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Effect of Motivational Interviewing- Based Intervention on Medication Attitude and Adherence in Patients with Mental Illness

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Abstract
Background*: Nonadherence to psychotropic medications is highly prevalent in patients with mental illness and associated with increased readmission rates, significant emotional, social and financial burden to patients, families and society. Motivational interviewing (MI) is a directive, patient centered approach aims to help patients explore their ambivalence and motivate them to change behavior.* ***Aim****: this study aimed to evaluate the effect of motivational interviewing – based intervention on medication attitude and adherence in patients with mental illness.* ***Methods****: A quasi-experimental research design was utilized. Total of 33 female patients were recruited from in- patient at Psychiatric medicine and Addiction Prevention Hospital– Hospitals of Cairo University. Tools of data collection included: socio demographic and clinical data sheet, Hogan Drug Attitude Inventory (DAI - 30) and Clinician Rating Scale (CRS). The program consisted of 12 sessions of MI and health education conducted on four weeks followed by eight weeks follow up.* ***Results:*** *there was significant increase in positive attitude towards medication and significant increase in level of medication adherence of participants.* ***Conclusions:*** *interventions that include motivational interviewing and health education demonstrate hopeful results as an approach to increase positive attitudes and medication adherence in patients with mental illness.*
Keywords: *motivational interviewing, medication adherence, attitude towards medication, health education, psychotropic medications.*

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I. Introduction

Adherence to medication is the degree to which the patient uses medications in correspondence with the recommended prescription. On the practical level, adherence involves patient's behaviors as accessing treatment, obtaining and taking medications, understanding and following instructions about medications. Moreover, the term adherence was introduced by World Health Organization to change the undertone of paternalism associated with the term compliance [1, 2].

Adherence to psychotropic medications is multifactorial and complex process. It is affected by many factors as lack of patient's motivation, type of illness, patient's insight into illness and treatment, medication costs, cultural believes and provider - patient relationship. Additionally, psychopathology as psychotic symptoms, cognitive impairment and impaired judgment could result in nonadherence. Moreover, substance abuse as highly prevalent in patients with mental illness; is strongly associated with nonadherence [3-5].

Studies have shown that; when patient miss 20% of medication that is considered nonadherence. Patients with mental illness may intentionally modify treatment regimen rather than completely accept or refuse it. Modification includes partial adherence, selective full adherence to some medications but not others and irregular adherence. Moreover, patients may be unintentionally nonadherent to medications, i.e. forgetting taking medications. Abuse of prescription medication is another form of nonadherence [6].

It would be helpful to differentiate between adherence as a behavioral component and attitude towards medication as an evaluative component of the adherence process [7]. Studies have shown that attitude towards medications is the best predictor of medication adherence [8]. In this respect, [9] found positive correlation between attitudes towards medication and insight into the need for treatment. Furthermore, patient's attitude towards psychotropic medications is likely to be affected by previous experiences, social influences, level of patient's functioning, illness severity and side effects of medications [10].

There are many interventions developed to improve medication adherence in psychiatry including: psycho-education; counseling; pill count; skill building techniques and family support. Although no single strategy shows any distinctive advantage, multiple-focus interventions seem to provide larger effects and the

most powerful combination include educational, behavioral and affective components. For example, compliance therapy that derived from principles and techniques of cognitive behavioral therapy and motivational interviewing [4, 11].

Motivational interviewing (MI) is a collaborative, client-centered, directive method to elicit and enhance intrinsic motivation to change by exploring and resolving ambivalence and allowing clients to make conclusions about consequences of their actions, such as not taking medications. MI focuses on motivational processes within the individual that facilitates and supports change in a manner congruent with the person's own values and concerns [12].

Unlike most of the behavioral approaches to improve medication adherence, the spirit of MI is the use of skills as reflective listening, expressing empathy, developing discrepancy between the individual's values and behaviors, avoiding resistance, and supporting self-efficacy. During MI therapist validates the patient's views, gently timing the eliciting and strengthening of change talk, whilst resisting the righting reflex [12, 13].

Significance of the study

Non-adherence to psychotropic medications remains one of the greatest challenges which make treatment of psychiatric illness wasteful and ineffective. Egyptian study of factors leading to relapse among patients with mental illness revealed that 50% of participants refuse to take their psychotropic medications while outside the hospital and stop taking medications by themselves [14]. Furthermore, based on the researchers' clinical experiences, there are too many patients readmitted to the hospital frequently with exacerbation of symptoms due to leaving medications immediately or after few days of discharge.

Additionally, among human costs of nonadherence to psychotropic medications are repeated relapses which over time, lead to increased patients' functional impairment, reduced quality of life; increased rates of violence, and increased risk of suicide.

To address and manage patients' discontinuation of medication, it is essential to health team members to understand how patients experience medications and the processes which motivate negative attitudes towards medication and to non-adherence. In addition, they should adopt innovative and multifaceted interventions which emphasize patient's willing, ability and readiness to change nonadherence behaviors.

Although previous studies in Egypt might contribute to developing an understanding of medication nonadherence among patients with mental illness, none of these studies have investigated motivational interviewing as a strategy to enhance medication adherence. Thus, the present study would highlight on the effect of integrating motivational interviewing with health education to improve attitude and adherence in patients with mental illness.

Subjects and Methods

Aim of the study:

The current study aimed to evaluate the effect of motivational interviewing - based intervention on medication attitude and adherence in patients with mental illness

Research design:

A quasi-experimental research design was utilized in the current study.

Research hypotheses:

1. Motivational interviewing - based intervention will improve attitude towards psychotropic medications of the participants as measured by Hogan drug attitude inventory.
2. Motivational interviewing - based intervention will improve level of adherence to psychotropic medications of the participants as measured by adherence scale.

Setting

The study was conducted at female in-patient ward at Psychiatric Medicine and Addiction Prevention Hospital – Cairo University Hospitals.

Sample

Patients aged 18 – 55 years, who were admitted with recurrence or aggravation of symptoms because of non-adherence to prescribed psychotropic medications, were included in the study. Patients with first episode psychosis, uncooperative patients either due to active psychosis, intellectual disability or organic brain disorders were excluded. Patients with past or current history of substance abuse were also excluded as substance intake would be considered a major confounding factor to non-adherence. The total number of patients who remained eligible for the study was 33 female patients out of 54 patients admitted to the female ward over a period of four months and only two male patients out of 80 male patients admitted to the male ward. Most male patients were

excluded due to history of substance intake. The male participants were excluded from the statistical analysis of study to avoid statistical bias.

Pilot study

Prior recruiting the study sample, surveying male and female wards revealed that only three male patients out of 30 male patients had no current substance abuse. Thus, pilot study included those three male and four female participants. The aim of pilot study was to practice techniques of motivational interviewing, assess average of time of sessions and time needed for completion of the study tools. Those seven participants were not included in the study sample.

Tools for data collection

1. Socio-demographic and clinical data sheet. Developed by researchers and included: age, level of education, working status, diagnosis, duration of illness and number of previous admissions because of nonadherence to medications and reasons of nonadherence.
2. Hogan Drug Attitude Inventory (DAI - 30): was developed by Hogan et al, 1983 [15] to measure patient's subjective responses and attitude towards maintenance of psychotropic drugs. It contains 15 items to be answered as 'True', and 15 items to be answered as 'False'. To calculate the score, each 'positive' answer is given a score of (+1), and each 'negative' answer is given a score of (-1). The total score for each patient is calculated as the sum of the positive scores, minus the negative scores. A positive total score indicates a positive attitude and a negative total score indicates a negative attitude. The scale was translated into Arabic language and subjected to back translation. Cronbach's Alpha after translation: 0.874
3. Clinician Rating Scale (CRS): developed by (Kemp et al, 1996) [16]. In the current study, this scale was used to quantify the family's assessment of adherence level shown by the patient at home. The scale uses an ordinal scale 1-7. Higher numbers represent greater adherence: (1= complete refusal), (7= active participation, shows responsibility and accept medications). The scale was translated into Arabic language and subjected to back translation. Cronbach's Alpha after translation: 0.836.

Ethical consideration

Each participant and his family received explanation of aim, procedure of the study and frequency of follow up phone calls. Confidentiality of information and freedom to withdraw at any time were ensured to each participant who agreed to participate in the study.

Procedure

A- Preparation:

Aim and procedure of the study was explained to the hospital director and nursing director, written official permission was obtained. A manual of content of each session was developed in Arabic language by researchers after reviewing literature about stages and skills of motivational interviewing [17-21]. Definition and examples of skills of motivational interviewing that will be used during the program was included in the manual: open ended questions, affirmations, reflective listening, summaries and normalizing.

The program was planned to consist of 12 sessions, to be carried out on 4 weeks (3 sessions /week, every other day) and eight weeks follow up phone calls. Sessions were planned to be based on individual work with each participant except sessions of health education about medications.

B- Implementation:

Stage of Engaging. Sessions 1-3 and lasted up to the end of the program: the aim was to convey acceptance to participants and build therapeutic alliance. Through: daily visit to participants, discussion of important matters to them, nonjudgmental attitude and encouraging the participant to express feelings. Main skills during that stage were: open ended questions, active listening and empathy.

Stage of Focusing. Sessions 4 and 5: the aim was to set an agenda with each participant. Session (4): aim and procedure of the study was explained to each participant, assessment of participant's attitude toward medications was conducted through semi structured interview. Session (5): decisional balance worksheet and readiness to change rulers were applied through unstructured interview with each participant individually. Participant's permission to attend family visit was attained during that stage. Researchers started to apply skills of affirmations, reflective listening and summaries.

Stage of Evoking. Started in session (6) and lasted up to the end of the program: the aim was to elicit participant's own motivations for changing behavior of nonadherence. During that stage: reasons of non-

adherence to psychotropic medications, troubles that patient got because of stopping medications and disadvantages of frequent hospitalization were discussed with each participant.
Researchers helped each participant to elicit her steps to make change, for example: let us discuss your steps to start to adhere to medications, let us discuss benefits you will get when adhere to your medications. The focus was encouraging each participant to relate benefits of adherence to take care of herself, her children, to continue education / work and to be able to interact with others. Participants were encouraged to remember and mention previous successes whatever simple.

Furthermore, each participant was encouraged to use change talk such as: I want to …, I can…, I will…. Moreover, each participant was encouraged to learn and repeat motivational statements. At the end of each session, each participant encouraged to repeat the decision: "I decided to change; I decided to be committed to my medications". In addition, researchers started to apply the skill of normalizing at this stage.
Examples of self motivational statement: I can control myself and I will stay on medications, it is important to me to stay on medications because I want my life to improve, I'm a valuable person and deserve better life, staying on medication will help me to work better and take care of my children, I have great hope to improve and return to my family, relatives and friends, I think I have a lot of will and ability to continue to take medications and overcome the disease; I have positive energy to overcome non-adherence behavior.

Stage of Planning. Started in session (10).The aim was to help participants to develop a specific change plan willing to implement after discharge to overcome reasons of nonadherence. Health education was customized according to each participant's needs. Health education about importance and therapeutic effect of medications was also provided. Decisional balance worksheet and readiness to change rulers were applied for 2nd time. Skills of motivational interviewing were continued to apply. In general, all over the program each session took 30-60 minutes according to the participant's need.

C- Post program assessment and follow up.

Post program assessment of participant's attitude towards psychotropic medications was conducted. Eight weeks follow up after discharge was conducted through weekly phone call to each participant and the responsible family member. The aim was to maintain relationship with participants and their families, to assess participant's level of adherence to medications and to answer their questions regarding medications. Number and length of phone calls varied according to the need.

Statistical Design

Statistical analysis was done with the help of software 'SPSS 20' Statistical Package for the Social Sciences. Descriptive statistics including number, percentages, mean and standard deviations were used for quantitative data. Correlation coefficient was used to test research hypotheses. Relationship between different measures was computed via Pearson's correlation coefficient. The level of significance in this study was (<0.05), and (<0.005) considered highly significant.

II. Results and Data Analysis

Most participants (87.8%) were at age (18 - < 38 years), (51.5%) had finished school, (36.3%) were house wives and (48.4%) were single (table 1). Nearly half of the participants (48.5%) had bipolar disorders, meanwhile, more than one third (39.4%) had schizophrenia (figure 1). Furthermore, more than one third of the participants (39.4%) were previously admitted twice to psychiatric hospital (figure 2) and two thirds of the participants (66.7%) had duration of illness 1- < 5 years (figure 3).

Figure (4) illustrates that most of the participants (87.9 %) reported that the side effects of medications were the main reason of non-adherence, followed by (24.2%) complained of the multiple number of pills. Figure (5) shows that slightly more than half of the participants (51.5%) had negative attitude towards medications at the pre-program assessment compared to (6.1%) at the post-program assessment.

Figure (6) reveals that all participants (100%) were at level 1 of adherence "complete refusal of medications" before joining the program. Nevertheless, post program adherence level increased to level 6 in (18.2%) and to level 7 in (24.24%) of the participants.

Regarding individual scores of the studied variables of each participant, figure (7) illustrates that cases number (7 and 25) had neutral attitudes towards medication post program and cases number (10 and 16) still has negative attitudes. Meanwhile, figure (8) illustrates that cases number (3, 10, 16 and 21) still at level 1 " complete refusal of medications " post program. Meanwhile, adherence improved to level 7 in cases number (2, 5, 8, 11, 20, 23, 26 and 28).

Table (2) reveals that there were statistically significant differences between pre and post program scores of negative and positive attitudes towards medications according to Hogan Drug Attitude Inventory (p = 0.019, 0.026 respectively).). In addition, there was high statistically significant difference between pre and post program level of adherence of participants (p-value = 0.000).

Regarding the correlation study, table (3) shows that there was significant correlation between educational level of the patient and duration of illness with Hogan Drug Attitude Inventory scores (p= 0.028 and 0.032, respectively). On the other hand, there was significant correlation between work status, educational level, diagnosis, duration of illness, number of previous admissions with the scores of Level of Adherence Scale (p= 0.012, 0.022, 0.024, 0.035 and 0.002, respectively) . However, there was no significant correlation between scores of Level of Adherence Scale and Drug Attitude Inventory (r = 0.253, p value = 0.078).

Table (1) Socio-demographic characteristics of the studied participants (n=33)

Age	No.	%
18 - <28 years	17	51.5
28- <38 years	12	36.3
38 - <48 years	2	1.6
48- 55	2	1.6
Mean ±SD	29.47 ± 8.95	
Education		
Can read and write	8	24.2
School education	17	51.5
University education	8	24.2
Status of working		
Working	9	27.3
Students	4	12.2
House wives	12	36.3
Lost work after illness	8	24.2
Marital status		
Married	10	30.3
Divorced	7	21.2
Single	16	48.4

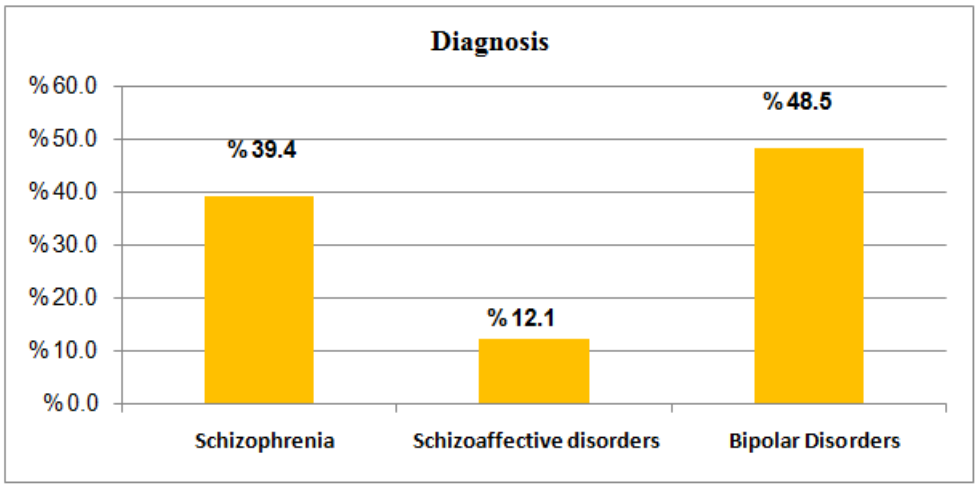

Figure (1): diagnoses distribution among the studied participants (n=33)

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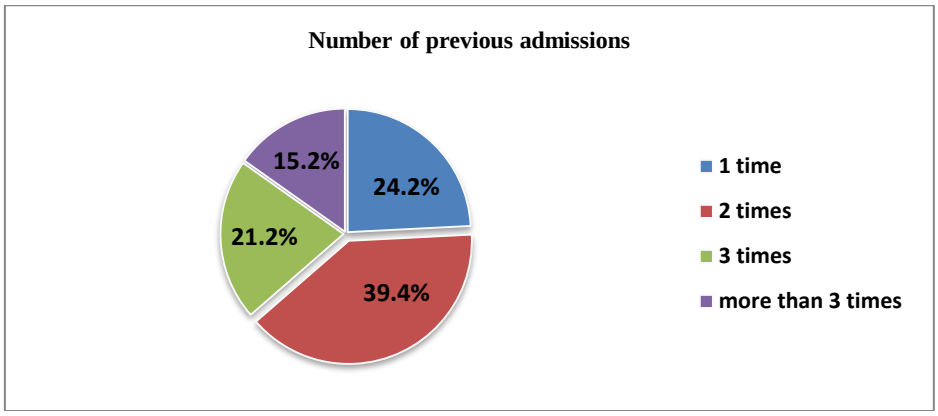

Figure (2): distribution of previous admissions among the studied participants (n=33)

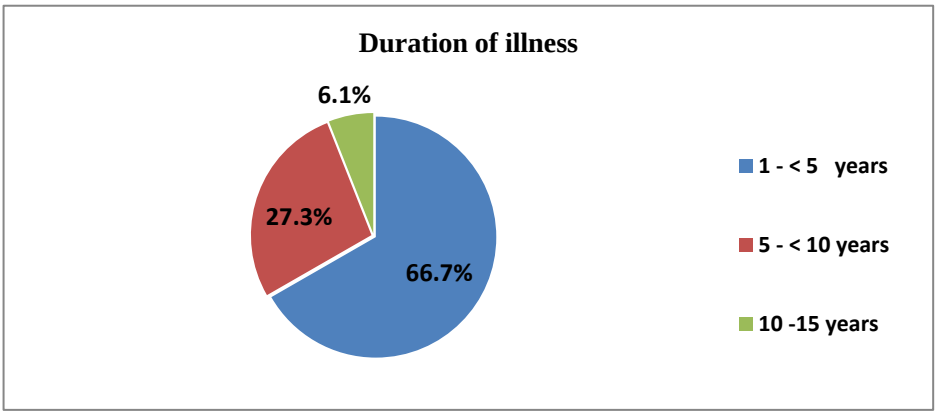

Figure (3): distribution of duration of illness among the studied participants (n=33)

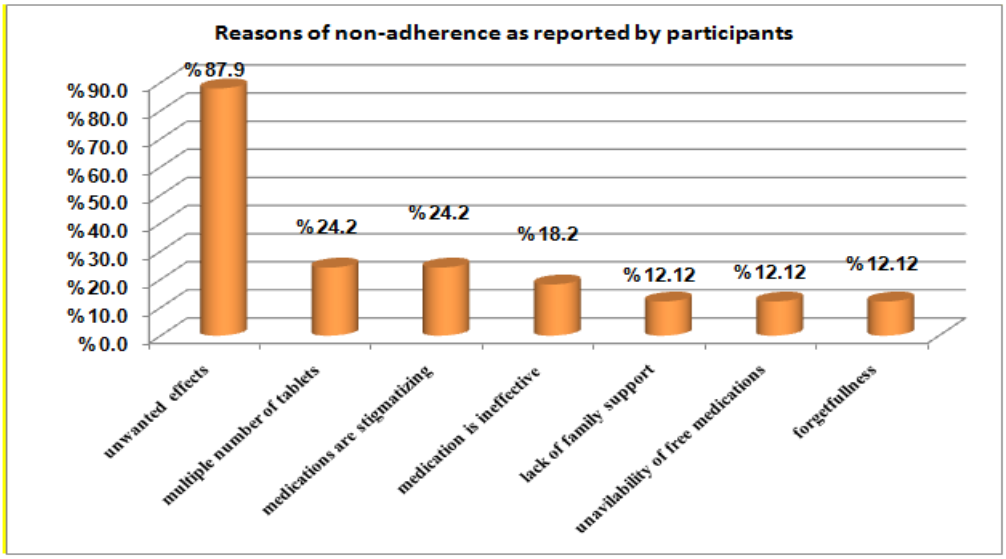

Figure (4): Reasons of non-adherence to medications as reported by participants (n =33)
As observed in this figure, percent is more than 100% as many participants reported more than one reason.

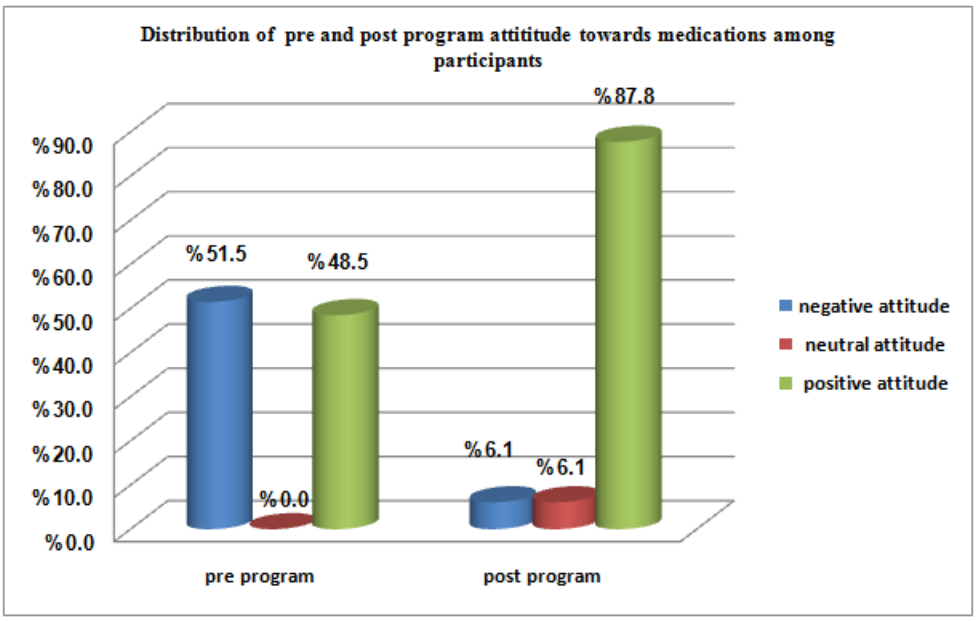

Figure (5): pre and post program attitude towards medications of participants (n=33)

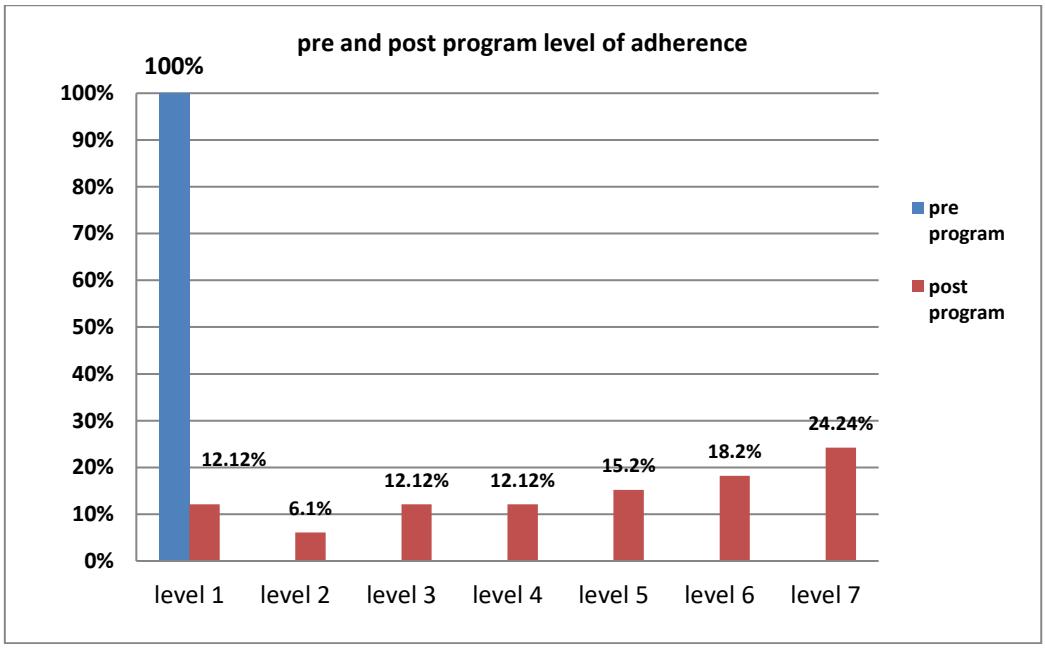

Figure (6): pre and post program level of adherence to medications among participants (n=33)

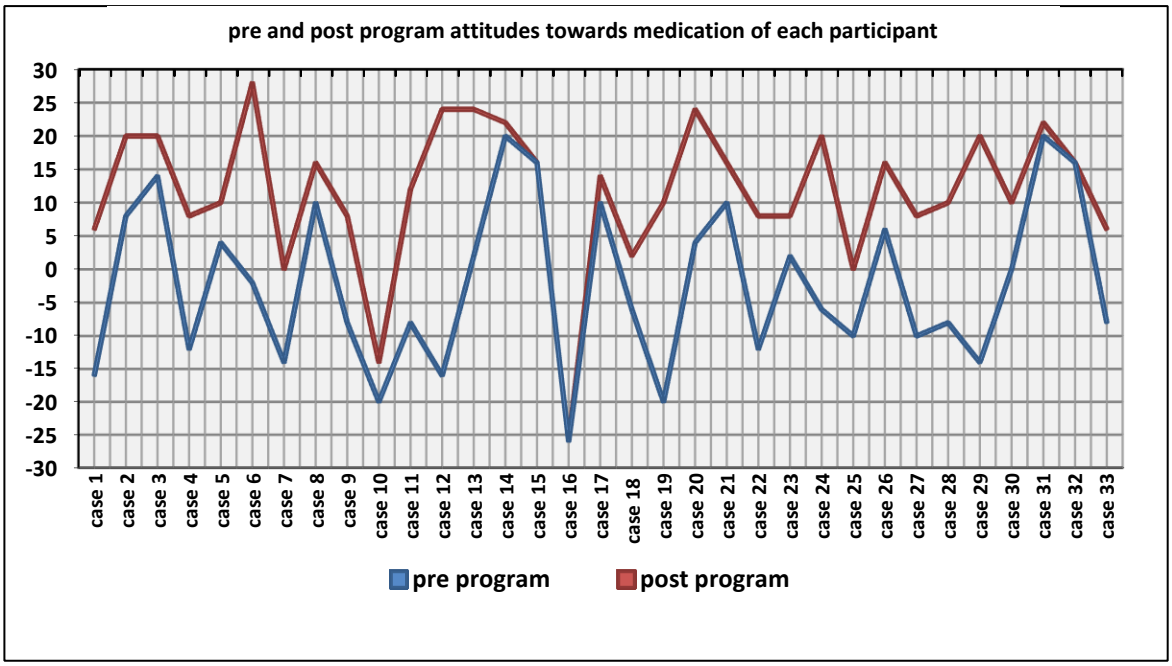

Figure (7): pre and post program scores of attitude towards medications of each participant (n=33)

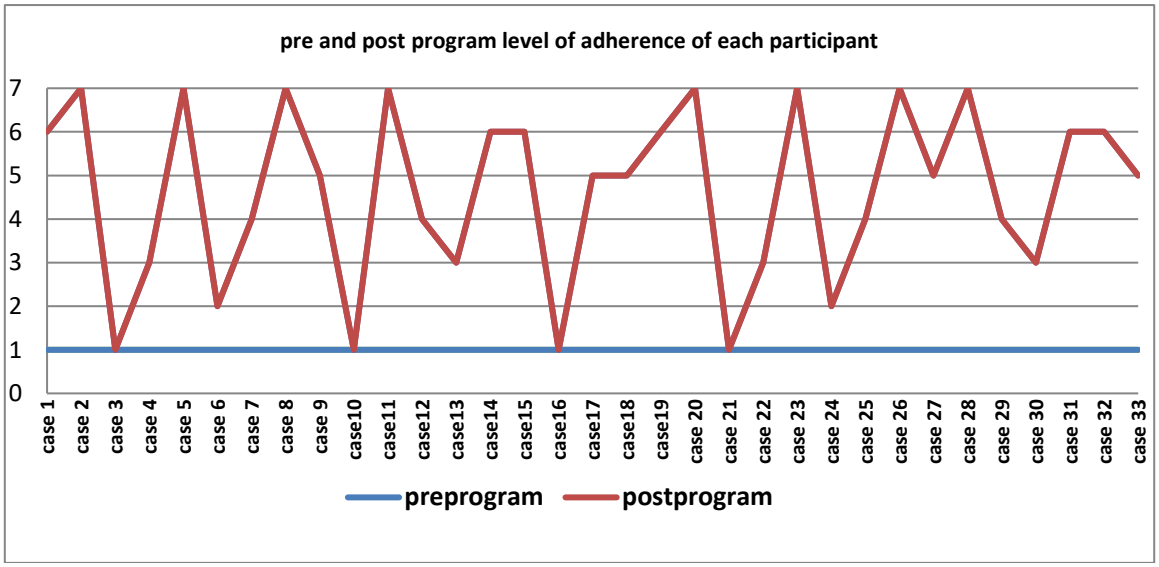

Figure (8): ***pre and post program scores of level adherence of each participant (n=33)***

Table (2): Differences between pre and post program scores of participants' attitudes towards medications and level of adherence (n=33)

	Pre program M±SD	Post program M±SD	t	P value
Positive attitude towards medications	8.750 ± 6.234	12.588 ± 3.841	2.143	.019*
Negative attitude towards medications	13.643 ± 5.957	8.000 ± 2.236	2.069	.026*
Level of adherence	1.4242 ± .50189	4.6364± 2.0587	8.708	.000**

*p <.05 =Significant relation **p <.005 highly Significant

Table (3): Correlation between socio-demographic, clinical data of the studied participants and the studied variables

Study variables	Drug Attitude Inventory		Level of Adherence Scale	
	R	P	R	P
Demographic data				
Age	0.241	0.089	0.011	0.475
Status of work	0.169	0.173	0.394*	0.012
Marital status	0.243	0.087	0.161	0.186
Education level	0.335*	0.028	0.352*	0.022
Clinical data				
Diagnosis	0.235	0.094	0.347*	0.024
Duration of illness	0.327*	0.032	0.320*	0.035
Number of previous admissions	0.040	0.413	0.495**	0.002
The studied variables				
Level of Adherence	.253*	.078		

*p <.05 = Significant **p <.005 highly Significant

III. Discussion

The aim of the current study was to evaluate the effect of motivational interviewing - based intervention on medication attitude and adherence in patients with mental illness.

Results of the current study showed that more than three quarters of participants were at age of 18 - 38 years with mean 29.47 ± 8.95 which might indicate that younger patients have more negative perception of medications. This result is supported by Maan et al. [22] who concluded that nonadherence is common among age group 21-30 years. Similarly, Stentzel et al. [23] concluded that older age is a significant positive determinant for adherence to psychotropic medications. Furthermore, results of the current study showed that age was not significantly correlated with attitude towards medications or level of adherence which is supported by Amr et al. and Baby et al. [24, 9].

Three quarters of participants had school and university education. This result may indicate that participants' lack of information about medications and their own reasons of nonadherence might have the greater effect on the decision to take medications or not regardless educational level. This result is contradicted with [22] who concluded that patients with lower education were more nonadherent to medication. Moreover, level of education had significant statistical correlation with attitude towards medications and level of adherence which is supported with [24].

On one hand, slightly more than third of participants in the current study was working or students and mentioned that their nonadherence was due to embarrassment of taking psychotropic medications in the place of work, or university. This result is supported by Gaber et al. [25] who found that stigmatized participants discontinued taking their medication.

On the other hand, slightly less than quarter of participants lost their work because of illness and expressed doubt about efficacy of medications. This result is consistent with Stentzel et al. and Sanele et al. [23, 26] concluded that unemployed participants were more non adherent to medication. Moreover, in the current study, status of working had significant statistical correlation with level of adherence which was consistent with [23], meanwhile inconsistent with [9] who reported that unemployment was not correlated with the nonadherence.

Slightly less than half of participants were single which might be attributed to the negative effect of mental illness on the interpersonal relationships of patients. Whether married or single, participants' nonadherence may indicate lack of enough help of significant others as spouses or family in the process of medications adherence. This result is not supported by Sajatovic et al. [27] who concluded that marriage appears to be a protective factor that increases adherence. Furthermore, marital status had no significant statistical correlation with attitude toward medications or level of adherence which is supported by [24].

Regarding clinical characteristics of participants in the current study, slightly less than half of participants were diagnosed as mood disorders. This result is supported by Aksoy et al. and Crowe et al. [28 and 29] who reported that nonadherence to medications is common problem in 20% - 60% of patients with bipolar disorders.

Moreover, Derya et al. [5] found the ratio was higher in the bipolar disorder group when compared to the groups with schizophrenia/schizoaffective disorder. Meanwhile, this result is contradicting to [23] who concluded that patients suffering from schizophrenia are most common not to comply with psychotropic medications. There is significant correlation between diagnosis and level of adherence in the current study which was supported by [22].

Regarding duration of illness, two thirds of participants had duration of illness 1 to < 5 years and found to have significant statistical correlation with level of adherence and attitude towards medications. This is supported by [22] while contradicting with Pareek et al. [30] who reported that longer duration of the illness may adversely affect drug adherence.

Iglika et al. [31] concluded that shorter duration of illness correlated significantly with negative attitudes toward antipsychotic medication, whereas the longer duration of the illness correlated with positive attitudes toward medication.

Regarding reasons of nonadherence to medications, most participants owed nonadherence to medication side effects as somnolence, fatigue and inability to concentrate which interfere with ability to do housework, caring of their children and ability to go to work and make them feel bad. This result is supported by [9, 22] and, Eticha et al [32] who found that the side effects of medication was the primary reason for nonadherence among participants of their studies. On the other hand this result is not supported by [30] who found that the main reason for non compliance was chronic nature of illness, transportation and poor health services. Additionally, [23] reported that the most common reason for non-adherence was forgetting to take the medicine

The second reason of nonadherence to medications among participants of the current study was multiple numbers of tablets which is supported by Alekhya et al. [33] who found polypharmacy was the main cause of nonadherence of antidepressant medications. With regard to inefficacy of medications, this result is supported by the qualitative study of Paul et al. [34] as participants reported doubts about the usefulness of medication because of medication side-effects.

Pre program assessment revealed that slightly more than half of participants (51.5%) have negative attitude towards medications which could be attributed to patients' hope to perceive daily and rapid benefits of medications and the nature of psychiatric illness which impair patients' insight into importance of treatment. Unexpectedly slightly less than half of participants (48.5%) had positive attitude towards medications. Moreover, during sessions those participants expressed understanding of medication importance but they gave many reasons for not taking medications.

This result is not supported by [9] who concluded that compliant and noncompliant participants had positive overall attitude towards medication. Furthermore, [24] concluded that patients' beliefs about necessity of prescribed antipsychotic medication to control their illness were higher among adherent participants of his study.

Additionally, results of the current study showed no significant correlation between attitude towards medication and level of adherence which is not supported by [32] who reported that adherent patients had positive attitudes towards treatment, while non-adherent patients had negative attitudes.

Post program results of the current study showed that motivational interviewing based-intervention significantly increased positive attitude towards medication in most of participants as evidenced by increased mean scores from 8.7 ± 6.2 to 13.6 ± 5.9. Additionally, level of adherence significantly increased up to the highest level in slightly less than quarter of participants as evidenced by increased mean scores from 1.4 ± 0.5 to 4.6 ± 2.0. This result could be attributed to many factors as: participants had chance to discuss their own concerns about medications, self motivational statements and good therapeutic alliance between researchers and participants. Moreover, health education was customized to each participant's needs.

This result is consistent with Wai et al. [35] who reported significant effect of adherence therapy that based on MI in improvement of participants' clinical outcome as medication adherence rate, insight into treatment and duration of re-hospitalizations. Moreover, Kristin et al. [36] concluded that participants demonstrated significant improvement in medication adherence, self-efficacy, and motivation to change after receiving the MI.

In addition, results of [27] and Jones et al. [37] showed improved attitude towards medications, increased adherence, high level of satisfaction with medications and improving mood in patients with bipolar disorders. Also our results are consistent with Staring et al and Pakpour et al. [38, 39] who concluded that multifaceted interventions that include MI and psycho-education enhanced medication adherence , service engagement and functional outcomes up to six months follow-up in patients with bipolar disorders.

Additionally, post program level of adherence to medication did not exceed level three in less than one third of participants which means that those participants still very reluctant and question the need for medication and require persuasion to take medications. This might be a result of their belief in the uselessness of

medications, lack of family support and might indicate the need to more sessions of MI and more focused follow-up.

This result is supported by Barkhof et al. [40] who conducted a randomized controlled trial to compare MI to health education in improving drug adherence in patients with multi-episode schizophrenia and found no effect of motivational interviewing or health education on medication adherence in their studied sample. Moreover, Faith [41] concluded that MI may be beneficial for some patients with schizophrenia but should not be considered as first line therapy.

IV. Conclusion

The current study concluded that interventions that involve motivational interviewing and health education demonstrates hopeful results as an approach to increase positive attitude towards medication and adherence in patients with mental illness. Moreover, good therapeutic alliance between patients and health team members has an impact on patients' motivation to engage in the process of adherence to medications.

Recommendations

1. Motivational interviewing should be implicated in the treatment plan and nursing care of patients.
2. Health education should be based on patient's perspectives of reasons of medication nonadherence.
3. Patient's family should be included in the sessions of health education about medications.
4. Replication of the study is needed with further sessions and longer follow up.

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