Attitudes towards Medication Intake in Patients with Mental Illness are influenced by Their Own and Relatives' Beliefs about Medication

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Abstract

Aim: In patients with psychiatric illness, beliefs and attitudes towards psychotropic medications influence their treatment adherence, in turn on treatment outcomes. Purpose: We examined the components of a relative's beliefs about medication influencing the components of the patient's beliefs about medication that in turn influences drug taking attitudes. **Subjects and Methods:** Patients and their relatives attending Psychiatry department who consented were both administered BMQ (Beliefs about Medication questionnaire). For patients, Drug attitude Inventory (DAI) was administered. Medication adherence was ascertained. Pearson's correlation on the Patient's BMQ sub-scales, relatives BMQ sub-scales and DAI was done. Multiple linear Regression analysis with Relatives and Patient BMQ sub scale on DAI was done. A mediation analysis to assess strengths of Direct and Indirect effects on the dependent variable as DAI was done. **Results:** 79 subjects participated in the study. Mediation analysis showed that DAI is directly negatively influenced by the Patient's BMQ specific concern, coefficient (- 0.99), 95 % CI (-1.44, -0.55) and positively by patient's BMQ specific necessity coefficient (0.55), 95 % CI (0.22, 0.88). Total indirect effect of Pt. Specific concerns through pt. specific necessity on DAI was coefficient (0.24), 95 % CI (0.05, 0.53). Patient specific concerns are in turn influenced by relatives specific concern, coefficient (0.43), 95 % CI (0.202, 0.507) and relative's specific necessity, coefficient (0.295, 05 % CI [0.117, 0.387]). **Conclusion:** Patient's with high concerns about medication have more negative attitude towards medication intake which are in turn influenced by relative's concerns and need for medication intake. Identification of such targets could help in counseling about medication use.

Introduction

Attitudes are defined as "a disposition or tendency to respond positively or negatively towards a certain idea, object, person, or situation." [1,2]. Attitudes can be related to, opinions and beliefs, and experiences of people. Studies reported that adherence was 50 % in general

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medicine while in people with mental illness as low as 20 % [3]. Patients with mental illness who found medication helpful in dealing with troublesome symptoms, in the past or present, develop positive attitudes are likely to continue using them when benefits outweighed the side effects with better treatment outcomes [4-6]. Conversely, it is also true that a proportion of the patients stop taking the drug because they feel better, because they are convinced that the drug helped them and that they no longer need it. In a meta-analysis it was found that there was a moderate association between patient attitude to medication and adherence in psychosis patients [7]. Factors associated with non-adherence were, poor insight, negative attitudes, previous non-adherence, substance abuse, inadequate discharge planning, beliefs, and expectations. Studies, showed a strong correlation of adherence with patient's own beliefs which is influenced by personal knowledge and experience [8-10]. Family and friends also influence the patient's attitude towards medication [11]. Studies opined that a patient-centric approach is essential to promote adherence, and focus on their needs and preferences [12-16]. Understanding cultural beliefs helps in improving therapeutic alliance, treatment planning, adherence to treatment, and better outcomes [17,18]. Some studies, focused on patients' beliefs about the necessity and harmfulness of antidepressants in both psychiatric and non-psychiatric conditions and their robust linkage to adherence [19,20].

Literature review suggests that relatives influence patient's beliefs and expectations about treatment but this area has mainly remained unexplored. Aims: The present study was aimed to assess attitudes of patients with mental illness towards psychiatric drug treatment. To study the pathways of influence of patient's own and relatives' beliefs about medication, on patient drug taking attitudes. Ethical approval: The study was approved by the Institutional ethics committee of Malla Reddy Institute of Medical Sciences, on 14 September 2019. All ethical procedures conformed to the principles of the 1964 Declaration of Helsinki and its latest 2008 amendments.

Subject and Methods

The participants of the study included patients attending Psychiatry outpatients or staying as inpatients and on treatment for at least one month, at a tertiary hospital. Total duration of illness ranged from three to 36 months Both male and female patients and their relatives who have observed them throughout their treatment were included in the study. Patients with intellectual disability disorder, dementia, other medical illnesses, unable to understand the questions, or unwilling to participate were excluded from the study. Non-random purposive sampling was used. As this is an exploratory study, no fixed sample size was calculated. The participants were explained about the project and only after obtaining consent on the informed consent from both patients and their relatives the subsequent steps of an interview, administration of scales were done.

Assessments were performed with Intake Proforma and Drug Attitude Inventory. Intake Proforma captures sociodemographic details, age, gender, diagnosis, previous and current medication. Belief about Medication Questionnaire (BMQ) [21,22]. It measures people's beliefs, concerns and the necessity of taking their medication. BMQ is an 18-item questionnaire with a five-point Likert scale from strongly disagrees to agree strongly. BMQ comprises two separate scales BMQ General and BMQ Specific. BMQ General measures respondent's attitude to medicine generally and consists of two domains General Overuse has four statements describing the patient beliefs about the overuse of medication by doctors. General Harm: [4 statements] describes the patient's beliefs about the harm of the medication generally. BMQ Specific measures respondent's attitude to medicine to the specific condition and consists of two domains: Specific Necessity: [5 statements] measuring how much the patient believes his/her medication as necessary for their health. Specific Concern: [5 statements] measures how much the patient is concerned about taking his/her medications. The score of each domain is calculated by the sum of the sentence score. In BMQ, a higher score means a higher or stronger attitude. The interview of each respondent takes at least 15 minutes. In our study a patient with a psychiatry illnesses who have been on medication [psychotropics] for the past one month has been interviewed. Horne and associates used BMQ scale in general population; hence we used it for the relatives of patients in our study [2].

Drug Attitude Inventory (DAI - 30) is a patient self-reported questionnaire each with true/false answers, about various aspects of the patient's perceptions and experiences of treatment of only those medications used for the patient's health needs. Fifteen items of full adherence to their prescribed medication expected to have a "positive" subjective response to medication would answer as "True," and 15 items answered as "False." For calculating the score from a set of answers, each "positive" answer is scored plus-one, and each "negative" answer is minus one. The "positive" answers are shown as bold text in the questionnaire. The total score for each patient is the sum of the positive scores, minus the negative scores. A total score showing positive, indicates a positive subjective response [adherent] and a negative total score indicates a negative subjective response (non-adherent) [23]. A short form consisting of 10 questions has also been developed and validated.

Descriptive statistics used were frequencies, percentages for categorical variables, and for continuous variables, mean and standard deviation. Box plot was employed for depicting prior and current medication use. Pearson's product-moment correlation was used to find the degree and direction of association between the variables. Multiple linear regression analysis was employed with the dependent variable as DAI and subsequently

on PBMQSPC. IBM SPSS version 25 was used for analysis. For finding the Direct and Indirect effects on DAI, most significantly correlated variables will be entered for mediation analysis. For mediation model we used SPSS macro PROCESS by Andrew Hays [24].

Results

A total of 80 patients attending outpatient and inpatients were recruited into the study after obtaining informed consent from patients and their relatives. Relatives were cooperating to answer questions on BMQ. These patients should have completed at least one month on medications at the hospital outpatients and 3 years was observed as maximum. One subject didn't complete the assessments, hence data pertains to 79.
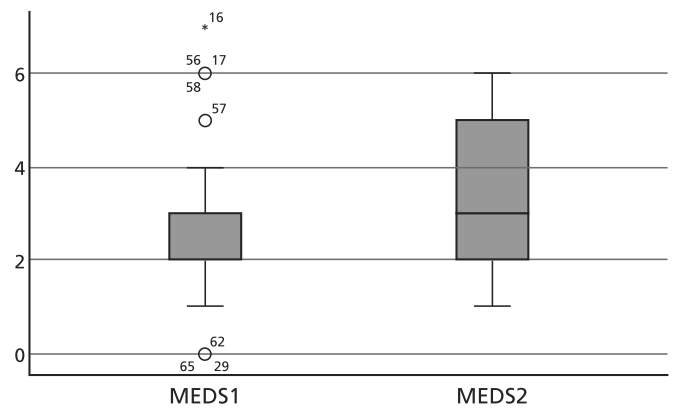

Figure 1. the Box plot of total medication use for last month showed that there is a median rise to three from the previous two medications, while the upper end of the whisker rose from four to six

Table 1. Sociodemographic, family history, diagnosis and medications

Variable	Values		
Age Mean (SD)	34.89 (11.17)		
Sex Male/Female	38 (48.2 %) / 41 (51.8 %)		
Education			
Uneducated	4 (5.06 %)		
High school	55 (69.62 %)		
Graduate	20 (25.31 %)		
Income Annual INR			
Median (IQR)	20000 (95000)		
Family History of			
Mental Illness Yes/No	44 (56 %)/35 (44 %)		
Diagnosis			
Anxiety Disorders	8 (10.12 %)		
Bipolar Disorders	12 (15.18 %)		
Depression	17 (21.51 %)		
Psychosis	18 (22.78 %)		
(Includes Schizophrenia)			
Substance Abuse	10 (12.65 %)		
(OCD, Somatization disorders,	14 (17.72 %)		
Seizures, Migraine, Headache,			
Insomnia).			
Prior Antipsychotics		Current Antipsychotics	
Single	27 (34.17 %)	Single	24 (30.37 %)
Multiple	13 (16.45 %)	Multiple	25 (31.64 %)
Nil	39 (49.36 %)	Nil	30 (37.97 %)
Prior Antidepressants		Current Antidepressants	
Single	40 (50.63 %)	Single	47 (59.49 %)
Multiple	5 (6.32 %)	Multiple	6 (7.59 %)
Nil	34 (43.03%)	Nil	26 (32.91 %)

As a group, of patients receiving antipsychotics currently, there is a twofold rise in multiple uses. Current single drug antidepressant use has marginally raised by 8.8 %.

Table 2. Pearson's Bivariate Correlations (DAI, Pt. BMQ sub scales, Rel. BMQ sub scales and age [N = 79])

		DAI	PBMQSPN	PBMQSPC	PBMQGO	PBMQGH	RBMQSPN	RBMQSPC	RBMQGO	RBMQGH	Age
DAI	r	1									
	Sig										
PBMQSPN	r	0.197	1								
	Sig	0.082									
PBMQSPC	r	-0.0361	0.320	1							
	Sig	0.001	0.004								
PBMQGO	r	-0.168	-0.085	0.419	1						
	Sig	0.139	0.454	0.001							
PBMQGH	r	-0.255	-0.029	0.571	0.594	1					
	Sig	0.023	0.797	0.001	0.001						
RBMQSPN	r	-0.026	0.651	0.488	-0.003	0.208	1				
	Sig	0.819	0.001	0.001	0.979	0.066					
RBMQSPC	r	-0.282	0.226	0.561	0.340	0.393	0.221	1			
	Sig	0.012	0.045	0.001	0.002	0.001	0.050				
RBMQGO	r	-0.010	-0.156	0.125	0.526	0.313	-0.285	0.292	1		
	Sig	0.930	0.169	0.274	0.001	0.005	0.011	0.009			
RBMQGH	r	-0.202	-0.018	0.276	0.392	0.552	-0.011	0.550	0.558	1	
	Sig	0.074	0.872	0.014	0.001	0.001	0.921	0.001	0.001		
Age	r	-0.001	-0.015	0.120	0.308	0.181	0.094	-0.063	-0.016	-0.025	1
	Sig	0.993	0.896	00.293	0.006	0.111	0.409	0.583	0.889	0.827	

PBMQSPN = Pt.BMQ Specific Necessity, RBMQSPN = Relation BMQ Specific Necessity

PBMQSPC = Pt.BMQ Specific Concerns, RBMQSPC = Relation BMQ Specific Concerns

PBMQGO = Pt.BMQ General Overuse, RBMQGO = Relation BMQ General Overuse

PBMQGH = Pt.BMQ General Harm, RBMQGH = Relation BMQ General Harm

r = Correlation Coefficient, Sig = Level of Significance 2 tailed

Table 3. Multiple Linear Regression Analysis on Dependent Variable DAI [Enter Method]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0 % Confidence Interval for B		Collinearity Statistics	
	Beta	Std. Error	Beta	t	Sig.	Lower-Bound	Upper Bound	Tolerance	VIF
(Constant)	21.651	3.915		5.530	0.001	13.848	29.454		
PBMQSPN	0.578	0.174	0.369	3.315	0.001	0.231	0.926	0.823	1.215
PBMQSPC	-0.944	0.322	-0.447	-2.936	0.004	-1.586	-0.303	0.438	2.281
PBMQGH	0.192	0.323	0.088	0.595	0.554	-0.451	0.835	0.462	2.164
RBMQSPC	-0.208	0.249	-0.120	-0.834	0.407	-0.705	0.289	0.494	2.024
RBMQGH	-0.130	0.337	-0.054	-0.385	0.701	-0.800	0.541	0.510	1.962

PBMQSPN = Pt.BMQ Specific Necessity, PBMQSPC = Pt.BMQ Specific Concerns, PBMQGH = Pt.BMQ General Harm
RBMQSPC = Relation BMQ Specific Concerns, RBMQGH = Relation BMQ General Harm, DAI = Drug Attitude Inventory

Depicts Bivariate Pearson's product moment correlation. Variables entered were Drug Attitude Inventory [DAI]) (Mean = 15.55, SD = 7.00), Age (Mean = 34.89, SD = 11.17), Patient Beliefs about Medication Questionnaire (PBMQ) subscales: PBMQSPC (Patient Specific Concern) (Mean = 13.65, SD = 3.31), PBMQSPN (Patient Specific Necessity) (Mean = 15.92, SD = 4.45), ,PBMQGO (Patient General overuse) (Mean = 9.06, SD = 3.09), PBMQGH (Patient General Harm) (Mean = 8.87, SD = 3.21), and Relatives Belies about Medication Questionnaire (RBMQ) subscales: RBMQSPC (Relatives Specific Concern) (Mean = 14.09, SD = 4.02), RBMQSPN (Relatives Specific Necessity) (Mean = 16.77, SD = 3.88), RBMQGO (Relatives General overuse) (Mean = 9.38, SD = 3.35), RBMQGH (Relatives General Health) (Mean = 10.05, SD = 2.93). All the variables were normally distributed. Variables significantly (two-tailed) negatively correlating with DAI were PBMQSPC (-0.361), PBMQGH (-0.255), RBMQSPC (-0.282), and RBMQGH (-0.202), Weak positive correlation with PBMQSPN (0.197). These variables were subsequently entered in multiple linear regression analysis.

Multiple linear regression analysis by enter method was done with DAI as the dependent variable and independent variables which were correlating with DAI in the correlation table given in table 2 viz. PBMSPC, PBMQSPN, PBMQGH, RBMQSPC, and RBMQSPN. Model R Square .202 and Regression equation were significant. All VIFs were well below 3, so no collinearity.

It can be seen that the Beta unstandardized coefficient of PBMQSPC is -0.944 is significant at p-value 0.004 which means that with one unit increase of PBMQSPC there is a decrease in DAI by 0.944 units. Also, it can be seen that with one unit rise in PBMQSPN there

is an increase of DAI by 0.578 which is significant at p-value 0.001. All other beta coefficients are not significant.

Shows mediation model where the dependent variable "Y" is DAI and the independent variable "X" is PBMQSPC and the mediating variable "M" is PBMQSPN. Several mediations and moderator models were tried with the "X" and "Y" being the same while Patient BMQ subscale variables as mediator variables and relative BMQ subscale variables as moderators which did not reach a level of significance, hence, not included here. Footnotes of the table describe beta coefficients, standard error of beta coefficients, t-test, and level of significance. It can be seen that the direct effect of "X" on "Y" is 99 % while the indirect effect through the me-
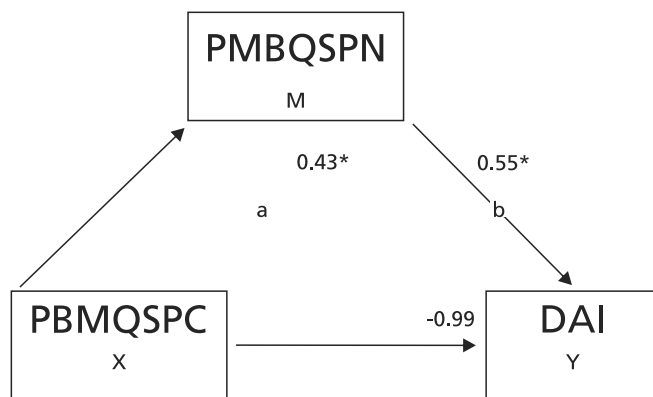

Figure 2. Mediation Model with [IV] PBMQSPC [DV] DAI and Mediator PMBQSPN

diation variable and is negatively correlated. "M" is 24 % which is a product of "X" on "M" 43 % and "M" on "Y" is 55 %. The confidence intervals in all these paths do not contain zero; hence, they can be taken up for analysis.

Multiple linear regression analysis by enter method was done with PBMQSPC as the dependent variable and Independent variables which were correlating with PBMQSPC in correlation table given in table 2 viz. PBMGH, RBMQSPN, RBMQGH, and RBMQSPC. Model R Square 0.589 and Regression equation were significant. All VIFs were well below 2, so no collinearity. It can be seen that Beta unstandardized coefficient of PBMQGH is 0.470 is significant at p-value 0.001 which means that with one unit increase of PBMQGH there is an increase in PBMWSPC I buy 0.470 units. Also, it can be seen that with one unit rise in RBMQSPN there is an increase of PBMQSPC by 0.355 which is significant at p-value 0.001. Also, it can be seen that with one unit rise in RBMQSPN there is an increase of PBMQSPC by 0.355 which is significant at p-value 0.001 Also with one unit increase of RBMQGH there is a 0.236 unit decrease in the dependent variable PBMQSPC which is significant at p-value 0.045. All other beta coefficients are not significant.

Discussion

Relation between Beliefs about Medication and Drug taking Attitudes

Our study shows that the lower patient beliefs of specific concern about medication, the higher is the positive attitude towards medication intake. Tempier in their studies, reported a high inverse relationship of DAI with BMQ necessity and a moderate positive relationship with the BMQ General scales (harm and overuse), while in our study necessity had a positive relationship with DAI while patient BMQ General scales didn't significantly influence DAI [25]. Further, they reported higher positive attitudes in patients with affective disorders who were significantly more compliant than non-affective disorders. In our study, we compared all the BMQ sub-scale scores between psychosis, bipolar disorders, depression, and anxiety disorders and there were no significant differences. In at least one study, significant correlations between the BMQ (Specific and General) with DAI - 30, supported patient's beliefs about medication associated with self-reported medication adherence [26]. A negative association was found between the BMQ Specific Necessity subscale and DAI - 30 scores. The authors suggested that patients, while hospitalized, may be influenced by physicians and nurses to follow medication treatment; however, they believed that their future health didn't depend on medication adherence alone. In our study, there was a positive correlation between the necessity to take medication and positive attitudes for medication intake. Further their relatives influenced patient's belief about the necessity to take medication. Hospitalization specifically was not taken as a variable in our study.

Beliefs concerning medications create fear in the minds of patients and a dilemma exits in their minds between concerns and necessity to take medication. It can be seen that when relatives believe that there is a strong necessity for the patients to take medication, they do directly influence the patient's necessity belief.

Illness Beliefs Influence Adherence to Medication in Patients

Non-adherent patients had significantly higher scores in the BMQ-Harm and Concern that correlated with lower educational level and presence of side effects [14]. Adherent patients had a significantly higher positive attitude towards their medication on the DAI scale. In our study, assessment for medication adherence was confirmed from significant relatives of the patients. We find nonsignificant relations of harm and overuse with medication attitudes, rightly so because of positive attitudes. Patient's perceptions and expectations towards the prescribed drug and concerns about side effects are more important. Furthermore, it was found that younger patients have a more negative view of medicines, which wasn't seen in our study [27]. Also, in their study, patients' beliefs about overprescribed medications were the best variable to predict non-adherence. Beliefs about the necessity of taking medication and concerns about adverse effects weren't related to adherence in their studies while necessity was a strong influencer in our study.

Attitudes towards medication are associated with medication adherence cross-sectionally longitudinally and with insight [3,28-36]. This study brings out an important area that attitudes are a pre-determinant of adherence to treatment and medication adherence was independently influenced by patients' perceived necessity and concerns [37]. These findings are similar to our study.

Counselling to foster medication adherence

Loffler, reported that outpatients perceived the benefit of medication as the main reason for medication adherence in 79 % of patients. They recommend a shared decision-making approach in psychiatric counselling [39]. Taira, made useful suggestions from their studies to enhance medication adherence, clinicians should understand the patient's problematic medication attitudes and beliefs [40]. Counselling should be targeted on beliefs to reduce perceived concerns and increasing the perceived necessity of taking treatment. While clinicians may prescribe it to reduce certain symptoms, patients may per-

ceive medication as needful to treat sleep disturbances. Patient's attitudes about their perceived symptom reduction need to be respected.

A study reflected that patients and their relatives when given information and a need to take medication, their adherence is increased which had significant correlations with all BMQ sub-scales [16]. Overuse of medication was a real concern. When patients believed that psychiatric medications were overprescribed and were concerned about the potential adverse effects, their attitudes were negative. Psychiatric outpatients implicitly indicated their desire to participate in decision-making about their treatment with practical implications. In a meta-analysis, it was shown that adherence was positively correlated with patients' beliefs about disease threat and avoidance or relief through treatment. The duty of physicians is to ensure that patients fully understand the severity of their disease condition and the necessity of adhering to treatment. Patients' perceptions and beliefs in the context of social and cultural sensitivity should be fully understood in efforts to foster their adherence. To foster medication adherence patient's beliefs are of importance as the acceptance has to be internalized.

Relatives' role in influencing patients' beliefs has few references and probably most of the studies are from Western countries where individuals have to manage medications on their own. In contrast, countries like India, where relative's opinion also has an impact on the patient's adherence there is a need to counsel and explore the strength and influence of their opinion on the patient. Verifying adherence from relatives is a practical way of checking adherence and anyway often it's the relatives who supervise medication intake physically, especially in patients with mental illness.

In our study, patients continued to be adherent to medication that was supervised by their relatives. Patients continue to take medication when they perceive benefit from it and not perceived as forced down their throat. Relatives' beliefs about concern and necessity has a strong influence on their subjects undergoing treatment. Both patient and their relatives were counselled about the necessity of regular intake of medication after allaying specific concerns.

The results of this study help to identify targets in beliefs about medication in both patients and relatives as these influence attitudes towards medication intake. This gives a scope to understand Culture-specific fears and anxieties and develop counselling modules.

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