

Explanatory Models and Medication Adherence in Patients with Depression in South India

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ABSTRACT

Introduction: Conceptualization of depression may have bearing on treatment seeking. It may affect adherence behaviour of the patients.

Aim: To find out the explanatory models and their relationship with socio-demographic variables and medication adherence in patients with depression.

Materials and Methods: Fifty-eight consecutive patients with depression in remission were recruited as per selection criteria. Socio-demographic details were collected. Patients were assessed using Mental Distress Explanatory Model Questionnaire (MDEMQ) and Morisky Medication Adherence Scale (MMAS).

Results: Significant scores were observed in all dimensions of explanatory models. In the Mann-Whitney U test the patient's marital status (MU=113.500, $p=0.05$, $\text{sig}\leq 0.05$, 2-tailed), and family history of mental illness (MU=165.5, $p=0.03$, $\text{sig}\leq 0.05$, 2-tailed) had a statistically significant group difference in the score of MDEMQ. In linear regression analysis, four predictors (MDEMQ subscales Stress, Western physiology, Non-Western physiology and Supernatural) had significantly predicted the value of MMAS ($R^2=0.937$, $f=153.558$, $p<0.001$).

Conclusion: Findings of this study suggested that patients with depression harbor multidimensional explanatory model. The levels of explanatory models are inversely associated with levels of medication adherence.

Keywords: Concept formation, Explanatory model, Major depressive disorder

INTRODUCTION

Major Depressive Disorder (MDD) is one of the most common psychiatric disease; with a lifetime prevalence estimates upto 17% [1]. Conceptualization (explanatory model) of depression varies with culture, ethnics and comorbid psychiatric disorder [2-4]. In India, common model of explanation about depression are supernatural and psychosocial [5,6]. Explanatory Model (EM) is the notion about an episode of sickness and its treatment that is employed by all those engaged in the clinical process [7]. EM influences patient's help seeking behaviour [8]. Those with a supernatural model of explanation seek help from a traditional healer [9-11], while those with a social model seek more from social networks [12].

Only 60% of patients with depression seek treatment from physician, and non-adherence ranges from 20-50% [13-15]. Supernatural explanatory model of mental illness may hamper the medication adherence [10]. Few studies in India have addressed the EM in depression. Grover et al., reported Karma-deed-heredity category as commonest explanatory model (77.4%), followed by psychological model (62.2%) and social model (40.2%) and opined that this might have treatment implications [5]. Other studies from different parts of the world have examined the EM and treatment seeking behaviour in patients with depression and found that non-medical models were associated with less preference for medical treatment [16,17].

There is a paucity of study that have examined the relationship of EM and medication adherence among patients with depression. Buus N et al. had done a qualitative study in 16 patients with depression and found that patients with predominant psychosocial explanatory model were ambiguous about treatment with antidepressants [18]. Thus, this study was conducted to explore the explanatory model and its relationship with medication adherence in patients with depression. We hypothesized that the levels of explanatory models are negatively associated with the levels of medication adherence.

MATERIALS AND METHODS

This was a cross-sectional hospital based study. A sample size of 60 was recommended by institutional reviewers, which was based on number of patients visiting for depression in psychiatry outpatient department every day, Patient's selection criteria, and duration of this study.

A total of 58 consecutive patients with depression, who were in remission and living in the community, were recruited when they attended the outpatient department of psychiatry at a tertiary care hospital (in South India) for follow up over a period of three months (February 2014-April 2014). The inclusion criteria were both genders with an International Classification of Disease, Tenth Revision (ICD-10) diagnosis of depressive episodes, currently in remission as per treating psychiatrist and aged 16-65 years. Patients with any chronic physical illness were excluded as it may interfere with the conceptualization of mental illness due to its physical nature and induced discomfort or distress. An ICD-10 diagnosis of mental retardation or dementia was also excluded due to reliability issues. Patients who satisfied the selection criteria were first assessed with a socio-demographic proforma designed for this study. Then conceptualization of mental illness was assessed using MDEMQ that has 45 items; 5 points (1-5) item rating with a possible minimum score of 45 and the maximum score of 225 [19]. The items can be clustered into four explanatory categories (with a possible score range); Western Physiology (9-45), Non-Western Physiology (4-20), Supernatural (19-95) and Stress (13-65). At last medication adherence was assessed with eight items MMAS [20]. Each item can be rated in two points (0-1). Adherence is low when the score is >2 , medium when the score is 1-2, and high when score is 0. The data were analyzed using SPSS version 16.0. Analysis of demographic variables and explanatory models was done with descriptive statistics. Since normal distribution could not be established in the analysis of data distribution; group difference of demographic variables on the score of MDEMQ were obtained with Mann-Whitney U (two groups) and Kruskal

Wallis test (three or more groups). Linear regression analysis was conducted to know if score on MDEMQ could significantly predict patients score on MMAS. The level of statistical significance was kept at $p < 0.05$ for all tests.

Variable		n	%
Gender	Male	24	41.4
	Female	34	58.6
Occupation	Unemployed	39	67.2
	Employed	19	32.8
Education	Uneducated	11	19.0
	Primary	4	6.9
	Middle	5	8.6
	High school	17	29.3
	Higher secondary	14	24.1
	Graduate	6	10.3
	Postgraduate	1	1.7
Marital status	Married	49	84.5
	Single	9	15.5
Family type	Nuclear	47	81.0
	Joint	11	19.0
Residence	Rural	26	44.8
	Urban	32	55.2
Religion	Hindu	52	89.7
	Muslim	5	8.6
	Christian	1	1.7

[Table/Fig-1]: Socio-demographic characteristics.

Variables	Minimum	Maximum	Mean	Std. Deviation (±)
Total score on MDEMQ	60.00	191.00	97.05	22.76
Stress	20.00	72.00	39.03	9.42
Western physiology	11.00	35.00	19.72	5.53
Non-Western physiology	4.00	13.00	5.62	2.15
Supernatural	19.00	73.00	32.67	13.13

[Table/Fig-2]: Explanatory models and scores.

Variables		N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig. (Two-tailed)
Gender	Male	24	28.16	704.0			
	Female	34	30.52	1007.0	379.0	-0.527	0.59
Occupation	Unemployed	39	31.25	1187.5			
	Employed	19	26.18	523.5	313.5	-1.091	0.27
Religion*	Hindu	52	29.92	1526.0			
	Muslim	5	26.43	185.0	157.0	-0.514	0.60
Education	Uneducated	11	27.71	332.5			
	Educated	47	29.97	1378.5	254.5	-0.414	0.67
Marital status	Married	49	30.68	1503.5			
	Single	9	18.69	149.50	113.5	-1.900	0.05
Family type	Nuclear	47	28.68	1319.5			
	Joint	11	32.62	391.5	238.5	-0.722	0.47
Domicile	Rural	26	28.61	772.5			
	Urban	32	30.27	938.5	394.5	-0.375	0.70
Family history	Without family history	46	31.90	1467.5			
	With family history	12	20.29	243.5	165.5	-2.126	0.03
Knowledge of treatment	Magico- religious	11	33.82	372.0			
	Allopathic	47	28.49	1339.0	211.0	-0.944	0.34
Source of information	Family and society	19	25.47	484.0			
	Health professionals	39	31.46	1227.0	294.0	-1.271	0.20

[Table/Fig-3]: Group difference of demographic variables on score of MDEMQ.

* one patient was christian

RESULTS

In this study [Table/Fig-1] majority of the patients were educated, married, unemployed and belonged to the Hindu nuclear family. [Table/Fig-2] reveals mean and standard deviation of scores on MDEMQ (Mean 97.05, $SD \pm 22.76$) and its subscales: Stress (Mean 39.03 \pm 9.42), Western physiology (Mean 19.72 \pm 5.53), Supernatural (Mean 32.67 \pm 13.13) and Non-Western physiology (Mean 5.62 \pm 2.15).

In the Mann-Whitney U, test a statistically significant group difference on the score of MDEMQ was observed for patient's marital status (Mann-Whitney $U = 113.500$, $p = 0.05$, sig ≤ 0.05 , 2-tailed) and family history of mental illness (Mann-Whitney $U = 165.5$, $p = 0.03$, sig ≤ 0.05 , 2-tailed). No statistically significant result was observed in Kruskal Wallis Test [Table/Fig-3].

A linear regression was conducted using the enter method to see if MDEMQ score can predict the value of MMAS [Table/Fig-4]. Five predictors explained 93.7% of the variance ($R^2 = 0.937$, $F = 153.558$, $p < 0.001$). These predictors were total score of MDEMQ, (Beta = -2.064, $t = -13.675$, $p < 0.001$) and its subscales Stress (Beta = 0.651, $t = 6.265$, $p < 0.001$), Western physiology (Beta = 0.437, $t = -7.339$, $p < 0.001$), Non-Western physiology (Beta = 0.244, $t = 3.693$, $p < 0.001$) and Supernatural (Beta = 1.094, $t = 9.701$, $p < 0.001$) [Table/Fig-5].

DISCUSSION

Demographic characteristics

Demographic characteristics can be explained on the basis of a population characteristic around the study centre. Hindus are among the majority, literacy is on the rise, there is a trend of the nuclear family and unemployment is a major problem in that community.

Explanatory models

Scores on MDEMQ (both total and subscales) indicate patients had multiple explanatory models of depression, similar to a report by Grover S et al., (2012) [5]. Such observation was also made for other mental illnesses in tertiary care setup [9,21,22]. Prevailed explanatory models are usually symptom based and depression as a syndrome is likely to have multiple explanatory models. Medical literacy is on the rise and patients are now likely to have medical

Variables		N	Mean Rank	Chi-square	df Asymp. Sig
Knowledge of course of illness	Continuous	8	36.12	2.318	2.31
	Recurrent	42	29.42		
	Other	8	23.31		
Preferred method	Pharmacological treatment only	49	30.50	1.738	2.41
	Pharmacological and psychological	8	25.62		
	Magico -religious	1	11.50		
Referred by	Self	5	43.60	5.514	2.06
	Family members	43	29.62		
	Health professionals	10	21.95		
Treatment type sought before	Magico-religious	27	30.30	1.143	2.56
	Allopathic	29	28.00		
	Ayurvedic	2	40.50		

[Table/Fig-4]: Group difference of demographic variables on score of MDEMQ in Kruskal Wallis Test.

Model Predictors	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	30.051	2.241		13.407	0.000
Stress	0.829	0.132	0.651	6.265	0.000
Western physiology	1.037	0.141	0.437	7.339	0.000
Non-Western physiology	1.251	0.339	0.244	3.693	0.001
Supernatural	1.116	0.115	1.094	9.701	0.000

[Table/Fig-5]: Regression of explanatory models.
Dependent variable: Total score MMAS
R²=0.937, F=153.558, p<0.001

model apart from traditional non-medical explanatory model. Probably, non-scientific and scientific belief may coexist in the same individual at the same time as multiple facets of a broader worldview [23,24].

Explanatory models and demographic variables

Statistically significant group difference was observed for patients marital status and family history of mental illness on the score of MDEMQ. In India, unmarried status or inability to get married in time (within 35 years of age) is often considered as a cause of mental illness, while after marriage inability to adjust with their spouse or in-laws is considered as the cause [25,26]. After marriage due to cultural practice the patient belonging to Hindu family are more likely to harbor non-Western explanations such as ayurvedic concepts of mental illnesses (that mental illness is a result of excited gas, vata dosha or imbalanced food intake) and other traditional believe [27-29]. Patients with a family history of mental illness are more likely to be subjected for validation of supernatural explanation of illness due to their family background of mental illness [30,31].

Explanatory models and treatment adherence

Consistent with our hypothesis, a linear regression analysis subscales score of MDEMQ was inversely associated with level of medication adherence. As per the MMAS scoring instruction more score actually indicates less adherences. Thus, a statistically positive association between MDEMQ and MMAS is clinically an inverse relation. Interestingly models did not have significant differential effect on medication adherence. Models of illness are often determined by demographic and cultural characteristics of patients that may directly or indirectly influence the medication adherence [32]. In a qualitative study, Buus N et al., found that psychosocial or biomedical models are non- prominent in patients with depression [18]. If medicine is ineffective, the explanatory

models legitimised alternative strategies towards recovery, including non-adherence [18]. In another report non-adherence was more due to apprehension of addictive or harmful effect of antidepressant, and stigma associated with psychotropic medication [33]. Thus, health care service provider must be aware of and sensitive to the patient's model of illness, because beliefs and perceptions influence individual, family and community acceptability to treatment [34].

LIMITATION

Limitations of this includes small sample size, no socio-cultural evaluation, and knowledge about the illness was not assessed (especially biomedical model). Further studies are needed addressing limitation of this study.

CONCLUSION

Findings of this study suggest that patients with depression harbor multidimensional explanatory model. The levels of explanatory models are inversely associated with levels of medication adherence.

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