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Research Article

Examining the Psychometric Properties of the Antidepressant Adherence Scale (AAS) in the Context of an Interventional Psychoeducational Study

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Abstract

Objectives: The main two objectives of the study are to assess the efficacy of a systematic patient-centered psychoeducation on adherence to antidepressants, and to examine the psychometric properties of the Antidepressant Adherence Scale (AAS), with emphasis on predictive validity.

Method: 70 consenting patients with confirmed diagnosis of major depression were randomly assigned to an intervention group (n = 40) who received systematic psychoeducation for depression, and to a standard care group (n = 30) who received standard care. The intervention group received systematic education consisting of (1) Reading material, "depression manual", (2) Individual or groups educational sessions. The primary clinical outcome measures included the Antidepressant Adherence Scale. Other instruments used to monitor clinical outcomes included; the Clinician and Self Rated Quick Inventories of Depressive Symptomatology (QIDS-C and QIDS-SR).

Results: Forgetfulness was the commonest omission reported followed by carelessness, stopping when feeling better, and stopping when feeling worse. The total number of omissions in the four AAS domains were less among the intervention group ($p < .001$) than in the standard care group, at 4, 8, and 12 weeks. At 12 weeks there was significant ($p < .01$) reduction in the QIDS-CR and the QIDS-SR scores in both the intervention and standard care group. However the intervention patients were less symptomatic than the standard care group. The total omission scores correlated with the severity scores of QIDS-SR and QIDS-CR among the intervention group.

Conclusion: There was an evidence for predictive and construct validity of the AAS, and the systematic education may lead to improved adherence to antidepressants and reduction in clinical symptoms of depression.

INTRODUCTION

Adherence can be described as the extent to which a patient is able to follow medical advice (e.g. taking medication, and following diet and lifestyle recommendations). The issue of adherence in the treatment of Major Depressive Disorder requires special attention because of the high early discontinuation rates of antidepressants among patients [1]. The term "adherence" is considered non-judgmental, refers to a positive doctor-patient relationship, and is preferred over the term "compliance," which carries negative connotations due to its passive nature and suggests blame for the patient [2].

Antidepressant drugs remain as the mainstay treatment for depression, which are shown to be effective also in the presence of other comorbid physical illnesses [3]. The goal of achieving adherence with medical recommendations to antidepressants is to treat depressive episodes, prevent relapses, and decrease the risk of suicide. A recent study showed that 42% of patients discontinued their antidepressant treatment during the first 30 days and 72% had stopped within 90 days [4,5]. There was also partial non-adherence in 75% of depressed patients, culminating in an average of 40% of days without dispensed antidepressants being taken.

There is evidence however that patient who received systematic patient education and ongoing monitoring of medication adherence and depressive symptoms had high rates of using maintenance pharmacotherapy when compared to standard care patients [6-11].

Reasons for non-adherence

The reasons of non-adherence are multi-factorial and may include patients' factors, non-patients' factors, and factors related to patient - clinician relationship. For example, in one study, 52% of patients stopped taking their medication during a 10–12 week period and two-thirds of these patients did not tell their

doctor. Authors reported that the reasons for discontinuation included feeling better (35%), side effects (30%), and other reasons such as fear of dependence, were cited by 17% of patients. An additional 15% each cited lack of efficacy or having been told by their physician to stop [12]. It is crucial to identify these broad categories in more depth, in order to customize interventions to target the reasons of non-adherence. Morisky et al. (1986) have developed an instrument to measure non-adherence to antihypertensive agents. The theory underlying this model suggests that non-adherence due to any or all of these mechanisms: forgetting, carelessness, stopping the drug when feeling worse, or stopping the drug when feeling better [13].

The relationship between depression literacy *per se* and behavior change, such as help seeking, was examined in a number of studies. There is evidence in literature to support that patient knowledge of and attitudes toward depression and its treatment influence the choice of treatment modalities, especially antidepressant medication. For example, in a number of studies, the most frequently endorsed reasons for depressed individuals delaying or not seeking professional help or treatment was related to lack of knowledge about mental illness and available treatments [14-16].

It was demonstrated that multifaceted programs were found to significantly improve adherence to antidepressants, to improve satisfaction with care, and improve depressive outcomes compared with usual care. It was shown in these studies that patients who received systematic patient education, utilizing a single or combination of educational intervention methods for depression to enhance adherence to antidepressants and ongoing monitoring of medication, have demonstrated positive clinical outcomes, when compared to standard care patients [7-11,17].

For example, in a collaborative care-management program for the elderly, patients (n =1801) were randomized into an intervention group and a usual care group for up to 12 months, with the intervention group being offered education, antidepressant management or brief psychotherapy, and problem-solving for depression. Authors reported that intervention patients had a 50% or greater reduction in depressive symptoms from baseline, less functional impairment, and better quality of life compared with 19% of usual care participants at 3, 6, and 12 months [11].

The majority of the intervention studies used multiple approaches. The educational approaches were parts of many other interventions such as counseling and psychotherapy, all of which had the same objectives of improving adherence to antidepressants to reduce relapses through enhancing the learning experiences and using through using educational packages such as interactive booklets, self-help materials, short videos, and telephone counseling [18].

Although these studies have been undertaking on strategies to improve patients' depression literacy, and to improve adherence, the present study adds to the literature by focusing on measuring outcomes of educational interventions, utilizing a reliable instrument to measure adherence to antidepressants with evidence of validity. This is the Antidepressant Adherence Scale (AAS) [19].

The main objectives of this study were set to test the efficacy of psychoeducation on improving adherence to antidepressants, and to examine the psychometric properties of the Antidepressant Adherence Scale.

METHOD

Design

This is a randomized single blinded, prospective study, to evaluate the adherence and symptomatic outcomes of a psychoeducation intervention program for patients suffering from depression. Overall this study consists of a pre and post-test repeated measures design as well as between group comparison (intervention group and standard care group). Also, outcome comparisons are made between the highly or low adherent groups, among those who completed the educational intervention program.

Participants

Inclusion/Exclusion Criteria: Participants included, both male and female consenting out-patients, 18 - 65 years of age, with confirmed diagnosis of major depression. All patients fulfilled the criteria of the MINI international neuropsychiatric interview for Major depression [20]. All patients received the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition clinical diagnoses of major depressive disorder without psychotic features. Diagnosis was confirmed by an independent research psychiatrist, and all patients were administered SSRIs or SNRIs antidepressants treatments. Patients with sever medical or neurological conditions were excluded. Patients with suicidal ideation, those who were not able to provide an informed consent, patients with psychotic symptoms were also excluded. All patients provided their consent for inclusion in the study, and the conjoint scientific and ethics board of the University of Calgary granted approval for the study.

Psychoeducational intervention

Randomization and procedure: Patients were randomly assigned into 2 groups, the intervention care group and the standard care group.

Psychoeducational Program

Psychoeducational objective were designed to target the cognitive, affective and attitudinal components, to achieve changes in attitudes to depression and its treatments, and to teach strategies of self management of day to day stress and management of their own medication, leading to adherence to treatments.

Multiple Psychoeducational methods were used in order to maximize the learning, among the intervention group, by addressing the three educational domains (cognitive, behavioral and attitudinal). All patients in the intervention group received the following educational methods; 1. Reading material "The depression manual" to target the cognitive educational domain. The content of the manual was developed from reviewing trusted educational resources. This educational method was developed to target the cognitive educational domain. The content of the manual was developed from reviewing trusted websites of patient education on depression. The manual was written

in a simple language consistent with grade nine education. It consists of thirty pages, double spaced which included the description of major depression symptomatology. It has a concise description of different biological, and psychosocial etiological factors, and a summary of the biological and psychological treatments, side effects of medications, and lists of readings and trusted websites designed for patients' psychoeducation, 2. Group Psychoeducation: Active participation in-group psychoeducational sessions emphasizing reflection and feedback through discussions facilitated by a therapist (5-8 patients each, 6 sessions, once weekly, 60 minutes each). Audio-visual material portraying cases of depression emphasizing role modeling were used during group sessions, and 3. Individual educational sessions, by the research psychiatrist (in total, 6 visits, and 30 minutes each). In these sessions, the same educational methods regarding adherence including reflection, and viewing role models, were utilized. During either group or individual sessions with the psychiatrist, obstacles to adherence were assessed and addressed with each patient as needed. All patients in both the intervention, and the standard care groups were treated by Serotonin Reuptake Inhibitor (SSRIs) or Serotonin Norepinephrine Reuptake Inhibitor (SNRIs) antidepressants.

Follow up: All patients in both the intervention and the standard care groups received maintenance antidepressants, and ongoing monitoring of medication management, via regular visits with their psychiatrist for 12 weeks. The standard care group patients were followed by the research psychiatrist received standard care for major depression including review of antidepressants, and counseling as necessary. These patients had the choice of receiving the full educational program, should they wish, after the trial is completed (12 weeks). Patients randomized to the educational intervention were required for the purpose of this study, to complete at least attendance of four total group sessions, or six individual educational sessions with a psychiatrist.

Instruments

The Antidepressants adherence Scale (AAS), The Primary outcome measure: All patients in both groups completed the four- item Antidepressant Adherence Scale (AAS) [20]. The AAS was developed and modified the self-reported measure of antihypertensive adherence scale which was developed by Morisky et al, 1986 [13]. The AAS measures omissions in the main four domains of adherence;1) forgetfulness, 2) carelessness, 3) Stopping to take the antidepressants when feeling better and, 4) Stopping to take antidepressants when feeling worse. The AAS can be used in clinical settings (2-3 minutes to administer) to evaluate patients' adherence to antidepressants during the four weeks prior to clinicians' visits. The initial modification and psychometric properties were examined for reliability and content validity by Gabriel and Violato, 2010 [20]. The internal consistency reliability, Cronbach's Alpha, was 0.66 for the instrument, it has empirical evidence for content validity, and there was 90% agreement among experts that its four items were highly relevant as measure for patients' adherence. This instrument was applied in the present study to all patients in both the intervention and the standard care groups at baseline, at 4, 8, and at week 12.

Other outcome measures

The Quick Inventory of Depressive Symptomatology scales QIDS-C & QIDS-SR: The Quick Inventory of Depressive Symptomatology, Clinician Rated QIDS-C, and the Quick Inventory of Depressive Symptomatology, Self Rated QIDS-SR, were utilized as the clinical outcome measure [21-23]. Response was defined as > 50 % reduction in baseline score in this inventory. Both QIDS-C and QIDS- S, were completed at baseline, at 4, 8, and 12 week of educational intervention, for all patients in both the intervention and the waiting groups. The QIDS-CR, was completed blindly by an independent research assistant. All patients in both groups (n =69) attended their psychiatrists to address standard treatments and the administration of antidepressants.

Data analysis

The Statistical Package of Social Sciences version 16 (SPSS), was utilized for data analysis. The data described in terms of means and standard deviations for continuous variables, and as frequencies and percentages for non-continuous variables, for demographic data. The repeated measures multivariate analysis of variance (rep-MANOVA) was utilized to assess and compare changes, over time in adherence (AAS), and in depressive symptoms as measured by (QIDS-C) and (QIDS-SR), between the intervention and waiting groups. The "Pearson product moment" correlations, was utilized to examine the relationship between changes in AAS scores and other clinical outcome measure scores.

RESULTS

Seventy patients completed the 12-week study (85%); 40 patients, randomized to the intervention group and 30 randomized to the standard care group. There were 12 patients (15%) who did not complete the study, due to poor attendance. Table 1 shows the demographic variables for both groups. Of the total sample (n=70) who completed the study, there were twenty five patients (35.7 %) who were treated with SSRIs, seventeen patients (24.3%) who were treated with SSRIs, and twenty eight patients (40 %) who were treated by adjunctive treatments of both SSRIs and SSNRIs. Among the intervention group, twenty patients completed group sessions with a clinical educational psychologist, and twenty patients attended individual educational sessions with a psychiatrist (Table 1).

AAS score Changes overtime

Table 2 compares omission changes in both groups, which reflects the adherence to the antidepressants, across the four domains of the AAS. All patients completed the AAS, before each consultation, at baseline before entering the education intervention program, at 4, 8 and 12 weeks.

Forgetfulness was found to be the most common omission, among both the intervention and waiting groups.

The scores of forgetfulness, carelessness, and stopping when feeling better for the intervention were significantly higher ($p < .001$) than in the standard care group. However, there was a trend towards a difference between both groups ($p < .06$) in the domain of stopping the antidepressants when feeling worse.

Employing analysis of variance, there were no significant

Table 1: Demographics of patients in the intervention (n = 40) and the standard care (n= 30) groups.

Variables	Intervention (n= 40) Frequency, Percentages %)	Standard care (n = 30)
Male	17 (42.5)	15(51.7)
Female	23 (57.5)	15(48.3)
STATUS		
Single	13(32.5)	11(37.9)
Married	12(30)	11(37.9)
Divorced	9(22.5)	5(17.2)
Separated	4(10.0)	3(7.0)
Widowed	2(5.0)	0
RACE		
Caucasian	38(95)	19(62.1)
No-Caucasian	2(5.0)	11(37.9)
COMORBID PSYCHIATRIC DIAGNOSIS		
Generalized Anxiety	4(10.0)	2(5.0)
Panic disorder	2(5.0)	2(5.0)
Post- traumatic stress disorder	3	
Adult attention deficit	11(27.5)	5(16.0)
Obsessional Compulsive disorder	2 (5.0)	0
EDUCATION		
School education	22(55)	21(69)
University	15(37.5)	9(31)
Higher	3(7.5)	0
CONTINUOUS VARIABLES	M(SD)	M(SD)
Age	44(12.0)	46(10.0)
History of depression (Months)	54(51.0)	89(83.0)
Duration of current episode (months)	25(35.6)	17(7.7)
Number of visits with psychiatrist	5(1.78)	3.0(1.6)

Table 2: Comparing changes in adherence at 12 weeks, between the intervention group (n=40) and the standard care (n=30) group.

changes in the two groups		Mean(SD)	95 % Confidence interval Upper bound	Lower bound	P<
Forgetfulness	Educational intervention Waiting group	2.8(3.5) 8.5(5.0)	4.2 10.1	1.5 7.0	.001
Carelessness	Educational intervention Waiting group	1.7(2.5) 6.1(5.0)	3.0 7.5	.60 4.7	.001
Stopped when felt better	Educational intervention Waiting group	1.2(1.4) 5.4(4.7)	2.2 6.6	.20 4.3	.001
Stopped when felt worse	Educational intervention Waiting group	1.8 (2.1) 3.3 (4.2)	2.8 4.4	.80 2.1	.06
Multivariate analysis of variance (MANOVA)					

differences in the total omission scores between the intervention and standard care groups with respect to gender, level of education, duration of illness, duration of the current depressive episode, and the number of visits to a psychiatrist over the 12 weeks of treatment. Also, there were no significant differences in all domains of adherence, between two age groups (Table 2).

Depressive symptomatology QIDS-CR and QIDS-SR

Patients in both groups, showed significant improvement in depressive symptomatology as measured by the QIDS-SR and QIDS-CR inventories. However, at 12 weeks, there were significant differences ($p < .001$) in the QIDS-SR and QIDS-CR scores between the intervention and the standard care groups (Table 3, Table 4).

Repeated measures Multivariate Analysis of Variance, showed no influence of age, duration of depression, and length of the most recent episode or the number of times they received standard psycho-educational visits made by patients on the scores of the QIDS-SR and QIDS-CR, in both the intervention and the standard care groups.

There was a correlation ($r = .56, .63, .7, .65$, $p < .001$), between the QIDS-SR and QIDS-CR scores, at baseline, at 4, 8, and 12 weeks respectively, in both groups.

Employing analysis of variance, there were no significant differences in QIDS-SR and QIDS-CR scores at 12 weeks between the intervention and standard care groups with respect to gender, durations of illness, duration of the current episode, and the number of visits to a psychiatrist over the 12 weeks of treatment.

Table 3: Comparing changes in depressive symptomatology, Self Rated (QIDS SR), in the intervention group (n=40) and the standard care (n=30) group.

changes in the two groups		mean(SD)	95 % Confidence interval Upper bound	Lower bound	P<
QIDS-SR baseline	Educational intervention Waiting group	15.6(5.0) 16.8(4.0)	17.0 18.4	14.0 15.1	.2
QIDS-SR 4 weeks	Educational intervention Waiting group	12.2(6.0) 14.6(4.5)	14.0 16.6	10.5 12.6	.07
QIDS-SR 8 weeks	Educational intervention Waiting group	9.8(5.5) 11.1(5.3)	11.5 14.5	8.2 10.6	.01
QIDS-SR 12 weeks	Educational intervention Waiting group	8.5(5.1) 12.5(5.6)	10.1 14.5	6.8 10.6	.001

QIDS-C: Quick Inventory of Depressive Symptomatology, Clinician Rated
QIDS-SR: Quick Inventory of Depressive Symptomatology, Self Rated
MANOVA: Multivariate analysis of variance

Table 4: Comparing changes in depressive symptomatology, Clinician Rated (QIDS-CR) between the intervention group (n=40) and the standard care (n=30) group.

changes in the (QIDS CR),		mean(SD)	95 % Confidence interval Upper bound	Lower bound	P<
QIDS-CR baseline	Educational intervention Waiting group	14.1(3.6) 15.1(3.5.0)	15.5 16.3	13.3 14.0	.30
QIDS-CR 4 weeks	Educational intervention Waiting group	11.0(5.7) 13.0(3.5)	12.0 14.1	9.7 11.6	.01
QIDS-CR 8 weeks	Educational intervention Waiting group	9.3(4.1) 11.0(3.8)	10.6 12.6	8.1 9.7	.06
QIDS-CR 12 weeks	Educational intervention Waiting group	7.6(3.0) 11.0(4.5)	8.8 12.3	6.4 9.6	.001

QIDS-C: Quick Inventory of Depressive Symptomatology, Clinician Rated
QIDS-SR: Quick Inventory of Depressive Symptomatology, Self Rated
MANOVA: Multivariate analysis of variance

The relationship between self reported depressive symptoms and AAS scores

Table 5, displays the "Pearson product moment" correlations between changes in adherence scores and changes in symptomatology scores (QIDS-C, and QIDS-S) at 12 weeks of treatment in the total sample (n-70), and in the intervention group (n=40). There were significant positive correlations between the QIDS-SR scores and the mean scores of all omission domains at baseline, and at 12 weeks (r = .60, .70, .76, .75), respectively with ($p < .001$).

Among the intervention group (n=40), at 12 weeks there were significant correlation between QIDS-SR, scores and adherence for forgetfulness, carelessness, and for stopping when feeling better scores at 12 weeks (r = 0.2, $p < .01$; 0.4, p, .001; and 0.3, p, .01) respectively. However, there was no significant correlation between QIDS-SR scores and stopping when feeling worse scores. The correlation between carelessness omission scores, and (QIDS- SR) scores was significantly positive at baseline, at 4, 8 and 12 weeks (Table 5).

Contrary to the intervention group, there were no significant positive correlations between QIDS-SR scores and any of the adherence omission scores, among the standard care groups. There was also, a tendency for negative or non-significant correlations (r = -.10, .01, .23, 32) between these two variables and for forgetfulness, carelessness, and for stopping when feeling better scores respectively, at 12 weeks (Table 5).

Examining the Psychometric Properties of the AAS

Internal consistency reliability: The internal consistency reliability (Cronbach's alpha) of the (AAS) was examined further in this study, on eight occasions (at baseline, at 4, 8 and 12 weeks), in both the intervention and waiting groups. The internal consistency was deemed acceptable (ranging from alpha .6 to .86).

Factor structure

Principal factor analysis, with varimax rotation, was applied to the self-report adherence responses in each group, at baseline, at 4, 8, and 12 weeks. There was a single extracted factor in each analysis, in each group, with excluding loadings below 0.4, and accounting for 47% to 57% of the variance for the intervention group and 45 % to 72 % of the variance for the waiting group. Table 6, displays the factor analyses performed on the self report adherence domains of the (AAS) in both groups over time (Table 6).

DISCUSSION

The objectives of this study, was to examine the outcome of systematic depression education on adherence to antidepressants, and to re-examine the psychometric properties of the AAS with emphasis on predictive validity, in the context of a randomized controlled intervention fashion. Adherence to antidepressants was measured by the AAS, with proved acceptable reliability and with evidence for validity [20]. The psychometric properties of

Table 5: Pearson product moment correlations between adherence and self rated symptomatology at 12 weeks of treatment in the total sample (n = 70), in the intervention group (n = 40), and in the standard care group (n=30).

A. Pearson product moment correlations between adherence and self rated symptomatology at 12 weeks of treatment in the total sample (n = 70)				
Time factor	**Forgetfulness**	**Carelessness**	**Stopped when felt better**	**Stopped when felt worse**
(QIDS- SR)12 W	.24*	.32**	.38*	.31**
(QIDS-CR) 12W	.32**	.29*	.46**	.31**
B. Pearson product moment correlations between adherence and self rated symptomatology in the intervention group (n = 40)				
(QIDS- SR)-4 Weeks	.14	.37*	.31*	.10
(QIDS- SR) 8-Weeks	2.0	.32*	.28	.23
(QIDS- SR)12 Weeks	.24*	.43**	.32*	.16
C. Pearson product moment correlations between adherence and self rated symptomatology in the standard care group (n = 30)				
(QIDS- SR)-4 Weeks	.28	.01	- .01	.13
(QIDS- SR) 8-Weeks	.13	- .04	- .01	. 14
(QIDS- SR)12 Weeks	.18	- .07	- .08	.03

* p< 0.05, ** p< 0.01.
QIDS-C: Quick Inventory of Depressive Symptomatology, Clinician Rated
QIDS-SR: Quick Inventory of Depressive Symptomatology, Self Rated
MANOVA: Multivariate analysis of variance

Table 6: Internal Consistency reliability and results of principal component analyses applied to each group over time.

Internal consistency reliability	**Baseline**	**4 weeks**	**8 weeks**	**12 weeks**
Intervention group	.70	.52	.60	.60
Waiting group	.68	.86	.60	.80
Principal component analysis	**Baseline**	**4 weeks**	**8 weeks**	**12 weeks**
*** Intervention group variance**	**55.3 %**	**57.4%**	**47.5%**	**52.1%**
Intervention group Loadings				
Forgetfulness	.67	.72	.91	.75
Carelessness	.83	.72	.53	.90
Stopping when feeling better	.83	.88	.40	-.31
Stopping when feeling worse	.63	.70	.80	.79
Waiting group variance	**52.8%**	**72.6%**	**45.0%**	**66.0%**
Waiting group loadings				
Forgetfulness	.77	.90	.67	.80
Carelessness	.89	.83	.69	.84
Stopping when feeling better	.74	.85	.74	.73
Stopping when feeling worse	.43	.83	.59	.87

* Principal component analyses, Varimax rotation. Factor loadings < .4 have been excluded

this instrument was re-examined by author in the present study.

In the present study, although both the intervention and the standard care groups showed significant symptomatic improvement as shown by the reduction in both the (QIDS-SR) and (QIDS-CR) scores, there were significant differences between the two groups. Although patients in the standard care group did not follow a systematic depression education, their educational activities and their symptoms were monitored and were measured systematically by the same instruments and at the same intervals as this was measured in the intervention group. In this manner, researchers were able to compare the changes in symptoms associated with systematic education with those associated with no-systematic education as this might takes place in clinical sittings.

The rationale behind using multiple educational methods for intervention strategy in the present study is justified by the fact that individuals have different preferences for learning referred to as learning styles, so that the learning and educational achievements could be maximized [24]. The relationship between psychoeducation and adherence is complex. However, one may accept that adherence as a behavioral response or as a psychomotor outcome of education. In the present study, author selected the positive behavior, of adherence to antidepressants, as the psychomotor educational domain [25]. In a recent systematic review of psychosocial and psychoeducational intervention, findings suggest that increased knowledge about depression and its treatment is associated with better prognosis in depression, as well as with the reduction of the psychosocial burden for the family [26].

There are number of studies which examined the relationship

between psych-education and adherence to antidepressants and others examined the relationship between adherence and clinical outcomes [6 -11, 27-30]. However these studies did not utilize reliable instruments with evidence for validity, to measure the relationship between adherence and clinical improvement, which author aimed at in the current study. In a recent retrospective four-year population-based cohort study, which examined the impact of age and gender on adherence to antidepressants, authors found that average adherence was significantly higher for males aged 20-40 years than for females, but this relationship reversed later in life [31]. In the present study, authors did not find a significant impact of age and gender on adherence to antidepressants. However this may need to be examined critically in a large controlled randomized trial.

In the present study, authors utilized an instrument to measure adherence (AAS), with established acceptable reliability, and with evidence for validity, in order to examine the relationship between adherence scores and depressive symptomatology measures (QIDS-SR, and QIDS-CR) in more depth. Our findings are supported by other previous research which found that forgetting was the most prominent omission among patients receiving antidepressants [20, 32, 33]. In the present study there were strong association between symptomatology and carelessness about or stopping antidepressants when feeling better. These findings are consistent with published literature concluding that stopping antidepressants when feeling better should not be underemphasized not only because it is quite common among patients with depression, but also because this type of omission appears to overlap with defective knowledge, misperceptions about the illness and its treatment or the lack of effective communication with the prescribing physician [12]. The present study shows that psychoeducation may improve patient's adherence especially in the domains of becoming less careless and of not stopping taking the antidepressants even when they felt better.

Psychometric properties of the AAS

In the present study, the psychometric properties of the (AAS) were reexamined in more depth in particular with respect to reliability over time, its factor structure, and the predictive validity of the instrument. The reliability of the AAS was examined over time and the results support the evidence for acceptable high level of reliability of this instrument. Also there is evidence for construct validity as shown by the strong cohesive factor structure of the instrument over time.

In the present study, the significant correlations between depressive symptomatology scores and poor adherence among the intervention and the standard care groups, may also lends an evidence for predictive validity for the (AAS).

Consistent with findings from, Gabriel and Violato, 2010 [20], the present study, demonstrated acceptable reliability, and construct validity. Also, in the current study, given the significant relationship between adherence scores and depressive symptomatology, predictive validity was also demonstrated.

The results from the present findings support further evidence of validity for the use of the (AAS), and support the use of (AAS) in assessing adherence among patients suffering from depression. It measures adherence in the four week period prior to consultation, and it takes 2-3 minutes to complete [20].

Limitations of Psycho- educational programs in depression

The sample size was not large. Future research should include large sample size, to allow conducting more detailed analysis of adherence and clinical outcomes among different treatment subgroups. The limitations of the adherence instrument (AAS) include the problem of recall bias due to collecting information from the past four weeks, which could not be very precise. Also, it could be argued that the favorable outcomes shown with psycho-education, were in fact the result of the other psychiatric treatments administered e.g. antidepressant medication or psychotherapy websites utilized by the waiting group.

CONCLUSION

Systematic patient psychoeducation for depression achieved better clinical outcome and better adherence than standard care. Treatment adherence as measured by the AAS, positively correlated with improved outcomes, and the AAS showed acceptable psychometric properties.

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REFERENCES

1. Cameron C, Habert J, Anand L, Furtado M. Optimizing the management of depression: primary care experience. Psychiatry Res. 2014; 220 Suppl 1: S45-57.
2. Julius RJ, Novitsky MA Jr, Dubin WR. Medication adherence: a review of the literature and implications for clinical practice. J Psychiatr Pract. 2009; 15: 34-44.
3. Rayner L, Price A, Evans A, Valsraj K, Higginson IJ, Hotopf M. Antidepressants for depression in physically ill people. Cochrane Database Syst Rev. 2010; CD007503.
4. Bambauer KZ, Soumerai SB, Adams AS, Zhang F, Ross-Degnan D. Provider and patient characteristics associated with antidepressant nonadherence: the impact of provider specialty. J Clin Psychiatry. 2007; 68: 867-873.
5. Olfson M, Marcus SC, Tedeschi M, Wan GJ. Continuity of antidepressant treatment for adults with depression in the United States. Am J Psychiatry. 2006; 163: 101-108.
6. Katon W, Von Korff M, Lin E, Simon G, Walker E, Unützer J, et al. Stepped collaborative care for primary care patients with persistent symptoms of depression: a randomized trial. Arch Gen Psychiatry. 1999; 56: 1109-1115.
7. Katon W, Rutter C, Ludman EJ, Von Korff M, Lin E, Simon G, et al. A randomized trial of relapse prevention of depression in primary care. Arch Gen Psychiatry. 2001; 58: 241-247.
8. Lin EH, Von Korff M, Katon W, Bush T, Simon GE, Walker E, et al. The role of the primary care physician in patients' adherence to

antidepressant therapy. Med Care. 1995; 33: 67-74.

9. Vergouwen AC, Bakker A, Katon WJ, Verheij TJ, Koerselman F. Improving adherence to antidepressants: a systematic review of interventions. J Clin Psychiatry. 2003; 64: 1415-1420.

10. Von Korff M, Katon W, Rutter C, Ludman E, Simon G, Lin E, et al. Effect on disability outcomes of a depression relapse prevention program. Psychosom Med. 2003; 65: 938-943.

11. Unützer J, Katon W, Callahan CM, Williams JW Jr, Hunkeler E, Harpole L, et al. Collaborative care management of late-life depression in the primary care setting: a randomized controlled trial. JAMA. 2002; 288: 2836-2845.

12. Maddox JC, Levi M, Thompson C. The compliance with antidepressants in general practice. J Psychopharmacol. 1994; 8: 48-52.

13. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care. 1986; 24: 67-74.

14. Blumenthal R, Endicott J. Barriers to seeking treatment for major depression. Depress Anxiety. 1996; 4: 273-278.

15. Goldney RD, Fisher LJ, Wilson DH, Cheok F. Mental health literacy of those with major depression and suicidal ideation: an impediment to help seeking. Suicide Life Threat Behav. 2002; 32: 394-403.

16. Roness A, Mykletun A, Dahl AA. Help-seeking behaviour in patients with anxiety disorder and depression. Acta Psychiatr Scand. 2005; 111: 51-58.

17. Rush AJ, Trivedi M, Carmody TJ, Biggs MM, Shores-Wilson K, Ibrahim H, et al. One-year clinical outcomes of depressed public sector outpatients: a benchmark for subsequent studies. Biol Psychiatry. 2004; 56: 46-53.

18. Aubert RE, Fulop G, Xia F, Thiel M, Maldonato D, Woo C. Evaluation of a depression health management program to improve outcomes in first or recurrent episode depression. Am J Manag Care. 2003; 9: 374-380.

19. Gabriel A, Violato C. Knowledge of and attitudes towards depression and adherence to treatment: the Antidepressant Adherence Scale (AAS). J Affect Disord. 2010; 126: 388-394.

20. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry. 1998; 59 Suppl 20: 22-33.

21. Rush AJ, Trivedi MH, Ibrahim HM, Carmody TJ, Arnow B, Klein DN, et al. The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): a psychometric evaluation in patients with chronic major depression. Biol Psychiatry. 2003; 54: 573-583.

22. Rush AJ, Carmody TJ, Ibrahim HM, Trivedi MH, Biggs MM, Shores-Wilson K, et al. Comparison of self-report and clinician ratings on two inventories of depressive symptomatology. Psychiatr Serv. 2006; 57: 829-837.

23. Trivedi MH, Rush AJ, Ibrahim HM, Carmody TJ, Biggs MM, Suppes T, et al. The inventory of Depressive symptomatology, Clinician Rating (IDS-C) and self Report (IDS-SR), and the Quick Inventory of Depressive Symptomatology, Clinician Rating (QIDS-C) and self Rating (QIDS-S) in public sector patients with mood disorders: a psychometric evaluation. Psychol Med. 2004; 34: 73 - 82.

24. Price GE. Diagnosing learning styles. In: Smith RM Helping adults learn how to learn. San Francisco: Jossey-Bass.1983; 49-56.

25. Bloom BS, Engelhart MD, Furst EJ, Hill WH, Krathwohl DR. "Taxonomy of educational objectives: The classification of educational goals", Handbook 1: Cognitive domain New York: David McKay Company Inc; 1956.

26. Tursi MF, Baes CV, Camacho FR, Tofoli SM, Juruena MF. Effectiveness of psychoeducation for depression: a systematic review. Aust N Z J Psychiatry. 2013; 47: 1019-1031.

27. Haynes RB, Mc Kibbon KA, Kanani R. Systematic review of randomised trials of interventions to assist patients to follow prescriptions for medications. Lancet. 1996; 348: 383-386.

28. Zygmunt A, Olfson M, Boyer CA, Mechanic D. Interventions to improve medication adherence in schizophrenia. Am J Psychiatry. 2002; 159: 1653-1664.

29. Azrin NH, Teichner G. Evaluation of an instructional program for improving medication compliance for chronically mentally ill outpatients. Behav Res Ther. 1998; 36: 849-861.

30. Wilkinson G, Allen P, Marshall E, Walker J, Browne W, Mann AH. The role of the practice nurse in the management of depression in general practice: treatment adherence to antidepressant medication. Psychol Med. 1993; 23: 229–237.

31. Krivoy A, Balicer RD, Feldman B, Hoshen M, Zalsman G, Weizman A, et al. The impact of age and gender on adherence to antidepressants: a 4-year population-based cohort study. Psychopharmacology (Berl). 2015; 232: 3385-3390.

32. Bulloch AG, Adair CE, Patten SB. Forgetfulness: a role in noncompliance with antidepressant treatment. Can J Psychiatry. 2006; 51: 719-722.

33. Taj F, Tanwir M, Aly Z, Khowajah AA, Tariq A, Syed FK, et al. Factors associated with non-adherence among psychiatric patients at a tertiary care hospital, Karachi, Pakistan: a questionnaire based cross-sectional study. J Pak Med Assoc. 2008; 58: 432-436.

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