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Functional status and its associated factors in Nigerian adults with serious mental illnesses

Samuel Obateru Osasona[1], Oluyemi Oluwatosin Akanni [Ψ2]

[1]Department of Mental Health, University of Benin Teaching Hospital, Benin City, Nigeria
[2]Department of Clinical Services, Federal Neuropsychiatric Hospital, Benin City, Nigeria

ABSTRACT: Patients with serious mental illness may be less likely to achieve functional goals than the general population. Assessment of the functional impact of the illness is useful to determine severity of illness, evaluate remission, and achieve optimal treatment success. The aims of this study are to determine and compare the prevalence of low functional status among outpatients with major axis 1 psychiatric disorders, assess the risk factors for low functional status, and determine the proportion of the variance in low functional status explained by low self-esteem and non-adherence to medication. A descriptive cross-sectional study was conducted among 308 outpatients of the psychiatric unit of a tertiary hospital. The Global Assessment of Functions (GAF), Morisky Medication Adherence Scale (MMAS-8) and the Rosenberg's Self-esteem Scale were used to collect data, which were analyzed using version 20 of SPSS. Level of statistical significance was set at 5% (P< 0.05). The overall prevalence of low functional status was 40.6%. Patients with schizophrenia had the highest prevalence of low functional status (53.4%). Educational attainment, employment status, self-esteem, medication adherence, and comorbidity had significant association with functional status. Poor medication adherence had the largest relative contribution (35.4%) to the variance in functional status, while self-esteem had an insignificant relative contribution of 3.4%. An appreciable proportion of the patients in this study had low functional status with more schizophrenic patients having impairment than patients with mood disorders. Poor medication adherence, among other variables, contributes significantly to low functional status. Physicians should give as much attention to functional recovery as they give to symptom resolution in the management of psychiatric patients.

KEY WORDS: *Functional capacity; Psychiatric patient; Correlates; Benin-City*

INTRODUCTION

Functional status is a multidimensional concept that encompasses the subject's ability to perform daily activities and to participate in everyday situations such as working, studying, living independently, having leisure time and keeping relationships[1] while functional impairment refers to limitations due to an illness, as people with a disease may not carry out certain functions in their daily lives.[2]

[Ψ]**Correspondence at: Department of Clinical Services, Federal Neuropsychiatric Hospital, Benin City, Nigeria**. Email: popyemi@gmail.com

Mental disorders, generally, create societal problems because they are often associated with impairment in the functional capacity of the patients.[3,4] When disability was added to the public health measures as was the case with the disability adjusted life years (DALYs), mental disorders ranked as high as cardiovascular and respiratory diseases, surpassing all malignancies combined or HIV.[5] The global burden of disease study, using DALYs, thus revealed the true magnitude of mental health problem due to the disability they produce.[6] Larry and Mauksch,[7] in their study among primary care population reported that having psychiatric disorders was associated with lower functional

status and more disability days compared with not having mental illness. In particular, major axis 1 psychiatric disorders often cause significant impairment in the functional status of the patients.[8] Depression, bipolar disorders and schizophrenia are major axis 1 disorders[9] and are the most common.[10] The relationship between depression and functional impairment has been demonstrated in some studies.[11] A cross sectional survey by Kessler and his colleagues[3] showed that roughly 60% of depressed people reported severe or very severe impairment among successfully treated respondents. Some patients (20%) indicated substantial daily life functional impairment even after treatment.

Bipolar disorder, a chronic incapacitating condition, is known to be associated with disability and impaired function.[12] It accounts for major functional impairment worldwide.[8] The severity of symptoms and fluctuation of mood in patients with bipolar disorders are known to impact significantly on functioning.[13]

Similarly, major functional deficits are found in the majority of Schizophrenic subjects and they have strong association with low educational levels.[14] Mean functional capacity in patients with schizophrenia is reduced by 20% compared to general population resulting in overall reduction of global functioning.[15]

Because functional impairment is a complex phenomenon, it is likely to be created by many variables, not just by the psychiatric illness.[16,17] Dang and his colleagues,[18] noted that mental health problems are a major but not the sole contributor to functional impairment. This finding seems to be supported by the observation that further deficits in functioning persist even during remission.[11] Thus, although functional limitation may reflect the effects of underlying psychiatric disorder, other variables may compound the effect of the disorder. However, most researchers focus on the impact of specific psychiatric disorders on functional impairment, which is often of primary clinical concern to the physician.[16,17] Studies have shown that psychological variables such as self-esteem provide a significant contribution to the amount of variance in functional impairment (above that explained by demographic and clinical variables).[16,17] Patients with psychiatric disorders often cite decreased self-esteem as significantly impairing their lives.[19] Previous studies reported a relationship between low self-esteem and high functional impairment and that self-esteem is associated with functional impairment even in remitted patients.[20]

Poor medication adherence in psychiatric patients has been reported to be associated with poor psychosocial outcome and poor quality of life.[21,22] Rapoff[23] reported that non-adherence in patients with chronic diseases can adversely impact their social functioning. Zhang and his colleagues[24] similarly reported an association between cost-related non-adherences to medication and limitations in activities of daily living (ADLS) and instrumental activities of daily living (IADLS) and that non-adherence may worsen functional status.

Functional capacity is a domain of everyday functioning and adequate functional capacity is a critical component of recovery from mental illness. It is associated with greater engagement in community responsibility.[25] The ability to perform activities of daily living allows the mentally stable psychiatric patients, including older patients, to live independently in the community. Furthermore, achievement of the typical milestone of adulthood such as keeping a job, raising a family and maintaining a home is strongly dependent on adequate functional ability and performance in the activities of daily living.[26] Therefore, assessing patient's functional status portends important clinical relevance; it helps to determine the level of severity of the diagnosed disorder,[27] track clinical progress, evaluate remission and monitor recovery after treatment.[4] However, because symptoms are the most proximal indicators of a disorder, researchers, after pharmacological treatment, often employ symptoms outcome measures to assess the effectiveness of treatment or recovery from illness; functional outcome measures are often ignored. A meta-analysis of over 90 depression treatment outcomes indicate that less than 5% of the clinical trials measure and report functional outcomes.[4] A literature search revealed that empirical evidence on the comparative influence of the major psychiatric disorders, self-esteem of individual patients, and adherence to medication on functional status are scanty especially in Nigeria and Africa. Therefore, the aims of this study are to:

1. Determine and compare the prevalence of low functional status among outpatients with major axis 1 psychiatric disorders (Schizophrenia, Bipolar affective disorders and Depression).
2. Identify risk factors/independent predictors of low functional status.
3. Assess the proportion of the variance in low functional status explained by self-esteem and adherence to medication.

METHODOLOGY

Study location and design

This study was conducted at a tertiary hospital in Benin City, Nigeria. The hospital serves as a major referral center to many primary and secondary hospitals in the entire state, as well as many neighboring states. The psychiatric unit of the mental health department runs outpatient clinics three times in a week. A cross sectional descriptive

design was adopted and data were collected between June and December, 2017.

Study participants

Participants included consecutive psychiatric patients who presented for appointments at the outpatient clinics of the hospital over a period of six months. Eligibility criteria included are:

- Being an adult aged 18 years and above.
- Being diagnosed for depression, bipolar disorder or schizophrenia based on DSM-1V diagnostic criteria, established over the course of at least three clinic visits.
- Being under regular care at the outpatient clinic and receiving psychopharmacological therapy directed at their clinical condition for a period of, at least, six months.
- Being considered (after relevant mental state examination) mentally stable, enough to participate in the study.
- Expression of willingness to voluntarily participate in the study and giving of consent.

Measures

The following instruments were used to collect data from the participants:

The Global Assessment of Functioning (GAF) Scale: The GAF assesses global functioning of adults in terms of a single rating of overall psychological, social, and occupational functions.[28] It is a numeric clinician rated scale used widely and regularly by mental health clinicians and physicians to measure how much a person's illness/symptoms affect his or her day-to-day life on a scale of 1 to 100. Rating ranges from 1-10 (persistent danger of severely hurting self or others, persistent inability to maintain minimal personal hygiene or serious suicidal act with clear expectation of death) to 91-100 (no symptoms, superior functioning in a wide range of activities). Scores within the range of 11 and 90, represent varying levels of symptom severity and functionality, with a lower score indicating low functioning and vice versa. In this study, functional status was dichotomized as 'Low' or 'High' based on the mean score on the GAF scale: patients with scores below the mean, and those with mean and above scores were considered as 'Low' or 'High', respectively. The instrument as well as similar dichotomy/cut off-point has been used by previous authors in Nigeria to assess functioning in adult patients with psychotic disorders.[29]

Morisky Medication Adherence Scale (MMAS-8): An 8-item scale is designed by Morisky *et al*[30] It was initially developed to evaluate medication adherence in patients with hypertension, but it is now widely used in various other patient populations. Respondents are to answer "Yes" or "No" to each of the first seven items, while the last item is a 5-point Likert scale response. The tool considers three levels of adherence based on the following scores: 0 to <6 (low adherence); 6 to <8 (medium); 8 (high). However, for the purpose of this study the levels of adherence were dichotomized based on the following scores, 0 to <8 (non-adherence); 8 (adherence). Previous authors in Nigeria have used the tool, as well as similar dichotomy/cut off score.[31]

The Rosenberg's Self-esteem Scale:[32] This is a 10–item self-report Likert-type measure that assesses an individual's overall sense of self-worth or self-acceptance. Response options of the scale range from 'strongly disagree' to 'strongly agree'. The sum of the ratings assigned to all the items, after a reverse scoring of the positively worded items gives the global scores which range from 10 to 40 with higher scores indicating higher self-esteem. Rosenberg[32] initially found it to have strong internal consistency reliability of 0.93.[32] In Nigeria, Okwaraji and his colleagues[33] established a Cronback alpha of 0.84 and two week test–retest reliability coefficient of 0.76. In this study, self-esteem was dichotomized as 'Low' or 'High' based on the mean score on the Rosenberg's scale: patients with scores below the mean, and those with mean and above scores were considered as 'Low' or 'High', respectively. Similar dichotomy/cut off-point has been used by previous authors in Nigeria.[34]

A socio-demographic and clinical data collection sheet: This is designed by the authors to collect information from the participants on their socio-demographic characteristics such as age, marital status and so forth, as well as clinical variables such as diagnosis, duration of illness, and so forth. Comorbidity was defined as the presence of another diagnosed chronic illness, like hypertension, diabetes mellitus, arthritis and so forth, in addition to the psychiatric illness in a participant.

Ethical issues/procedure

Prior to the commencement of the study, ethical approval was obtained from the research and ethical committee of the institution. On each clinic day, consecutive potential participants were approached, the nature and purpose of the study was explained to them, and they were informed of their liberty to either participate voluntarily or decline participation. They were also told there would be no penalty for declining participation, nor incentive for participating. Confidentiality was assured and verbal informed consent was obtained

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from willing subjects. Participants who gave verbal consent and met the eligibility criteria underwent mental state assessment by the authors (consultant psychiatrists) to establish their mental fitness to participate. The questionnaires were self-administered except the GAF, which was administered and rated by the authors (psychiatrists). Information provided by the participants was corroborated or, where necessary, supplemented by clinical details from subjects' case files.

Data analysis

Completed questionnaires were retrieved and coded. SPSS version 21 was used to analyze the data. Categorical ranking of some socio-demographic and clinical variables was done. Frequency distribution and percentages were computed to describe the categorical variables, and Chi-square was performed to test the association of functional status with those socio-demographic variables, and psychiatric diagnoses. Pearson correlation analysis was used to assess the relationship between GAF scores and some other continuous variables. Analysis of variance (ANOVA) with Bonferroni Post-Hoc test was used to determine the effect of diagnosis on functional status by comparing the mean GAF scores of patients with depression, bipolar disorder, and schizophrenic. Variables that had significant association with functional status in the bivariate analyses were simultaneously entered into logistic regression model to determine independent predictors of low functional status, as well as the contribution of low self-esteem and poor medication adherence to the variance in functional status.

RESULT

Socio-demographic characteristics of the participants

A total of 308 patients, 181 (58.8%) males and 127 (41.2%) females participated in the study. Their mean age was 37.01+12.22 years. One hundred and nineteen (38.6%) were currently married, 163 (53.0%) were never married while 26 (8.4%) were previously married (separated, divorced or widowed). One hundred and ninety-one (62.0%) were currently employed, 117 (38.0%) were currently not employed and the average monthly income was US$172.86±247.31.

Clinical characteristics

The proportion of participants with schizophrenia, bipolar disorder and depression were 118 (38.31%), 107 (34.74%) and 83 (26.95%), respectively.

Ninety-three (30.2%) participants had comorbid illnesses, 141 (46.8%) had low self-esteem, while 216 (70.1%) were non-adherent to their medications. The mean duration of illness was 7.22±6.34 years and the mean GAF score was 69.13±10.56.

Prevalence of low functional status

A total of 125 (40.6%) participants had low functional status. Schizophrenic patients had the highest prevalence of low functional status (53.4%), followed by bipolar disorder patients (33.6%) while patients with major depression had the least at 31.3%. The differences were statistically significant (p= 0.061) (**Table 1**).
ANOVA test revealed that diagnosis had significant effect on functional status (F = 16.251, P<0.01), and the Post-Hoc test showed that the mean GAF score of patients with schizophrenia differed significantly from the mean scores of bipolar and depressive disorder patients; the mean GAF score of schizophrenic patients was reduced by 9.09% and 11.52% compared to that of bipolar and depressive disorder patients, respectively. There was no significant difference between the mean GAF scores of bipolar and depressive disorder patients (**Table 2**).

Correlates of low functional status

Chi-square test showed that the following social-demographic/clinical variables: age (P = 0.028), educational attainment (P = 0.001), employment (P = 0.012), self-esteem (P = 0.001), medication adherence (P < 0.001), and comorbidity (P < 0.001) had significant association with functional status (**Table 3**).
Pearson correlation revealed that income (r = .157, P = 0.001), self-esteem scores (r = .146, P = 0.001), and medication adherence scores (r = .413, P< 0.001) had positive significant relationship with GAF scores, while duration of illness (r = -.334, P< 0.001) and number of previous hospitalization (r = .314, P < 0.001) had negative significant relationship with GAF scores (**Table 4**).

Predictors of low functional status

Multiple binary logistic regressions revealed that low income, presence of comorbid conditions, poor adherence to medication and having schizophrenia significantly predicted low functional status while controlling for the other variables. The tested variables accounted for up to 55.2% of the variation in the outcome variable (**Table 5**).
Poor medication adherence had the highest relative contribution (35.4%) to the variation in functional status while self-esteem had an insignificant relative contribution of 3.4%.

Table 1: Prevalence of low functional status and its association with psychiatric diagnosis

Psychiatric Diagnosis	Functional status		Total
	High	**Low**	
Schizophrenia	55(46.6)	63(53.4)*	118(100.0)
Bipolar affective disorder	71(66.4)	36(33.6)*	107(100.0)
Major depression	57(68.7)	26(31.3)*	83(100.0)
Total	183(59.4)	125(40.6)**	308(100.0)

$\chi 2$ **= 13.112   df = 2 *P* = 0.001**
*Specific (diagnosis related) prevalence of low functional status.
**Overall prevalence of low functional status.

Table 2: Comparison of the mean GAF scores of patients with schizophrenia, bipolar and depressive disorders (ANOVA)

GAF scores

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3296.010	2	1648.005	16.251	.000
Within Groups	30930.051	305	101.410		
Total	34226.062	307			

Bonferroni Post Hoc Tests

Dependent Variable: GAF scores

(I) Psychiatric diagnosis	(J) Psychiatric diagnosis	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Schizophrenia	Bipolar affective disorder	-5.912[*]	1.344	.000	-9.15	-2.68
	Major depression	-7.503[*]	1.443	.000	-10.98	-4.03
Bipolar affective disorder	Schizophrenia	5.912[*]	1.344	.000	2.68	9.15
	Major depression	-1.592	1.473	.842	-5.14	1.95
Major depression	Schizophrenia	7.503[*]	1.443	.000	4.03	10.98
	Bipolar affective disorder	1.592	1.473	.842	-1.95	5.14

The mean GAF score in schizophrenic patients is reduced by 9.09% and 11.52% in bipolar and depressive disorder patients, respectively.
*The mean difference is significant at the 0.05 level.

Table 3: Association between social demographic/clinical variables and functional status

Variables	Functional Status		χ^2	P-value
	High n=183(%)	Low n=125(%)		
Age (years)				
<20	13(76.5)	4(23.5)	10.836	0.028
20-39	109(61.9)	67(38.1)		
40-59	51(58.6)	36(41.4)		
60 & above	10(33.3)	18(66.7)		
Sex				
Male	105(58.0)	76(42.0)	0.359	0.549
Female	78(61.4)	49(38.6)		
Marital Status				
Currently married	75(63.0)	44(37.0)	2.558	0.278
Never married	96(58.9)	67(41.1)		
Previously married	12(46.2)	14(53.8)		
Level of Education				
No formal education	3(21.4)	11(78.6)	17.519	0.001
Primary education	38(49.4)	39(50.6)		
Secondary education	74(60.7)	48(39.3)		
Tertiary education	68(71.6)	27(28.4)		
Level of Support				
Good support	123(62.8)	73(37.2)	2.493	0.114
Poor support	60(53.6)	52(46.4)		
Employment status				
Currently employed	124(64.9)	67(35.1)	6.321	0.012
Not currently employed	59(50.4)	58(49.6)		
Self-esteem				
High	112(68.3)	52(31.7)	11.463	0.001
Low	71(49.3)	73(50.7)		
Any comorbid illness?				
No	151(70.2)	64(29.8)	34.551	<0.001
Yes	32(34.4)	61(65.6)		
Medication adherence				
Non-adherence	107(49.5)	109(50.5)	29.265	<0.001
Adherence	76(82.6)	16(17.4)		

Table 4: Correlation matrix of GAF scores with other continuous variable

		GAF scores	Monthly income ($)	Duration of illness	Number of Hospitalization	Self- esteem scores	Medication adherence scores
GAF scores	Pearson Correlation	1	.157**	-.334**	-.314**	.146*	.413**
	Sig. (2-tailed)		.010	.000	.000	.010	.000
Monthly income ($)	Pearson Correlation		1	.057	.047	.106	.096
	Sig. (2-tailed)			.351	.446	.082	.118
Duration of illness	Pearson Correlation			1	.914**	-.081	-.218**
	Sig. (2-tailed)				.000	.155	.000
Number of Hospitalization	Pearson Correlation				1	-.067	-.211**
	Sig. (2-tailed)					.243	.000
Self- esteem scores	Pearson Correlation					1	.160**
	Sig. (2-tailed)						.005
Medication adherence scores	Pearson Correlation						1
	Sig. (2-tailed)						

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

Table 5: Predictors of functional status (Multiple logistic regression)

Predictors	B	Wald	Exp(B)	95% C.I. for EXP(B)		Sig.
				Lower	Upper	
Age	.010	0.242	1.010	.970	1.053	.623
Level of Education*		1.788				.618
No formal education	.294	1.112	1.342	.239	7.547	.738
Primary education	.163	.099	1.177	.427	3.244	.753
Secondary education	-.367	.546	.693	.262	1.833	.460
Monthly Income	-.006	9.418	.994	.990	.998	.002
Currently unemployed**	.665	2.239	1.945	.814	4.648	.135
Duration of illness	.039	.268	1.040	.896	1.207	.605
Hospitalization	-.025	.004	.976	.471	2.019	.947
No comorbidity***	-1.897	16.647	.150	.060	.373	.000
Medication Adherence score	-.785	36.387	.456	.354	.589	.000
Self Esteem Scores	-.064	3.340	.938	.877	1.005	.068
Diagnosis****		10.437				.005
Schizophrenia	1.878	9.674	6.539	2.003	21.352	.002
Bipolar disorder	1.070	3.014	2.915	.871	9.753	.083
Constant	6.341	12.720	567.583			.000

Reference category for categorical variables**: **Tertiary education, **currently employed, ***presence of comorbidity, ****Depression
R^2: Coefficient of determination of the logistic model; R^2 = 40.2% to 55.2%

DISCUSSION

Prevalence of low functional status

This study examined the prevalence and correlates of low functional status among patients attending the psychiatric outpatient clinic in Benin City. An overall prevalence of 40.6% of low functional status was found among patients with serious mental illness. This rate falls within the range of 37.3% - 43.5% previously reported among outpatients with schizophrenia and bipolar disorder in Nigeria.[35] However, higher rates have been reported in the United States by Kessler and his colleagues[3] and Druss *et al.*[36] among patients with mental illness using Sheehan Disability Scales. The reason for higher rates of low functional status among the USA samples is not clear but, generally, differences in prevalence rates are related to operational definition and measurement of impairment, as well as the targeted populations. The rate of low functional status found in this study is considered high and worrisome considering its implication in limiting activities of daily living and overall treatment outcome. Therefore, clinicians should embrace a more holistic approach in management; beyond pharmacotherapy often aimed at alleviating symptoms, management should include routine assessment of the functional capacity of the patients as well as interventions targeted at enhancing individual functioning in the area of occupation, interpersonal relationships, and psychological well-being.

When the different diagnostic categories (schizophrenia, bipolar disorder, and depression) were compared, patients with schizophrenia reported significantly highest rate (53.4%) of low functional status followed by those with bipolar disorder (33.6%), while the least prevalence was among patients with depression (31.3%). Between bipolar and depressive disorder patients, there was no significant difference found in their functioning status. Numerous studies have reported higher disability and functioning among schizophrenic compared to mood disorder patients,[35,37,38] while only a few found no significant difference between the two groups.[39] A comparable study carried out in Nigeria among 200 dyads of psychiatric outpatients and their care givers revealed a somewhat similar report; higher but non-significant prevalence rate of severe impairment in functioning was found among the schizophrenic compared to the bipolar disorder patients.[35] Notable differences between their survey and the current one are: their study utilized the Social and Occupational Functioning Assessment Scale (a scale derived from the Global Assessment of Functioning Scale) to evaluate the participants' level of social and occupational functioning[40] and a cut off-point of 50 from a range of 1 to 100 was used to determine those with poor functional status.

It is understandable why persons with schizophrenia will report greater impairment in functioning; elements such as cognitive deficits and negative symptoms which respond poorly to treatment have been strongly linked to functional outcome[41,42] and these factors are worse in persons with schizophrenia. Also, extrapyramidal symptoms, as a fall-out of the pharmacological agents employed in treatment, may contribute to poor functioning.[14] Altogether, the clinical picture and course of an individual with schizophrenia present with a poorer outcome because of the severe disability experienced.

Correlates of low functional status

Low functional status was significantly associated with psychiatric diagnosis (as discussed above), older age, lower educational attainment, lack of employment, and presence of co-morbid medical illnesses. In addition, functioning scores correlated positively with monthly income and medication adherence scores, and negatively with duration of illness, number of hospitalizations, and self-esteem scores. However, following a regression analysis in which significant variables on bivariate analysis were controlled, low functional status was independently predicted by only the presence of medical co-morbidities, low monthly income, poor medication adherence, and having schizophrenia diagnosis. While all the variables investigated contributed jointly up to 55.2% of the variance in low functional status, medication adherence accounted for the highest at 35.4%.

As shown by this study, the presence of physical co-morbidity may influence the outcome of functioning In this regard, reports of previous studies are mixed: while our finding is in agreement with some studies[43] it conflicts with others.[17,44] The influence of comorbid medical condition on functioning may vary with the nature and severity of the medical condition. For example, studies have shown that patients with osteoarthritis reported a significantly more functional disability than other chronic medical illnesses.[45] In this study, various medical co-morbidities reported by the patients include hypertension, diabetes, osteoarthritis, and so forth. Some patients reported having more than one condition so, the presence of co-morbidity in this study is a mixture of conditions. Chronic medical conditions are likely to impair the ability to perform a physical task which may limit home and work functioning, whereas mental disorders are known to impede social functioning and relationships.[36] The debate regarding which of the conditions hamper functioning more may depend on which area of functioning is in question.[46] Nevertheless, the combined effect of the two illnesses would be interactive. It should be mentioned that physical co-

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morbidity is high among people with mental illness but the detection rate is poor.[47] The added effect of physical ailment on an already disabling mental illness will further worsen functioning; therefore, it is advisable to treat physical co-morbidities adequately in mentally ill persons in order to achieve optimal functional outcome.

Lower income level was also found to be an independent risk factor for poor functioning in patients with serious mental illness. The reason for this is not clear, though lower income has been similarly found to predict greater disability in end-stage renal patients.[48] However, when the cross-sectional nature of the study design is considered, low functional status, may be conceived as a consequence, rather than a risk, of poor functioning among the participants. Functioning, expectedly, would impact on employment status, suitability and performance; hence, poor functioning will invariably lead to lack of employment or lower paying job, if the individual is employed.

The result also shows that poor medication adherence predicted low functioning, though the relationship between medication adherence and low functional status could be explained in both directions. It is likely that those with low functioning will be less stable mentally, have poor insight; and consequently comply less with treatment as found in patients with schizophrenia and mood disorders.[49] It could also be surmised that those who comply less with treatment won't make significant clinical improvement resulting ultimately in lower functioning. A longitudinal study, perhaps in future, might help to determine the cause and effect relationship between the two variables.

Self-esteem was a variable of interest investigated in this survey because of previous reports which link it to poor psycho-social functioning,[50] yet, in this study, it fell marginally short of statistical significance as an independent predictor of low functional status. Low self-esteem had a relatively insignificant contribution of 3.4% to the variation in functional status. The initial correlation (r= .146, *P*= 0.001) that existed with functioning on bivariate analysis ceased following regression analysis, and this suggests the mediation role of a factor. It is probable that one of the independent predictors such as medication adherence, known to be associated with self-esteem[51] contributed to or enhanced the effect of self-esteem initially, but the moment medication adherence was controlled for, the association disappeared. This speculation will be of interest to study in the future.

Limitation of study
The strength of this study is that it compared functioning across three important diagnostic categories; notwithstanding, there are limitations in the study. The method of assessing functioning,

which is by self-report, is subjective. Both the mood state and social desirability bias of participants could have influenced rating. An objective means of assessing functioning such as performance-based assessment or third-party rating is advocated in subsequent studies. Similarly, the medical co-morbidities were identified by self-report, however, most of the cases were corroborated by information from patients' case files. The relationship between functional status and specific medical comorbidity will be a topic of interest for future study.

CONCLUSION

Despite the limitations, the findings reveal that substantial proportion of persons suffering from serious mental illnesses have impaired functional status. Schizophrenic patients have more impairment in functioning compared with those with mood disorders. The contributory effect of multiple factors in determining functioning in persons with serious mental illness was also highlighted. The role of comorbidity and poor medication adherence is of clinical significance. There is a need to strengthen the multidisciplinary approach to the management of mental disorders and regularly assess and encourage adherence to medication in order to improve the level of functioning of the patients.

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