applicable	110(74.8)		

Most of the patients were age of 24 years at the time of diagnosis. In terms of the types of the patients most of the patients were follow up, patients returned after default the treatment and relapse. Frequent reason of default mentioned by patents was feeling asymptomatic.

Table-3:

Sr#	Variables	1	2	3	4	5	6	7	8	9	10	11
1	Age	-	.05	-.16*	-.06	-.11	-.07	.19*	.23**	.22**	.07	.05
2	Gender	-	-	-.14	-.24**	-.07	-.22**	.17*	.13	.31**	.29**	.02
3	Distance to hospital	-	-	-	.21**	.22**	.08	-.11	-.05	-.17*	-.06	-.09
4	Travel Cost	-	-	-	-	.05	.35**	-.13	-.29**	-.30**	-.13	-.13
5	Waiting time	-	-	-	-	-	.22**	-.26**	-.22**	-.32**	-.25**	-.20**
6	Conduct of doctors	-	-	-	-	-	-	-.28**	-.40**	-.42**	-.35**	-.40**
7	Monthly family Income	-	-	-	-	-	-	-	.58**	.53**	.45**	.22**
8	Attitudes	-	-	-	-	-	-		-	.71**	.48**	.43**
9	Subjective Norms	-	-	-	-	-	-		-	-	.52**	.40**
10	Perceived behavioral Control	-	-	-	-	-	-		-	-	-	.16
11	Intentions	-	-	-	-	-			-	-	-	-

*p<.05, **p<.01, ***p<.001

Results showed that distance to hospital, waiting time and attitude of doctors and staff negatively correlated with intentions to take medication. However, monthly family income, attitude and subjective norms significantly positively correlated with intentions.

Table-4: Hierarchical Regression Analysis

	Intentions to take medication					
	Block 1			*Block 2*		
Variables	*B*	*SE*	*β*	*B*	*SE*	*B*
Constant	6.97	2.65		8.85	2.63	
Age	-.00	.03	-.01	-.02	.03	-.05
Gender	-.20	.65	-.02	-.36	.64	-.04
Monthly family income	.00	.00	.18*	-.2.62	.00	-.04
Distance to Hospital	-1.50	.67	-.18*	1.31	.63	.16*
Travel Cost	-1.15	.67	-.14	-.20	.65	-.02
Waiting time	-1.56	.66	-.19**	-.1.10	.63	-.13
Attitudes				.20	.07	.30**
Subjective Norms				.23	.10	.27*
Perceived Behavioral Control				-.08	.06	-.12
R^2			.34			.50
ΔR^2			.11***			.13***
F change			3.16			5.28

*p<.05, **p<.01, ***p<.001

Hierarchical Regression Analysis for Demographic Variables and Attitudes towards Medication, Subjective Norms and Perceived Behavioral Control as Predictors of Intentions to Take Medication (N=147).

Two steps Hierarchical regression analysis was conducted. First model explained 34% variance in intentions, with distance to hospital and waiting time in hospital significantly negatively predicted intentions and monthly family income positively predicted intentions. In the second model attitudes towards medication and subjective norms were significant predictors of intentions and model explained 50% variance in intentions.

DISCUSSION

The aim of the study was to assess factors associated with non adherence intentions through systematic theoretical framework. For this purpose, a well established model in health and social psychology, theory of planned behavior was used. Furthermore, the influence of socio-cultural and disease related factors on intentions were also investigated to remove barriers in adherence and to develop effective intervention for patients with pulmonary Tuberculosis.

The study highlighted the role of background factors such as longer distance to hospital, poor attitude of doctors and staff, long waiting time to get medicines and poor socio economic status as determinants affecting patient's motivation to complete full medication course. Previous studies have confirmed that patients stop taking their medicines if doctors treat them badly, they have to travel long distance to reach hospital and wait longer in order to get their medicines [24-26].

Findings of the study also revealed that patients with positive attitudes had higher intentions to perform behavior. In several studies based on theory of planned behavior, positive attitudes lead to stronger intentions to carry out specific action [27]. This shows that if patients have favorable attitude towards taking medication, they are more likely to take their medicines. Another component that significantly predicted intentions was subjective norms. These results were partially supported by previous literature on adherence intentions, which showed greater effect of attitude and perceived behavioral control than subjective norms on behavioral intentions [28-30]. However subjective norms significantly related to intentions in studies conducted on adherence among cardiac patients [31-32]. These findings confirmed that patient's decisions to adhere relies more on pressure from others than attitude and perceptions of control over behavior. The differences in findings were may be due to the norms and values of Pakistani culture, in which people pay more attention to advice of family members and professionals in the use of medication.

Among TPB constructs, Perceived behavioral control did not predict intentions to take medication in current study. This finding is not consistent with the theory, as well as several previous studies which strongly focused on the role of behavioral control [27-30]. Perceived Behavioral control refers as person's perceived ease and difficulty in performing a behavior and their confidence that specific behavior is under their control [33]. As current study revealed financial problems, poor attitude of doctors and long distance to hospital, due to these socio cultural barriers patients may have weaker perception of control in compliance with treatment.

In conclusion, Intentions to adhere with medication were based on positive attitudes to take regular medication and high pressure from significant others. Therefore, there is need to develop interventions to increase adherence. Present study also highlighted that misconduct of doctors and staff influence medication adherence. To deal with increasing number of TB patients seen on daily basis, program should be available for doctors and staff to improve their attitude and reduce their stress level.

The study also had some limitations. Firstly, only patients with Pulmonary Tuberculosis were taken, patients with other types of TB were ignored. Future study should measure adherence level of other TB patients. With regard to theoretical model rather than measuring actual behavior which is adherence level of patients only intentions to comply was measured. Future studies should measure the effects of intentions on behavior and also add some external predictors with three main components of model (attitude, subjective norms and Perceived behavioral control) to improve variance in the model.

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