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Comparing Medication Attitudes and Reasons for Medication Non-Adherence among Three Disparate Groups of Individuals with Serious Mental Illness

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Abstract

This analysis compared medication attitudes and reasons for non-adherence in three distinct groups of patients with serious mental illness (SMI), Cohort 1 had 43 patients with bipolar disorder (BD) treated in community mental health setting, Cohort 2 had 43 patients with BD taking an atypical antipsychotic and treated in an academic medical center, and Cohort 3 had 30 patients with schizophrenia or schizoaffective disorder who had been homeless in the last year. Standardized attitudinal scales found generally negative attitudes towards medication and limited illness insight. While the 3 cohorts differed with regard to severity of symptoms, age of onset, education, baseline adherence, and race, groups had similar medication attitudes prior to and following treatment. Despite group differences in demographic and clinical variables, our analyses found more similarities than differences in medication attitudes among these three discrete groups of poorly adherent, symptomatic patients with SMI. The common attitudinal characteristics have implications for delivery of healthcare services that can enhance treatment adherence in high-risk SMI patients.

Keywords

medication adherence; adherence attitudes; serious mental illness

1. Introduction

Psychotropic medications are a cornerstone of treatment for individuals with serious mental illness (SMI) including disorders such as bipolar, schizophrenia and schizoaffective disorder; however, between 50% and 60% of such individuals do not take medications as prescribed (American Psychiatric Association., 2002; Lingam & Scott, 2002; Valenstein et

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al., 2006; Velligan et al., 2007). A variety of factors have been associated with treatment non-adherence in specific SMI populations such as schizophrenia and bipolar disorder, but few studies have directly compared medication attitudes in the various non-adherent SMI subpopulations.

While there is substantial overlap in levels of disability and illness experience among sub-groups with SMI, there may also be important differences between these subgroups with regard to symptoms and expected illness trajectories. Possible differences among these sub-groups as they relate to illness and treatment attitudes have not been well-studied yet are important when developing effective interventions to address adherence. In a comprehensive expert consensus paper addressing adherence in patients with bipolar disorder and schizophrenia, experts were questioned on their perception of risk factors for non-adherence in these populations (Velligan et al., 2009). They reported that people with schizophrenia may be particularly affected by factors that impact medication adherence such as difficulties related to cognitive deficits, managing their environment, being able to afford medications, lack of social support, and practical problems such as sticking with medication routines. Otherwise, expert-identified non-adherence risk factors in people with bipolar disorder and schizophrenia were broadly similar and include intolerance of side effects, poor insight into illness or need for medication, ongoing symptoms, substance abuse problems, and poor therapeutic alliance.

This study compared adherence attitudes prior to and following a nearly identical needs-based adherence enhancement psychosocial intervention entitled Customized Adherence Enhancement (CAE; see details of CAE in Sajatovic et al., 2012a and Sajatovic et al., 2012b) in three disparate subgroups of non-adherent individuals with SMI. Individuals with bipolar disorder (BD) treated at a Community Mental Health Center formed Cohort 1, individuals with BD treated at an academic medical center who were taking an atypical antipsychotic formed Cohort 2, and individuals with either schizophrenia (SZ) or schizoaffective disorder (SA) who had been homeless sometime in the previous 12 months formed Cohort 3. The intervention was comprised of four possible modules including: 1) Psychoeducation, 2) Medication Routines, 3) Communication with Providers, and 4) Substance Abuse. In Cohorts 1 and 2, the modules were presented in four one hour sessions held one week apart. Due to the severity of illness with Cohort 3, the same modules and content, modified only slightly for disease specific information, were presented over the course of eight shorter sessions (30-45 minutes) held one month apart. Given the customized nature of the intervention, in all three studies patients only received those modules which they needed according to responses on baseline measures (see Sajatovic et al., 2012a and Sajatovic et al., 2012b for guidelines on module assignment). The effectiveness of CAE to improve adherence as well as psychiatric symptoms has been demonstrated and described in previous reports (Sajatovic et al., 2011; Sajatovic et al., 2012a; Sajatovic et al., 2012b)].

2. Methods

This is a cross-sectional analysis of pooled data from non-adherent individuals with either BD ((N= 72), SZ (N=10), or SA (N=20). Poor adherence was defined as missing at least 20% of maintenance mood stabilizer or antipsychotic medication treatments according to the

self-reported Tablet Routines Questionnaire (TRQ) (Adams & Scott, 2000; Lew et al., 2006; Valenstein et al., 2004; Vieta, 2005). All participants went through the same screening procedure and completed the same illness severity measures and a battery of attitude questionnaires [portions of this data are published elsewhere (Sajatovic et al., 2011; Sajatovic et al., 2012a; Sajatovic et al., 2012b)]. Cohorts 1, 2, and 3 were compared on attitude measures including the Attitudes toward Mood Stabilizers Questionnaire (AMSQ), the Rating of Medication Influences (ROMI), and the Drug Attitude Inventory (DAI) prior to treatment. Given that participants all received CAE, scores on attitude measures were also compared following treatment. Finally, differences in module assignment were compared between the three cohorts.

2.1. Population and procedures

The participants were extracted from a database from 3 related adherence studies which are described in greater detail elsewhere (Sajatovic et al., 2011; Sajatovic et al., 2012a; Sajatovic et al., 2012b) and were then analyzed using SPSS, Version 21 All three studies evaluated the effectiveness of CAE, a module based psychosocial intervention in non-adherent individuals with serious mental illness (SMI). The first study involved 43 poorly adherent patients with BD prescribed a mood stabilizer and/or an atypical antipsychotic and receiving treatment from a community mental health center. Similarly, the second study involved 43 BD patients prescribed an atypical antipsychotic and receiving treatment from centers affiliated with an academic medical center. Finally, the third study involved 30 poorly adherent homeless or recently homeless patients with either SZ or SA. In the third study long-acting injectable antipsychotic medication was added to CAE as part of the intervention. Diagnoses of participants in all three studies were confirmed by the Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998). Among the 96 individuals screened for Cohort 1, 44 met inclusion criteria and 43 were enrolled. Of the 91 individuals screened for Cohort 2, 65 met inclusion criteria and 43 were enrolled. Of the 97 individuals screened for Cohort 3, 48 consented to participate, 32 met inclusion criteria, and 30 were enrolled.

In addition to the Tablet Routines Questionnaire (TRQ) (Peet & Harvey, 1991; Scott & Pope, 2002), a measure of poor adherence, inclusion criteria were SMI for at least a two year duration in all three studies. Exclusion criteria for all 3 studies were inability to complete assessments or imminent suicidal ideation. Additionally, for study number three, which involved a long-acting injectable (LAI), individuals were excluded if they had a known contra-indication to haloperidol, were on LAI at screening, had prior treatment with clozapine, substance dependence, or unstable medical conditions. All three studies were approved by the Institutional Review Board and all participants provided written informed consent.

2.2. Specific measures

2.2.1 Tablet Routines Questionnaire (TRQ)—Adherence was assessed using the TRQ (Peet & Harvey, 1991; Scott & Pope, 2002), a self-report measure which identifies partial and full adherence in the past 7 and past 30 days. The TRQ has demonstrated a statistically significant association with past non-adherence, non-adherence in the past month, and non-

adherence in the past week and has been shown to correlate highly with lithium levels (Scott & Pope, 2002). An average adherence rating was calculated for those individuals taking more than one oral maintenance medication for BD, SZ, or SA.

2.2.2 Drug Attitude Inventory (DAI)—Adherence attitudes were measured with the 10-item version of the DAI (Awad, 1993). While originally developed to assess patients with schizophrenia being treated with antipsychotic medications, the scale has been utilized with other seriously mentally ill populations receiving psychotropic medication (Sajatovic & Ramirez, 2001). The DAI is a simple true-false format questionnaire that assesses domains of patient attitudes towards psychiatric medications. Higher scores are indicative of more positive attitudes towards medications.

2.2.3. Attitudes toward Mood Stabilizers Questionnaire (AMSQ)—The AMSQ is a modification of the Lithium Attitudes Questionnaire (Harvey, 1991) which evaluates an individual's attitudes towards mood stabilizing medication or psychiatric medication in general (Scott & Pope, 2002). The AMSQ comprises 19 items grouped into 7 subscales: opposition to prophylaxis (4 items), denial of therapeutic effectiveness (2 items), negative attitudes toward drugs in general (3 items), lack of information about medications (1 item), fear of side effects (2 items), difficulty with medication routines (4 items), and denial of illness severity (3 items). Higher scores on each subscale represent more negative attitudes. Test-retest reliability for the 19 items ranges from 57.6 % to 96.6%.

2.2.4. Rating of Medication Influences (ROMI)—The ROMI is a measure of attitudes towards medication treatment which has been demonstrated to identify health beliefs and key reasons for medication non-adherence (Weiden et al., 1994). The ROMI contains 19 items that directly inquire about influences leading to adherence (9 items) and those leading to non-adherence (10 items). The ROMI has been found to be reliable, clinically sound and valid compared with other independent measures of attitudes toward medications and adherence (Weiden et al., 1994). In the current study only those items assessing factors leading to non-adherence were administered. Higher scores are reflective of stronger non-adherence beliefs.

2.3. SMI symptoms

Psychiatric symptoms were assessed with the Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962).

Results

The sample consisted of predominantly minority (70%), unmarried (83%) females (62%). Participants evidenced moderate levels of psychiatric symptoms (Mean BPRS 39.15, SD = 11.8) and rates of missing prescribed medications as measured by self-reported treatment adherence via the TRQ were in the order of 44%.

Table 1 illustrates sample demographic and clinical characteristics, with significant differences among the three cohorts on years of education $F(2,113) = 6.42$, $p = .002$), age of illness onset $F(2,113) = 3.14$, $p = .047$), and baseline BPRS scores $F(2,99) = 22.86$, $p = .000$).

Post Hoc Tukey HSD analyses showed Cohort 2 was higher educated than Cohort 3 and BPRS was lower for Cohort 2 than Cohorts 1 and 3. There were more black individuals in Cohorts 3 than in Cohorts 1 or 2 (x^2(4, N=116) = 10.06, p=.039). There were no cohort differences in gender or marital status. Finally, there were significant differences in past week pre-treatment TRQ scores F(2,113) = 5.89, p =.004) in the 3 cohorts such that Cohort 2 had better baseline adherence on selected TRQ scores compared to Cohorts 1 and 3.

Pearson correlations showed a significant correlation between BPRS and age of onset (r=−.23, p=.019) as well as between BPRS and the ROMI (r=.28, p=.004) but not between age of onset and any attitude measures. Years of education significantly correlated with BPRS (r=−.23, p=.02), AMSQ (r=.20, p=.034) and DAI (r=−.21, p=.03) but not with the ROMI. Finally, there was a significant correlation between past week baseline TRQ and BPRS (r=.28, p=.004) but not with any of the attitude measures (p>.05). Given the association with at least some of the attitude measures, BPRS and years of education were used as covariates in subsequent analyses.

Table 2 presents descriptive statistics for the standardized attitudinal scales (AMSQ, DAI, ROMI) prior to and following treatment. ANCOVAs with the independent variable being group membership and the dependent variable being each attitude measure prior to treatment using the BPRS and years of education as covariates were performed. The main effect for Cohort membership was not significant for AMSQ, DAI, or ROMI prior to treatment.

To determine whether specific attitudes characterized the different cohorts, ANCOVAs were run for each AMSQ subscale prior to treatment using the BPRS and years of education as covariates. Significant main effects were found for AMSQ subscales Opposition to Prophylaxis (F=3.32(2,97), p=.04) and near significance for Negative Attitudes towards Drugs in General (F=2.96(2,97), p=.056) but not for the other five subscales. Post-Hoc analyses indicate that Opposition to Prophylaxis was significantly stronger (p=.012) in Cohort 2 (Mean(SE) 1.76(.22) than in Cohort 1 (.97(.19) and Negative Attitudes towards Drugs in General was stronger in Cohort 2 (Mean(SE) 1.40(.17) than in Cohorts 1 (Mean(SE) .89 (.4) (p=.032) or 3 (Mean(SE) .79(.19) (p=.031). The analyses were re-run using race as a covariate but given that the results did not change, race was left out to simplify the model.

ANCOVAs with the independent variable being group membership and the dependent variable being each attitude measure following treatment using the pre-treatment BPRS, years of education, and each attitude measure pre-treatment as covariates were performed. None of the main effects for post-treatment attitude measures were significant. Similarly, none of the post-treatment AMSQ subscales were significant between cohorts after controlling for education, BPRS, and pre-treatment subscale scores.

Paired t-tests split by cohort were run for each of the attitudinal measures, the BPRS, and the past week TRQ. For all three cohorts, all measures significantly improved over time (p values range from .000 to .012) with the exception of the ROMI. Next, difference scores were calculated. ANCOVAs were run separately with each attitude measure, BPRS, and past week TRQ as dependent variables, while controlling for the pre-treatment level of each

variable in order to determine if certain cohorts improved more than the others. Multiple comparisons were adjusted for using a Bonferroni correction. There were no significant main effects between cohorts on any of the measures.

Finally, Chi Square analyses were run to determine whether there was a difference in module assignment between the three cohorts. The results indicate that there were no significant differences in module assignment between the groups but there was a close to significant difference for Medication Routines ($x^2(2, N=115) = 5.68$, p=.058) such that Cohort 3 was less likely (79.3% for Cohort 3 versus 95.3% for Cohort 1 and 93.0% for Cohort 2) to be assigned this module.

4. Discussion

This analysis characterized three distinct subgroups of individuals with SMI who had clinically significant non-adherence with prescribed psychotropic medication treatments. Cohort 1 was comprised of patients with BD treated in a community mental health setting, Cohort 2 was comprised of patients with BD treated at an academic medical center or its affiliates, and Cohort 3 was comprised of patients with schizophrenia or schizoaffective disorder who were homeless or recently homeless. Cohort 3 was made up of more African Americans with fewer years of education. Cohorts 1 and 3 also evidenced more severe psychiatric symptoms and poorer adherence prior to treatment than Cohort 2. Given that Cohort 3 had the added inclusion criteria of having been homeless, the greater clinical severity was not unexpected. Despite group differences in demographic and clinical variables, our analysis found more similarities than differences in medication attitudes among these discrete groups of poorly adherent, symptomatic patients with SMI. The common attitudinal characteristics have implications for delivery of healthcare services that can enhance treatment adherence in high-risk SMI patients.

In this sample, all three cohorts benefited significantly from a customized psychosocial intervention that addressed reasons for medication non-adherence. Prior to treatment, there were no significant differences between the three groups with regard to medication attitudes or resistance to treatment, aside from Opposition to Prophylaxis in Cohort 2 and a close to significant finding for negative attitudes towards medications in general. These findings are partially consistent with the expert-identified non-adherence risk factors as reported by Velligan et al. (2009). The treatment in all three groups led to significant improvements in medication adherence, symptom severity, and in most of the medication attitude scales and there were no differences between the cohorts in attitudes following treatment.

Of particular interest in this study was the question of whether or not these three cohorts of SMI patients would differ with regard to which treatment modules they would be assigned to in the customized intervention. Only one close to significant difference emerged in the assignment of Medication Routines such that that Cohorts 1 and 2 were more likely than Cohort 3 to be assigned the Medication Routines Module. This finding indicates that prior to the application of the intervention, Cohorts 1 and 2, comprised of persons with BD, were more likely to report difficulty with medication routines. This may be a function of better insight into their limitations. Alternatively, it is possible that these individuals had more

difficulty with medication routines given the high likelihood of being on multiple pharmacologic treatments including mood stabilizers, antidepressants, as well as antipsychotic drugs (Post et al., 2010) as is common in BD.

Given the emerging importance of the Affordable Care Act, organizations and groups that provide care to people with SMI will be looking for best practices to deliver health care services efficiently. Our data suggest that patients with varying educational backgrounds, diagnoses, severity of symptoms, levels of non-adherence, and treatment venue may have similar reasons for not taking their prescribed SMI medications. As such, it may be reasonable to combine individuals with SMI in treatment programs that are focused on addressing the problem of adherence rather than compartmentalizing groups by diagnosis as is done in some treatment centers. The similarity in adherence attitudes also supports the case for wide dissemination of effective adherence interventions, perhaps in web-based or other formats that can engage SMI populations broadly.

Limitations of the study include a small sample size and differences in demographics and overall severity between the cohorts. Differences in type of medication treatment in the 3 cohorts and venue of treatment may have also influenced the results and it is important to note that both attitudinal and adherence measures were self-report, which may have affected their reliability. Finally, individuals who agree to participate in a research study may also not be entirely representative of all individuals with SMI. These limitations are off-set by the fact that all studies specifically targeted non-adherent patients and are thus likely to be generalizable to poorly adherent individuals with SMI found in other clinical settings.

5. Conclusions

Taken as a whole, in spite of multiple differences such as diagnostic category, treatment center, or type of medication, there are striking similarities in medication adherence attitudes in this disparate group of non-adherent patients with SMI. It is therefore reasonable to consider delivering adherence enhancement approaches that could potentially be broadly inclusive, without the need to segregate or compartmentalize interventions based upon diagnosis, other clinical characteristics, or treatment setting. This has the potential to reach more patients as well as to be more cost-effective.

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Table 1

Demographic and clinical characteristics of Cohorts 1, 2, and 3 who are non-adherent with psychotropic medications.

Variable	Cohort 1 (N=43)	Cohort 2 (N=43)	Cohort 3 (N=30)
Age in years Mean (SD -- Range)	38.44(11.19--45)	43.07(11.33--51)	41.77(8.59--32)
Female N (%)	30(69.8)	28(65.1)	14(46.7)
Race N (%)			
White	17(39.5)	15(34.9)	3(10.0)
Black	25(58.1)	28(65.1)	27(90.0)
Hispanic ethnicity N (%)	3(7.0)	0(0.0)	2(6.7)
Education in years Mean (SD -- Range)	12.38(2.32--9)	13.31(2.94--14)	11.2(1.92--7)
Marital Status N (%)			
Single, never married	21(48.8)	20(46.5)	21(70.0)
Married	9(20.9)	9(20.9)	2(6.7)
Separated/Divorced/Widowed	13(30.3)	14(32.6)	7(23.3)
Age at onset of illness in years Mean (SD-- Range)(Median)	24.07(12.53--57)(22)	29.66(11.31--46)(30)	24.10(10.48--41)(22)
TRQ[a] Mean (SD)			
Past Week	47.98(31.74)	32.42(29.87)	57.23(33.22)
Past Month	51.43(27.15)	34.17(26.67)	46.06(31.23)
BPRS Mean (SD)	43.57(11.99)	30.43(6.93)	45.09(9.54)

[a]TRQ indicates Tablet Routines Questionnaire, % of pills missed in the last month or week as noted

Table 2

Medication attitudes in three cohorts of patients with serious mental illness who are non-adherent with psychotropic medications.

Variable	Cohort 1 N=43	Cohort 2 N=43	Cohort 3 N=30	p-values [d]
AMSQ Total Pre-Treatment Mean (SD--Range) [a]	7.97(3.41--14)	8.31(4.84--17)	6.39(3.36--12)	.16
AMSQ Total Post-Treatment Mean (SD--Range)	4.39(4.04--14)	4.55(3.65--12)	4.39(3.36--12)	.64
ROMI [b]				
Pre-Treatment Mean (SD -- Range)	12.66(4.49--18)	10.19(5.08--23)	11.84(5.52--19)	.54
Post-Treatment Mean (SD -- Range)	10.91(5.36--20)	8.00(6.11--23)	9.68(3.99--20)	.81
DAI [c]				
Pre-Treatment Mean (SD -- Range)	6.60(2.21--9)	6.59(2.41--9)	7.26(1.94--6)	.27
Post-Treatment Mean (SD -- Range)	7.97(2.17--8)	7.96(1.76--6)	8.05(1.27--5)	.98

[a] AMSQ subscales have varying numbers of items. Lower scores are more positive attitudes.

[b] ROMI total score is made up of 10 items reflecting factors against adherence with lower scores reflecting more positive attitudes.

[c] DAI indicates Drug Attitude Inventory with higher scores being more positive attitudes about medications.

[d] ANCOVAS with covariates of baseline BPRS and years of education. For post treatment analyses, pre-treatment scores were also added as covariates.