Original Article

Medication Adherence and Beliefs about Treatment among Patients with Major Depressive Disorder in a Tertiary Care Hospital

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ABSTRACT

Background: Major depressive disorder (MDD) is often associated with medication non-adherence. Research suggests that medication non-adherence in MDD patients has been linked to patients' beliefs about medicines. Our research aimed to evaluate the adherence to antidepressant medications and beliefs about treatment among patients with MDD and their association.

Methods: A cross-sectional study enrolling 85 subjects with MDD from the psychiatry OPD at a tertiary care hospital was conducted. In addition to collecting the patient's basic demographic information, the Medication Adherence Rating Scale (MARS) and the Beliefs About Medicines Questionnaire (BMQ) were used to evaluate medication adherence and the patient's beliefs about treatment, respectively.

Results: Majority of participants were young (82.4%), females (71.7%), educated (77.6%), married (73%), employed (56%), had depression for equal to or more than 5 years (55.3%), were on polytherapy (88.2%) and had co-morbidities (65.8%). A significant number of patients reported non-adherence 38(44.7%). Level of education (X^2 (1, N=85)=5.56, p=0.018), marriage status (X^2 (1, N=85)=5.18, p=0.02). and duration of illness (X^2 (1, N=85)=6.90, p=0.008) and antidepressant drug therapy (X^2 (1, N=85)=7.25, p=0.007) did significantly impact the MARS score. Multiple linear regression analysis revealed that the belief-concern, general harm, and necessity-concern domains of the BMQ were linked to non-adherence.

Conclusion: Non-adherence is a concern among patients with MDD. The observed non-adherence is associated with the patient's beliefs about medications, particularly concerns about medication harm. This knowledge can inform efforts to improve treatment outcomes in MDD.

Key-words: Belief about medicines, Medication adherence, Major depressive disorder, MARS score, Non-adherence

INTRODUCTION

Mental disorders include a spectrum of conditions, among which depression is one of the most common presenting psychiatric conditions, consequently resulting in enhanced morbidity as well as healthcare expenditure by the individual and as a nation as well.[1]

Following the COVID-19 pandemic, there has been an unprecedented surge in cases of depressive illnesses worldwide.[2] Among the depressive illnesses, the world is witnessing an annual increment in cases of major depressive disorder (MDD), subsequently making it a major socio-economic healthcare burden globally.[3]

Recently, the main focus of therapy in depression is towards complete recovery, which involves symptom amelioration as well and restoration of the full functional capacity of the individual.[4] Relapse of depression post successful treatment of an acute MDD episode poses a major clinical concern. Nevertheless, this risk can be

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mitigated by continuing the antidepressants for at least 4-9 months after successful acute phase treatment.[5]

Even though antidepressants may be effective in the treatment of depression, patient's failure to take them as prescribed poses a significant threat to clinical therapeutic success. Medication adherence can be defined as the extent to which a patient's behaviour corresponds with the prescribed medication dosing regime, including time, dosing and interval of medication intake.[6] Medication non-adherence is a global concern resulting in increased healthcare expenditure and hurting the safety and success of various therapies.[7] Medication adherence is of prime importance, particularly in conditions like major depressive disorder, which require treatment over a long period of time to achieve therapeutic success.[8]

Adherence to antidepressants is quite decent to begin with, i.e., around 70% to 80%, yet half of the patients become non-adherent soon. Tierce of the patients discontinue therapy at around three months, while more than 50% of them stop taking medications at around six months.[9] Medication-associated adverse effects significantly contribute to the premature termination of therapy continuation.[10]

The Medication Adherence Report Scale (MARS) is a valid and reliable tool to measure non-adherence. The MARS includes scale items specifically related to non-adherent behaviours that are phrased in an innocuous and liberal manner, thereby minimising self-reported bias.[11] The MARS has been used in multiple research studies in many health conditions requiring long-term medication and is found to have good internal consistency and psychometric properties.[12,13].

Multiple factors affect medication adherence, including patient demographics, the complexity of the therapy, and the illness itself.[14] Latest research suggests that medication adherence is strongly associated with the patient's beliefs or perceptions and has the potential to offer more expectedness to predict medication adherence than other patient-related factors.[15] BMQ is the most commonly used tool to evaluate and quantify beliefs about prescribed medication and medicines in general.[16]

A "depression specific" BMQ measure incorporates two constructs to assess the patient's beliefs concerning the need for the medication to improve their health, as well as their apprehensions about the medication-related adverse effects. The patient's perception of the benefit of taking the medication is analysed in relation to perceived harm, using a necessity-concern differential on the BMQ.[17] According to the patient's perception and beliefs, if the benefit of medication outweighs the concerns, there shall be a positive differential, and predicted medication adherence shall be higher. On the contrary, if the patient perceives the harm to be greater than the benefits, it will result in a negative differential leading to poor medication adherence.[14]

Hence, the present study was designed to explore the medication adherence to anti-depressants, patient's beliefs about medicines and the relationship between patient's beliefs and adherence to antidepressant medication in patients with major depressive disorder in a tertiary care hospital in Northern India.

MATERIALS AND METHODS

Study design- This study was a cross- sectional observational study. The study was conducted after obtaining approval from the Institutional Research Committee and the Institutional Ethics Committee. The study participants included inpatients and outpatients who were diagnosed with major depressive disorder in Psychiatry Department in Christian Medical College and Hospital, Ludhiana. A minimum of 85 patients were enrolled after signing written informed consent. Patients completed questionnaires, including measures of adherence (e.g., Medication Adherence Rating Scale [MARS]) and beliefs about treatment (e.g., The Beliefs About Medicines Questionnaire [BMQ]). Demographic information of the patients was also obtained. Sample size was calculated to be around 85 participants, in alignment with a study by Russel and colleagues, to detect an effect size of r=0.30 with 80% power and an alpha criterion of 0.05.[18]

Inclusion Criteria

1. All patients aged 18 years and above diagnosed with MDD by the treating physicians from the Psychiatry department, based on the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) or according to the International Classification of Diseases-10 (Mental and Behavioral Disorders, ICD-10); regardless of severity [19].

2. Patients who were willing to participate in the study.

3. Patients with a history of taking Antidepressants for at least six months [20].

Exclusion Criteria

1. Patients suffering from a co-morbid psychiatric such as psychotic illness or bipolar disorder [21].
2. Patients with memory-related disorders, impaired cognition, impaired mental capacity, Alzheimer's or Parkinson's disease [22].

Methodology- Patients diagnosed with MDD were enrolled. Written Informed consent was taken from the participants. Ethical approval was obtained from the Institutional Ethics Committee. Detailed demographic data, including patient details, disease details and drug details, was recorded in a patient-specific proforma. Medication adherence was assessed using the MARS questionnaire, and a total score of less than 6 was considered non-adherent, while a score of 6 or more indicated adherence.[23]

MARS-10 is a 10-item dichotomous self-reporting questionnaire used to assess medication adherence. The total scores range from 0 (low likelihood of medication adherence) to 10 (high likelihood).[24] Beliefs about treatment were assessed using the Beliefs about Medicine Questionnaire. The BMQ questionnaire consists of two parts: the BMQ-Specific, which assesses beliefs about medicine for a medical condition and the BMQ-General, which measures beliefs about medicines in general. In brief, BMQ-Specific comprises two scales: a five-item treatment-necessity scale, Specific-Necessity, and a six-item treatment-concern scale, Specific-Concern. BMQ-General used three subscales: (1) General-Overuse (four items), (2) General-Harm (four items) and (3) General-Benefit (four items). Respondents indicate their degree of agreement with each statement on a five-point Likert scale, ranging from 1=strongly disagree to 5=strongly agree. Scores obtained for individual items within both scales are summed. Thus, total scores for the Necessity and Concerns Scales range from 5 to 25. Higher scores reflect stronger beliefs.[25]

Statistical Analysis- Data were analysed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 25. Categorical variables were analysed using Chi-square test and Fisher's exact test. The Mann-Whitney U test or t-test was utilised to analyse continuous variables. Bivariate and multivariate logistic regression analyses were done to analyse the association between MARS and PSQI scores. A *p*-value < 0.05 was considered statistically significant.

RESULTS

All included patients agreed to complete the questionnaires. Majority participants were aged less than 65 years (82.4%), females (71.7%), educated more than or equal to class tenth(77.6%), married (73%), employed (56%), had depression for equal to or more than 5 years (55.3%), were on polytherapy (88.2%) and had co-morbidities (65.8%) (Table 1).

Table 1: Patient demographic characteristics

Variable	n (%)	
Age (in years)	<65	≥65
	70 (82.4)	15(17.6)
Gender	Female	Male
	61 (71.7)	24 (28.2)
Education	< 10th	≥10th
	19 (22.4)	66(77.6)
Marital status	Married	Single/Divorced
	73 (85.8)	12 (14.1)
Employment status	Unemployed	Employed
	28 (32.9)	56 (65.8)
Duration of illness	<5 years	≥ 5 years
	38 (44.7)	47 (55.3)
Antidepressant drug therapy	Monotherapy	Polytherapy
	10 (11.8)	75 (88.2)
Co-morbidities	No	Yes
No	29 (34.1)	56 (65.8)

The questionnaire had a sensitivity of 86.2% and a specificity of 88.6%. The internal consistency (Cronbach's alpha) of MARS in the current study was 0.83. The scores ranged between 0 and 10. The mean MARS score was 4.12±2.69. A total score of 6 or more indicated adherence, while a score of less than 6 indicated nonadherence. MARS scores were dichotomised into adherent/non-adherent.

Fig. 1 depicts the magnitude of adherence in the enrolled patients, where the majority of the patients were adherent 47(55.3%); however, a significant number reported non-adherence 38(44.7%).
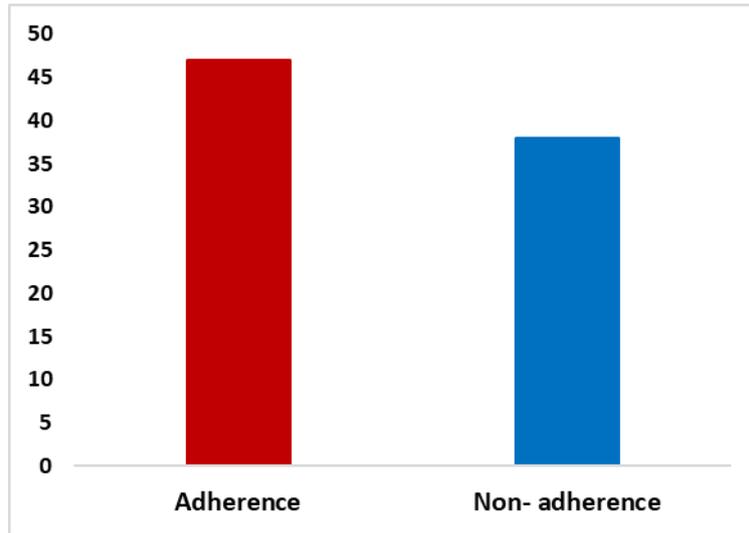

Fig. 1: Magnitude of Adherence

There were no differences in mean MARS scores across different ages (X^2 (1, N=85)=0.16, p=0.68), gender (X^2 (1, N=85)=1.2, p=0.27), employment status (X^2 (1, N=85)=1.32, p=0.24) and co-morbidities (X^2 (1, N=85)=0.81, p=0.36). However, level of education (X^2 (1, N=85)=5.56, p=0.01)., marriage status (X^2 (1, N=85)=5.18, p=0.02). and duration of illness (X^2 (1, N=85)=6.90, p=0.008) and antidepressant drug therapy (X^2 (1, N=85)=7.25, p=0.007) ignificantly iimpacted.

Table 2: Patient demographic characteristics by adherence level

Variable	n (%)	Adherence level n (%)		Chi-square	p-value
		Non-adherence	Adherence		
<65	70	32	38	0.16	0.68
≥65	15	6	9		
Male	24	13	11	1.21	0.27
Female	61	25	36		
< 10th	19	13	6	5.56	0.01
≥10th	66	25	41		
Married	73	29	44	5.18	0.02*
Separated/divorced /single/widowed	12	9	3		
Unemployed	28	15	13	1.32	0.24
Employed	57	23	34		
<5 years	38	11	27	6.90	0.008*
≥ 5 years	47	27	20		
Monotherapy	15	2	13	7.25	0.007*
Polytherapy	70	36	34		
No	29	11	18	0.81	0.36
Yes	56	27	29		

df= 1

Table 3 depicts beliefs about medications questionnaire scores by adherence group. This table shows that patients who believed their medication was necessary displayed greater medication adherence (p<0.01). Even the subscales, i.e., the belief that their health depends on medicines, that life would be impossible without their medicines, that without them they will become very ill, that their future health depends on their medicines, and that medicines protect them from getting worse, also depicted the same. The domain depicted that their concerns and worries were linked to higher non-adherence.

Table 3: Beliefs about Medications Questionnaire scores by adherence groups

Questions	Non adherence	Adherence	p-value
Necessity	19.4±3.3	20±2.6	<0.01
1. My health at present depends on my medicines	3.8±1.1	4.2±0.1	0.02*
2. My life would be impossible without my medicines	3.7±1.2	3.9±1.3	0.18*
3. Without my medicines, I would be very ill	3.9±1	4±1.1	0.29*
4. My health in the future will depend on my medicines	3.9±0.9	4.2±0.9	0.08*
5. My medicines protect me from becoming worse	4.1±0.8	4.5±0.9	0.02*
Concern	17.5±3.6	14.7±5	<0.01*
1. Having to take medicines worries me	3.8±1.2	2.9±1.2	<0.01*
2. I sometimes worry about the long-term effects of my medicines	3.9±1	3.3±1.2	<0.01
3.My medicines are a mystery to me	3.5±1	2.9±1.2	<0.01
4. My medicines disrupt my life	2.7±1.1	2.2±1	0.02*
5. I sometimes worry about being too dependent on my medicines	4.1±1.1	3.9±1.2	0.81*
Necessity-Concern	1.7±4.2	5.9±4.3	<0.01
Overuse	10.8±2.5	10.3±2.2	0.19*
1. Doctors use too many medicines	3.8±0.9	3.7±0.8	0.25*
2. Natural remedies are safer than medicines	3±1.1	2.8±1.1	0.23*
3. Doctors place too much trust on medicines	3.9±1.1	3.8±1.2	0.81*
4. If doctors had more time with patients, they would prescribe fewer medicines.	3.4±1.1	3.2±1.3	0.41*
Harm	14.3±3.2	12±2.5	<0.01
1. People who take medicines should stop their treatment for a while now and again	2.3±1.2	1.9±0.9	0.12*
2. Most medicines are addictive	3.4 ± 1.3	2.9±1.2	0.05*
3. Medicines do more harm than good	2.5±0.8	2.0±0.6	<0.01*
4. All medicines are poisonous	3.0±1.1	2.7±1	0.13*

All p-values calculated with t-tests, except in those indicated with an asterisk where U Mann-Whitney was used.

When adherence groups were categorised as per their responses to BMQ, it was revealed that the mean score in the necessity domain was higher and statistically significant in the adherence group and statistically significant. Conversely, higher and statistically significant mean scores were observed in the non-adherence group in the concern and harm domain. However, the overuse domain did not reveal a significant difference between the adherence and non-adherence groups.

Using the multiple linear regression stepwise method for certain variables, dependent on the adherence scores and after adjusting for other covariables, it was found that belief concerns, general harm and necessity-concern were the most important predictors associated with non-adherence to antidepressants as depicted in Table 4.

Table 4: Association between patient's beliefs about their medication and level of adherence

	Crude Analysis	Adjusted Analysis
	PR (95% CI)	PR (95% CI)
Necessity		
Non Adherence	1 (Reference)	1 (Reference)
Adherence	1.39 (0.70–2.86)	1.68 (0.83–3.56)
Concern		
Non Adherence	1 (Reference)	1 (Reference)
Adherence	0.50 (0.37–0.87)	0.54 (0.39–0.91)
Necessity-Concern		
Non Adherence	1 (Reference)	1 (Reference)
Adherence	2.73 (1.3–5.87)	2.62 (1.21–5.81)
Overuse		
Non Adherence	1 (Reference)	1 (Reference)
Adherence	0.78 (0.49–1.17)	0.83 (0.52–1.27)
Harm		
Non Adherence	1 (Reference)	1 (Reference)
Adherence	0.46(0.23–0.89)	0.49 (0.25–0.93)

DISCUSSION

Major depressive disorder is a recognised health concern having deleterious consequences for the individual and the public as well. There is availability of a vast number of drugs available to treat major depressive disorder, and medication adherence has been a major concern to ensure effective treatment of the same.[26] Medication non- adherence has emerged as a crucial factor impacting the progression of MDD to treatment-resistant depression. Medication adherence depends partly on patient's beliefs about medications prescribed to them. [27]

Hence, this study was designed to explore the medication adherence to anti-depressants, patient's beliefs about medicines and the relationship between patients' beliefs and adherence to antidepressant medication in patients with major depressive disorder. In our research, the majority of participants were young females. This finding is in alignment with another research where young females were the ones most affected by major depressive disorder.[28] In contrast to these findings, another study had mostly male participants.[29]

Our research revealed the participants to be mostly educated, employed and married. Another research reveals that the majority of the participants are married.[30]

When evaluated for medication adherence, even though the majority of the patients were adherent (55.3%), a significant number reported non-adherence (44.7%). The mean MARS score observed was 6.23±2.69. A Medication Adherence Rating Scale (MARS-10) mean score of 6.23 typically signifies moderate-to-low or partial adherence, falling within ranges associated with a higher risk of non-compliance. In another study, the MARS mean was found to be 4.27±2.52, which again reflects high non-adherence.[31]

As per our research, we could not find any differences in mean MARS scores across different ages, genders, employment status, and co-morbidities. However, the level of education and marriage status (i.e., single and unmarried) do impact medication adherence. This conforms to the findings of another research where patients who had low education and were unmarried exhibited low medication adherence.[32] Our research revealed non-adherence in patients who had depressive illness for a long time, i.e. more than 5 years. This is parallel to another research, which suggests that patients with long-term depression have higher non-adherence.[33]

Our research revealed that non-adherence was high among patients on polytherapy. In another research, among other factors, polytherapy emerged as an important factor leading to medication non-adherence

among patients with depression.[34] Multiple linear regression revealed that non-adherence was associated with beliefs in the concern, harm, and necessity-concern domains. These findings are similar to another study, where non-adherent patients had concerns and worries about their medications.[35] Additional research is mandatory to evaluate those factors that we have observed to be associated with non-adherence and develop interventions and measures to overcome these to achieve optimal treatment of major depressive disorder.

LIMITATIONS

This was a small-sample study; a larger sample would be beneficial for the generalisability of the study's findings. This is a cross-sectional study; hence, the association between non-adherence and beliefs about medicines does not necessarily reflect a causal relationship. However, it does act like a screenshot of the same and suggests that non- adherence is associated with negative beliefs about medications. This was a self-reported measure of adherence and may therefore have limitations and reporting bias.

CONCLUSIONS

Non- adherence is a concern among patients being treated for major depressive disorder. The non-adherence observed is often associated with patient's beliefs about medications, mainly concerning the general harm of antidepressant medications. This research augments the interpretation of factors that impact medication adherence. The provided knowledge can be beneficial to provide a systematic approach for patients as well as their caregivers to enhance the treatment outcomes of patients with major depressive disorder.

CONTRIBUTION OF AUTHORS

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