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Original Research Article

Treatment adherence among tuberculosis patients by using the theory of planned behaviour

Razi Faraz Khan

Psychology Department, Barkatullah University, Bhopal, Madhya Pradesh, INDIA.
Email: razifaraz27@gmail.com

Abstract

Tuberculosis (TB) is one of the most globally serious public health problems. About one third of the global population has been infected with Mycobacterium tuberculosis (Marinac *et al.*, 1998). Poor compliance with the prescribed treatment is a common problem in persons having tuberculosis. The purpose of the present study was to apply the theory of planned behaviors to the prediction of adherence in tuberculosis treatment among patient attending DOTS treatment in a tuberculosis hospital in Bhopal city. The sample consist of one hundred tuberculosis patient randomly drawn from patient attending DOTS treatment clinic. For data collection treatment adherence questionnaire based on the construct of The Theory of Planned behavior suggested by Ajzen 2002, 2006 was used. The obtained result indicates that (1) Behavioral belief, normative belief and control belief was significant predictor of attitude, subjective norm and perceived behavioral control. (2) Contrary to the assumption of the TPB attitude and subjective norm were not found as significant predictor of Intention. However perceived behavioral control was significantly related to behavioral Intention. (3) Correlation and regression analysis have shown positive and significant relation ship between intention and treatment adherence and also intention was found as significant predictor of treatment adherence. (4) Perceived behavioral control was found as significant predictor of treatment adherence.

***Address for Correspondence:**
Dr. Psychology Department, Barkatullah University, Bhopal, Madhya Pradesh, INDIA.
Email: razifaraz27@gmail.com

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INTRODUCTION Tuberculosis (TB) is one of the most globally serious public health problems. Poor compliance with the prescribed treatment is a common problem in persons having tuberculosis. Knowledge and perception of patients about their disease and health care needs have been shown to provide valuable insights in the decision making process (Oliver and Taylor, 1999).

DEFINITION OF ADHERENCE

"the extent to which a person's behaviour—taking medication, following a diet, executing lifestyle changes—follows medical advice" (Haynes, 1979). The participants at the WHO Adherence meeting in June 2001 (Sabate, 2001) concluded that defining adherence as "the extent to which the patient follows medical instructions". Accurate assessment of adherence behaviour is necessary for effective and efficient treatment planning for ensuring that changes in health outcomes can be attributed to the recommended regimen

MAGNITUDE OF THE PROBLEM OF POOR ADHERENCE: The impact of poor adherence grows as the burden of chronic diseases grows worldwide. **DETERMINANTS OF ADHERENCE:** A considerable amount of empirical, descriptive, research has identified correlates and predictors of adherence and non-adherence. These include aspects of the complexity and duration of treatment, characteristics of the illness, iatrogenic effects of treatment, costs of treatment, characteristics of health service provision, interaction between practitioner and patient, and socio-demographic variables. **Theory of Planned Behaviour:** The Theory of Planned Behaviour (TPB) is a well established social psychological model of behaviour that has been used extensively in the prediction of a range of health behaviours (see Conner and Sparks,

1996 for review). According to the TPB the proximal determinant of behaviour is a person's 'intention' to perform the behaviour (e.g., 'I intend to take treatment for tuberculosis regularly over the next six months'). This construct represents a person's motivation to perform the behaviour and those with strong intentions are likely to exert more effort to achieve their goals. Ajzen (1991) proposes three independent determinants of behavioural intentions; attitude, subjective norm and perceived behavioural control. Attitudes are conceptualized as general positive or negative evaluations of behaviour. It is the overall evaluations of performing the behaviour by the individual. Subjective norms tap the influence of perceived social pressure from significant others to perform (or not to perform) a particular behaviour. Perceived behaviour control is the third independent determinant of behavioural intentions. Thus, intention is in turn determined by three constructs: Firstly, the person's 'attitude towards the behaviour (e.g., 'My taking medicines regularly over the next 6 months would be good/bad'). Secondly, 'subjective norm' refers to the perceived social pressure from important others to perform or not perform the behaviour (e.g., "People who are important to me think I should/should not take medicine regularly over the next six months"). Thirdly, 'perceived behavioural control' refers to a person's perception of the amount of control he or she has over performing the behaviour (e.g., My taking medicines regularly over the next six months would be easy/difficult') and is seen to cover the perceived influence of both internal (e.g., self-efficacy, skills) and external (e.g., opportunities, constraints) control factors. The last construct was added to an earlier version of the model (Theory of Reasoned Action (TRA); Ajzen and Fishbein, 1988) in order to extend the model to the prediction of non-volitional behaviours. As Ajzen (1988) argues, the performance of much behaviour is not under complete volitional control and as such every behavioural choice is subject to some degree of uncertainty. Accordingly, when people are accurate in their assessment of control, perceived behavioural control should also have a direct influence on behaviour. This may be particularly relevant in relation to the treatment behaviour (especially by economically poor patients) where a number of barriers and obstacles (e.g., time pressure, economic constraints, distance, weather, cost) may prevent people from acting on their intentions. Theory of Planned Behaviour is hypothesized to mediate the relationship between external concepts and behaviour (Ajzen, 1985). Specifically, all concepts external to the TPB proper are hypothesized to influence a behaviour through attitude, subjective norm, and perceived behavioural control. This allows for interventions to target TPB concepts with an underlying insight into the antecedents of social cognition.

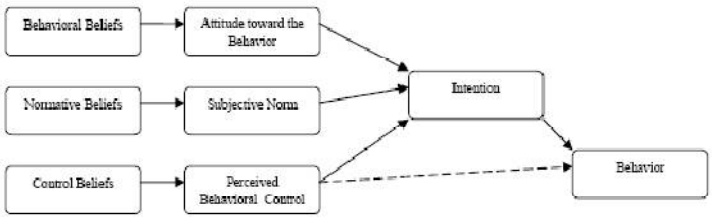

Figure 2-1. The theory of planned behavior (Ajzen, 1991)

Figure 2-1: The theory of planned behavior (Ajzen, 1991)

HYPOTHESES

It was hypothesized that:

1. Beliefs will be the significant predictor of attitude, subjective norm, and perceived behavioural control.
2. Attitude, subjective norm and perceived behavioural control will significantly predict treatment intentions of patients.
3. Intention will be direct and significant predictor of treatment adherence behaviour.
4. Perceived behavioural control will significantly predict treatment adherence behaviour.

Participants: One hundred tuberculosis patients randomly drawn from patients attending DOT treatment clinic at a local government tuberculosis hospital located in Bhopal city (MP) participated in the study.

Measures: The questionnaire contained direct measures of the main TPB constructs as suggested by Ajzen (2002, 2006). The questionnaire used in the present study was a 4-page stapled booklet. The section that the present analyses examined asked questions about behavioural beliefs, normative beliefs and control beliefs, attitude, subjective norm, perceived behavioural control, intention and adherence behaviour.

Procedure: Patients completed TPB questionnaire and a measure of constrains experienced by the patients in taking DOT treatment. The participants completed self-report measures of the TPB.

RESULTS

Table 1: Mean scores and SDs for different measures of the Theory of Planned Behaviour along with the analysis of variance F values.

Variables	Constraints in Treatment			F(2,96)
	Low (n=26)	Moderate (n=44)	High (n=30)	
Behavioural belief	7.27	6.84	7.47	1.67
	(1.87)	*(1.40)*	*(1.31)*	
Outcome evaluation	15.81	16.21	15.63	0.14
	(5.08)	*(4.43)*	*(5.18)*	
Past behaviour	76.54	71.66	63.10	8.79**
	(13.74)	*(10.57)*	*(13.25)*	
Normative belief	16.38	16.18	17.10	1.34
	(2.70)	*(2.37)*	*(2.20)*	
Motivation to comply	15.65	14.45	14.07	4.25*
	(2.65)	*(1.87)*	*(1.93)*	
Control belief	9.46	7.93	8.10	2.83*
	(3.13)	*(2.49)*	*(2.64)*	
Power of Control	7.77	7.45	7.30	0.28
	(3.08)	*(2.04)*	*(2.22)*	
Attitude	14.31	12.18	12.17	5.13**
	(2.56)	*(2.88)*	*(3.25)*	
Subjective Norm	15.46	15.00	15.40	0.70
	(2.61)	*(1.43)*	*(1.40)*	
Perceived behavioural control	16.50	14.77	13.23	13.66**
	(2.12)	*(2.11)*	*(2.78)*	
Intention	16.27	16.77	15.73	3.53*
	(2.24)	*(1.40)*	*(1.41)*	
Behaviour	39.81	39.30	34.23	15.56**
	(5.06)	*(3.08)*	*(5.15)*	

*P<.05; **P<.01

Table 1 Indicate that past adherence behavior, motivation to comply, control belief, attitude, perceived behavioral control, intention, and behavior was significantly different in three group of patient. Patient experiencing low constraints in treatment seeking have reported higher level of adherence, motivation to comply, control belief, favorable attitude, greater PBC, intention and favorable treatment behavior.

Table 2: Inter correlations of different constructs of the Theory of Planned Behaviour.

Particular	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Behavioural Belief	1.69	0.29	--							
2. Normative Belief	3.90	0.43	.06	--						
3. Control Belief	1.98	0.55	-.13	.17	--					
4. Attitude	2.12	0.51	.35**	.22*	-.15	--				
5. Subjective Norm	3.81	0.45	-.32**	.21*	.26**	-.06	--			
6. PBC	3.69	0.65	.06	.07	.22*	.26**	.01	--		
7. Intention	4.08	0.43	-.20*	.02	-.17	.12	-.08	.36**	--	
8. Behaviour	3.45	0.45	-.10	.01	.14	.07	-.07	.39**	.30**	--
9. Constraints	1.15	0.30	-.09	-.10	-.14	-.34**	.02	-.49**	-.11	-.46**

*P<.05; **P<.01

Coefficients of correlations presented in Table 2 indicate that in accordance to the Theory of Planned Behaviour behavioural belief was positive related with attitude, normative belief was positively related with subjective norm, control belief was positively related to the perceived behavioural control, Relation ship of attitude and subjective norm with intention was non significant, perceived behaviour control was significantly related to the intention, intention was found significantly related to behaviour of patients, Patients' experience of constraints in treatment seeking was found significantly but negatively related to their attitude, PBC and intention. However, experience of constraints was negatively but non significantly related to the three types of beliefs of patients.

Table 3: Results of simple linear regression analysis for the constructs of the Theory of Planned Behaviour.

Predictor	Criterion	R	R^2	b	SEb	t
Behavioural belief	Attitude	.35	.12	.31	.08	3.69**
Normative Belief	Subjective Norm	.21	.05	.11	.05	2.17*
Control Belief	PBC	.22	.05	.13	.06	2.46*
Attitude	Intention	.12	.01	.10	.08	1.15
Subjective Norm	Intention	.08	.01	-.07	.10	0.78
PBC	Intention	.36	.13	.24	.06	3.84**
Intention	Behaviour	.30	.09	.32	.10	3.12**

*p<.05; **p<.01

Behavioral belief was significant predictor of attitude, normative belief was significant predictor of subjective norm and control belief was significant predictor of PBC,PBC was significant predictor of intention. Attitude and subjective norm were not found significantly related to the intention of patient.

Table 4: Regression of the variables of the Theory of Planned Behaviour on Constraints in treatment as reported by patients

Criterion Variable	R	R^2	b	SEb	beta	t
Behavioural belief	.09	.01	.09	.10	-.09	0.93
Normative belief	.10	.01	-.14	.15	-.10	.11
Control belief	.14	.02	-.26	.19	-.14	1.42
Attitude	.34	.12	-.58	.16	-.34	3.58**
Subjective norm	.02	.00	.03	.15	.02	0.21
Perceived behavioural control	.49	.24	-1.08	.19	-.49	5.60**
Intention	.11	.01	-.16	.14	-.11	1.11
Treatment Behaviour	.46	.21	-.69	.14	-.46	5.07**

*p<.05; **p<.01

Table 4 indicate that experience of greater constraint in treatment seeking reduces patients' attitude toward behaviour, their perceived behaviour control as well as overall treatment behaviour.

Table 5: Results of stepwise multiple regressions to predict treatment intention from variables of TPB when treatment constraints included in the models

Predictors	R	R^2	F	b	SEb	beta	t
Attitude	.12	.01	1.32	.10	.08	.12	1.15
Attitude	.14	.02	0.91	.09	.08	.11	1.10
Subjective Norm				-.07	.10	-.07	0.71
Attitude	.37	.14	5.10**	.01	.08	.02	0.17
Subjective Norm				-.08	.09	-.08	0.85
PBC				.23	.06	.36	3.64**
Attitude	.38	.14	4.02**	.03	.09	.04	0.39
Subjective norm				-.08	.09	-.08	0.86
PBC				.26	.07	.40	3.66**
Constraints				.14	.16	.10	0.90

*P<.05; **P<.01

Perceived behavioural control remained as significant predictor of intention (b =. 26, SE-b =. 07, beta =. 40, t = 3.66, p<.01), treatment constraint was found as non significant predictor of the intention of patients (b =. 14, SEb =. 16, beta =. 10, t = 0.90, p>.05).

Table 6: Results of stepwise multiple Regression to predict treatment behaviour from TPB variables when treatment constraints are included in the models

Predictors	R	R^2	F	b	Seb	beta	t
Attitude	.07	.00	0.42	.06	.09	.07	0.65
Attitude	.09	.01	0.40	.05	.09	.06	0.60
Subjective Norm				-.06	.10	-.06	0.61
Attitude	.40	.16	6.00**	-.04	.09	-.04	0.46
Subjective Norm				-.07	.09	-.07	0.77
PBC				.27	.07	.40	4.13**
Attitude	.51	.26	8.43**	-.12	.08	-.13	1.39
Subjective norm				-.07	.09	-.07	0.77
PBC				.16	.07	.24	2.31*
Constraints				-.58	.16	-.38	3.66**
Intention	.30	.09	9.72**	.32	.10	.30	3.12**
Intention	.52	.27	7.18**	.27	.09	.25	2.90**
Constraints				-.64	.13	-.43	4.90**

*P<.05; **P<.01

Perceived behaviour control remained as significant predictor of treatment behaviour, treatment constraints was found negatively but significantly related to the treatment behaviour of patients. Step wise regression analysis revealed intention as significant predictor of treatment behaviour. These results provide strong support to the first hypothesis which stated that beliefs will be the significant predictors of attitude toward behaviour, subjective norm, and perceived behavioural control. Coefficient of correlation as well as results of regression analyses clearly indicates that behavioural belief, normative belief and control belief are significant predictor of attitude, subjective norm, and perceived behavioural control and thus, provide sufficient ground to accept the first hypothesis. Contrary to the assumptions of the TPB, attitude and subjective norm were not found as significant predictors of intention. However, perceived behaviour control was significantly related to behavioural intention of participants. Thus, in view of these results, the second hypothesis which stated that attitude, subjective norm and perceived behavioural control will significantly predict treatment intentions of patients, was partly supported. Results of correlation and regression analyses have shown positive and significant relationship between intention and treatment adherence and also intention was found as significant predictor of treatment adherence. This finding clearly attests the third hypothesis, which stated that intention will be direct and significant predictor of treatment adherence, was supported. Finally, fourth hypothesis that perceived behavioural control will significantly predict treatment adherence was also supported as perceived behavioural control was found as significant predictor of treatment adherence. Present results clearly indicate that some of the relationships between variables of the theory of planned behaviour have been observed as either significantly negative or very weak. These results provide sufficient ground to support the hypothesis which stated that the increasing constraints in seeking treatment will significantly diminish the assumed relationship between variables in the as assumed by the Theory of Planned Behaviour.

DISCUSSION

The strength of relationships between the constructs of the theory of planned behavior has varied across different diseases. In a recent review of the efficacy of TPB (Armitageand conner, 2001). It was found that the subjective norm construct is a week predictor of intention. In the present study, the relationship of subjective norm to intention was found non significant. This indicates that subjective norm played no role in predicting behavioural

intention of tuberculosis patients undergoing DOTS treatment. The non significant relationship of subjective norm to behavioural intention found in the present study reflects the patient's attitude to the adherence of DOTS treatment which may be because of the nature and characteristics of the participant. Participants of the present study were mostly from low socioeconomic status facing a number of situational, personal and economic constraints in seeking DOTS treatment. These characteristic may be a major determinant of the relationship between the constructs of the TPB. Socioeconomic characteristic of the patient population imposes a number of constraints on adherence behavior. This factor also shapes attitude and subjective norm of the patient differently. Attitude and subjective norm of the patient may not be very favorable in such situations just because of the personal, situational and economic constraints also, because of the constraints faced in seeking treatment patients may not be able to form attitude and subjective norm which in turn guide their intention as well as behaviour.

REFERENCES

1. Addington W. Patient compliance:The most serious remaining problem in the control of tuberculosis in the United States. Chest, 1979, 76:741–743.
2. Ajzen, I. (1985). From intentions to actions:A theory of planned behaviour. In J. Kuhl and J. Beckman (Eds.), Action control: From cognition to behaviour. Heidelberg: Springer.
3. Ajzen, I. (1988). Attitudes, personality and behavior. Milton Keynes: Open University Press.
4. Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behavior and Human Decision Processes, 50,179–211.
5. Ajzen, I. (2002a). Construction of a standard questionnaire for the theory of planned behavior. Retrieved from the World Wide Web: http://www-unix.oit.umass.edu/, aizen/
6. Ajzen, I. (2002b). Perceived behavioral control, self-ef.cacy, locus of control, and the theory of planned behavior. Journal of Applied Social Psychology, 32, 665–683.
7. Ajzen, I, and Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs,NY, Prentice Hall.
8. ARMITAGE,C.and conner, M.2001.Efficacy of the theory of planned behavior : a metaanalysis review.british journal of social psychology,40,471-497.
9. Bandura, A.J., and Simon, K.M. (1977). The role of proximal intentions in self-regulation of refractory behavior. Cognitive Therapy and Research,1, 177–184.
10. Becker, M. and Maiman, L. (1979). Patient perceptions and compliance; recent studies of the Health Belief Model. In R.B. Haynes, D.W. Taylor and Sackett, D.L. (Eds.), Compliance in health care (pp. 78-112). Baltimore,MD, Johns Hopkins University Press
11. Conner, M., and Sparks, P. (1996). The Theory of Planned Behaviour and health behaviours. In M. Conner and P. Norman (Eds.), Predicting health behaviour (pp. 121–162). Buckingham: Open University Press.
12. Dick, J. et al. (1996). Development of a health education booklet to enhance adherence to tuberculosis treatment. Tubercle and Lung Disease, 77, 173–177.
13. Haynes, R.B. (1979). Determinants of compliance: The disease and the mechanics of treatment. Compliance in health care. Baltimore, MD, Johns Hopkins University Press.
14. Haynes, R.B. (2001). Interventions for helping patients to follow prescriptions for medications. Cochrane Database of Systematic Reviews, Issue 1
15. Sabate, E. (2001). WHO Adherence Meeting Report. Geneva,World Health Organization.
16. W.H.O. (1994). TB – A Global Emergency. Geneva, World Health Organization.

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