

Association between Sociodemographic Factors and Severity of Psychiatric Symptoms with Duration of Untreated Psychosis in Patients with First Episode Psychosis: A Cross-sectional Study

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ABSTRACT

Introduction: The Duration of Untreated Psychosis (DUP) is the time interval between the manifestation of the first psychotic symptom in a patient and the starting of proper treatment. Though, considered as a modifiable factor in the outcome of mental illness, many confounding variables such as sociodemographic factors and illness related factors can affect the DUP.

Aim: To identify the association between sociodemographic factors and the severity of psychiatric symptoms with the DUP in patients with the first episode of psychosis.

Materials and Methods: A descriptive cross-sectional study conducted in the Department of Psychiatry, Government Medical College, Kottayam, Kerala, India, from March 2018 to February 2019. The first 50 consecutive patients reporting for treatment for the first time, who were diagnosed with psychotic disorders were recruited into the study. Details of the onset of psychosis were collected from the relative based on a clear, unequivocal description of symptoms by the relative. A specially designed proforma was used to gather the sociodemographic details and Brief Psychiatric Rating Scale (BPRS) was used to assess

the severity of psychotic symptoms. Statistical analysis was done using independent Student's t-test, one-way Analysis of Variance (ANOVA) and Pearson's correlation and p-value <0.05 is considered significant.

Results: The mean age of the participants was 30.46 years and males constituted 31 (62%) of the participants. A total of 32 (64%) of the participants were unmarried or married but living separately. The mean DUP was 24.3 weeks (SD=23.9 weeks) and the mean BPRS score of the participants was 57.4 (SD=10.1). Schizophrenia was the diagnosis in 28 (56%) of participants. There was a significant correlation between the DUP and BPRS with a p-value=0.021 and Pearson's correlation coefficient of 0.326. A significant association was found between the BPRS scores and the psychiatric diagnosis, with schizophrenia having higher mean BPRS scores.

Conclusion: The DUP is considered a modifiable factor in the outcome of psychotic disorders. Many factors affect the time interval between the manifestation of initial symptoms in a patient and starting of the proper treatment. A significant association was found between the DUP and the severity of psychotic symptoms as evidenced by the BPRS score.

Keywords: Mental illness, Social determinants, Symptom severity

INTRODUCTION

Psychosis is a condition in which a person loses contact with reality. Delusions, hallucinations, disorganised speech, grossly disorganised behaviour and negative symptoms such as social withdrawal are considered as the features of psychosis [1]. It is difficult to diagnose the psychosis during early phase as the manifestation of symptoms differs greatly among the individuals [2]. It is a challenging task even for the mental health providers to accurately identify the psychotic symptoms in the early stages of illness. In addition to the varying symptom manifestation, social factors such as lack of awareness regarding the mental illness, poor social support, financial constraints, and stigma, may prevent the individual and family in seeking treatment [3]. This delay in taking proper treatment results in a time period of untreated illness. The accurate measurement of this DUP is difficult but is important. The time interval between the manifestation of the first psychotic symptom in a patient and the starting of proper treatment is considered as the DUP [4]. Studies have reported that as the DUP increases, the outcomes become poor [5,6].

In addition to the functional outcome of the illness, the DUP is found to be associated with the severity of illness. Studies have found that,

among patients with longer DUP, there was increased severity of positive, negative and global psychopathology [2]. A meta-analysis on the clinical significance of DUP reported a strong relationship between the DUP and both positive and negative psychopathology domains [7]. A prospective follow-up study from India [8] found a positive correlation between the DUP and severity of symptoms both at baseline and during follow-up.

The DUP is considered a modifiable factor in the short and long term outcome of mental illness. However, many confounding variables can determine the DUP and thus, its outcome. Sociodemographic factors such as age, education, marital status, socioeconomic status, domicile and the final diagnosis were found to be confounding factors in many studies [6]. Older age, male gender, living alone, and unemployed status were associated with a longer DUP [9]. A study from Norway found that, an earlier age of onset of symptoms, lower premorbid functioning, poor academics and a diagnosis of schizophrenia had an association with longer DUP. The median DUP was 30 weeks [10]. Another study from an East African country, Malawi also had similar sociodemographic findings except in the median DUP which was 42 months [11].

Though, many factors affect the DUP, the research mostly focuses on the relationship between the DUP and outcome. The time interval between the first psychotic symptom and the starting of proper treatment in a patient depends on multiple sociodemographic and clinical variables. Eventhough, the studies mention the confounding factors that can affect the DUP; studies that primarily focus on the factors that are associated with the DUP are a few. The present study aimed to identify the sociodemographic factors and the severity of psychiatric symptoms and their association with the DUP in patients with the first episode of psychosis attending a tertiary care hospital in a developing country

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted in the Department of Psychiatry, Government Medical College, Kottayam, Kerala, India, from March 2018 to February 2019. Ethical clearance was taken from the Institutional Ethics Committee (IRB no. 46/2018).

Sample size calculation: The sample size was calculated by using the formula $n = Z^2 \times SD^2 / d^2$ where 'Z' is standard normal variate (1.94 at 95% confidence interval) SD=Standard deviation and d=absolute precision (taken as 2). Applying the formula where in the mean DUP of 12.7 months with SD 7.3 months in a previous study from India, the sample size was calculated as 50 [12]. Purposive sampling technique was used to select the sample of the study.

Inclusion criteria: Drug naïve patients in the age group of 15 to 45 years, who are physically fit for psychiatric evaluation, reporting at the study centre first time during the study periods were included in the study.

Exclusion criteria: Patients with intellectual disability, substance use disorders, those having co-morbid medical or neurological disorders and those who underwent treatment from other systems of medicine were excluded from the study.

Study Procedure

International Classification of Disease, 10th Revision, World Health Organisation (WHO), Geneva, Diagnostic Criteria for Research [13] BPRS [14] Kuppuswamy socioeconomic scale [15] and a specially prepared semi structured proforma were the tools used in the present study. The diagnosis was made by a psychiatrist using ICD 10 DCR [13]. International Classification of Diseases 10 Diagnostic Criteria for Research (ICD-10 DCR) provides specific criteria for the diagnosis of mental disorders that can be used in research by mental health professionals. The BPRS was used to measure the severity of symptoms. It is a 24-item scale and each item is rated from 1 to 7 depend on the severity. The Kuppuswamy socioeconomic scale was used to determine the socioeconomic status of the family. It gives a score between 3 to 29 and classifies the socioeconomic status into five groups. The DUP was measured from the time of the first onset of psychotic symptoms to the start of antipsychotic medication [4].

The first 50 consecutive patients reporting for treatment for the first time, who was diagnosed with psychotic disorder by a history, general examination, systemic examination and mental status examination satisfying DCR-10 [13], and satisfying both inclusion and exclusion criteria were recruited into the study. Details about the nature of the study were informed to the patient and the relative and written informed consent was obtained from both the patient and the relative. In the case of patients who were unable to give consent, this was obtained from a relative alone. Based on the psychopathology, a specific diagnosis was made. Details of the onset of psychosis were collected from the relative. The onset of the disorder was determined based on a clear, unequivocal description of symptoms by the relative. The specially designed proforma to gather the sociodemographic details and duration of untreated psychotic disorder were completed in the case of each patient and BPRS was applied to assess the symptom severity.

STATISTICAL ANALYSIS

Sociodemographic variables and the scores obtained were electronically entered into Microsoft Excel. Descriptive statistics of the variables are expressed as frequency and percentages. Statistical significance of sociodemographic factors, DUP and BPRS scores were assessed using independent Student's t-test and one-way ANOVA. The correlation between the DUP and BPRS scores was assessed using Pearson's correlation and p-value <0.05 is considered significant. The statistical analysis of the variables was done using R software for windows version 4.1.0.

RESULTS

The mean age of the participants was 30.46 (SD=6.53) years. The mean DUP was 24.3 (SD=23.9) weeks. The median DUP was 13.5 weeks with a minimum duration of two weeks and a maximum of 96 weeks. The mean BPRS score of the participants was 57.4 (SD=10.1). The minimum BPRS score was 41 and the maximum was 87. The majority of the participants were males 31 (62%) and 42 (84%) of participants belonged to upper lower socioeconomic status. None of the participants belonged to upper/upper middle socioeconomic status. Schizophrenia was the diagnosis in 28 (56%) of participants. The mean DUP was lower in christians (10.3 weeks) compared to other religions. Delusional disorder had a higher mean DUP (38.2 weeks). The sociodemographic variables and its association with DUP are given in [Table/Fig-1].

Variables	N (%)	Duration of Untreated Psychosis (DUP)		p-value	
		Mean (SD) in weeks	Statistical value		
Gender*	Males	31 (62%)	25.6 (24.3)	t=0.507	0.614
	Females	19 (38%)	22.0 (23.7)		
Religion†	Hinduism	29 (58%)	22.6 (24.1)	F=1.353	0.268
	Christianity	17 (34%)	10.3 (5.9)		
	Islam	4 (8%)	30.5 (25.2)		
Marital status‡	Unmarried	26 (52%)	24.4 (22.5)	F=0.099	0.906
	Married and living together	18 (36%)	22.9 (27.4)		
	Married and separated	6 (12%)	28.0 (22.5)		
Kuppuswamy socioeconomic status§	Lower middle class	7 (14%)	22.3 (18.4)	F=0.328	0.722
	Upper lower class	42 (84%)	25.0 (24.9)		
	Lower class	1 (2%)	6 (-)		
Domicile*	Rural	34 (68%)	24.6 (24.3)	t=0.128	0.899
	Urban	16 (32%)	23.6 (23.9)		
Diagnosis†	Schizophrenia	28 (56%)	26.3 (22.4)	F=2.112	0.112
	ATPD	4 (8%)	2.5 (0.6)		
	Delusional disorder	6 (12%)	38.2 (29.6)		
	Psychosis NOS	12 (24%)	24.3 (23.9)		

[Table/Fig-1]: The sociodemographic variables and its association with the Duration of Untreated Psychosis (DUP) (N=50).

ATPD: Acute and transient psychotic disorder;
 NOS: Not otherwise specified; *Independent Student's t-test
 †One-way ANOVA test

The present study found that, the mean BPRS Scores increase when the DUP increases with a significant p-value=0.042. There was a significant association between the BPRS scores (p-value=0.001) and the psychiatric diagnosis with schizophrenia having higher mean BPRS scores. The study found that, 34 (68%) had DUP less than 24 weeks. The association between the sociodemographic variables and BPRS scores are given in [Table/Fig-2]. There was a significant correlation between DUP and BPRS with a p-value=0.021 and Pearson's correlation coefficient of 0.326.

Variables		BPRS scores		p-value
		Mean (SD)	Statistical value	
Gender*	Males	56.7 (9.7)	t=- 0.623	0.536
	Females	58.6 (10.8)		
Religion†	Hinduism	57.1 (10.4)	F=0.068	0.934
	Christianity	56.8 (3.3)		
	Islam	58.2 (10.9)		
Marital status†	Unmarried	57.6 (10.7)	F=0.005	0.995
	Married and living together	57.3 (9.1)		
	Married and separated	57.2 (11.9)		
Kuppuswamy socioeconomic status†	Lower middle class	60.4 (11.7)	F=0.371	0.692
	Upper lower class	56.9 (9.9)		
	Lower class	59 (-)		
Domicile*	Rural	57.9 (10.3)	t=0.450	0.655
	Urban	56.5 (9.9)		
DUP*	<24 Weeks (34)	55.5 (7.6)	t=-2.086	0.042
	>24 Weeks (16)	61.6 (13.3)		
Diagnosis†	Schizophrenia	62.1 (10.4)	F=6.211	0.001
	ATPD	49.5 (5.2)		
	Delusional disorder	52.5 (6.6)		
	Psychosis NOS	51.6 (5.4)		

[Table/Fig-2]: The association between the sociodemographic variables and BPRS scores (N=50).

DUP: Duration of untreated psychosis;

ATPD: Acute and transient psychotic disorder;

NOS: Not otherwise specified;

*Independent Student's t-test

†One-way ANOVA Test

Results in bold indicate significant p-value at 0.05

DISCUSSION

The time interval between the onset of the psychotic symptoms in a patient and starting of proper treatment is influenced by patient related factors and illness related factors. Patient related factors such as age, education, marital status, socioeconomic status, domicile and illness related factors such as severity of symptoms and the final diagnosis were found to influence the DUP. The mean age of the present study participants was 30.46 years and males constituted 62% of the participants. A 64% of the participants were unmarried or married but living separately. This is consistent with the clinical record interactive search- first episode psychosis in the United Kingdom study [9] where, the mean age of the study participants was 33.2 years and the DUP was more in males, older age groups patients and who were living alone. A study from India [3] on factors responsible for delay in treatment seeking in patients with psychosis also reported similar findings. Males constituted 64% of the participants and 60% of the participants were single. Eventhough, the sociodemographic findings in the present study were consistent with other western and Indian studies, there was no significant association between the sociodemographic variables and the DUP. This finding is consistent with earlier studies in which age and gender did not find any significant association with the DUP [11,12,16,17]. The similarities in the sociodemographic variables, as well as, the insignificant role of these variables on the delay in treatment seeking alike in studies from both high and low income countries can be explained by importance of neurobiological dysfunction in the development of psychotic disorders and universalistic view in the area of psychiatric epidemiology [18,19].

The mean DUP was 24.3 weeks. This is inconsistent with the earlier Indian studies [3,8,12], where the DUP was between 12 to 24 months. The DUP in the present study is around six months which is more in terms with the western studies [9,20], where the DUP being around 3 to 4 months. The inconsistency in DUP in the present study with other Indian studies can be explained by the top rank and the highest health index (82.2) of Kerala on health parameters compared to other Indian states [21]. The lesser DUP in the present study might be due to the recent programmes by the government which increased the population's mental health awareness and access to mental health services. A significant correlation was found between the DUP and BPRS scores in the present study. A random effect meta-analysis and earlier studies also reported an association between the DUP and severity of psychopathology [7,8,17]. The Indian prospective study reported a higher severity of symptoms both at presentation and during follow-up among patients with longer DUP [8]. The longer the delay in taking treatment, the higher will be the symptom severity. The meta-analysis concluded that, the symptom severity increased by 8-12% with doubling in the DUP [7].

The DUP is a complex concept with multiple social, demographic, clinical and cultural factors having confounding and interacting effect on it. The factors that cause the delay in seeking treatment can also have a role in the course and outcome of the illness. Future studies can be designed in a way to minimise the confounding and interacting effects of the associated factors. Studies that compare patients with short and long DUP with respect to the above variables and severity can give better insights on the factors that are associated with the DUP.

Limitation(s)

The study is limited to those patients attending a tertiary care hospital. This may result in selection bias which is a limitation of research involving subjects attending tertiary care facilities. Recall bias in the calculation of the DUP is another limitation.

CONCLUSION(S)

The DUP is considered a modifiable factor in the outcome of psychotic disorders. But, many factors affect the time interval between the manifestation of initial symptoms in a patient and starting of the proper treatment. This time duration may in turn affect the baseline severity of presentation, course and prognosis of the illness. The present study found a significant association between the DUP and the severity of psychotic symptoms at the time of presentation as evidenced by the BPRS score. No significant association was found between other sociodemographic variables and the DUP. A significant association was found between the BPRS scores and the psychiatric diagnosis, with schizophrenia having higher mean BPRS scores.

REFERENCES

- [1] Understanding psychosis [Internet]. National Institute of Mental Health. U.S. Department of Health and Human Services; [cited 2022Dec16]. Available from: <https://www.nimh.nih.gov/health/publications/understanding-psychosis>
- [2] Katev H, Taraa N, Rachel L. Measuring the duration of untreated psychosis within first episode psychosis coordinated specialty care. [Internet]. [cited 2023Jan25]. Available from: https://www.nasmhpd.org/sites/default/files/2022-03/DH-Measuring_UntreatedPsychosis_v3.pdf
- [3] Dutta, M, Spoorthy M, Patel S, Agarwala N. Factors responsible for delay in treatment seeking in patients with psychosis A qualitative study. Indian Journal of Psychiatry. 2019;61(1):53-59.
- [4] Marshall M, Lewis S, Lockwood A, Drake R, Jones P, Croudace T. Association between duration of untreated psychosis and outcome in cohorts of first-episode patients. Archives of General Psychiatry. 2005;62(9):975.
- [5] Harris M, Henry L, Harrigan S, Purcell R, Schwartz O, Farrelly S, et al. The relationship between duration of untreated psychosis and outcome: An eight-year prospective study. Schizophrenia Research. 2005;79(1):85-93.
- [6] Perkins D, Gu H, Boteva K, Lieberman J. Relationship between duration of untreated psychosis and outcome in first-episode schizophrenia: a critical review and meta-analysis. American Journal of Psychiatry. 2005;162(10):1785-804.

- [7] Howes O, Whitehurst T, Shatalina E, Townsend L, Onwordi E, Mak T, et al. The clinical significance of duration of untreated psychosis: an umbrella review and random-effects meta-analysis. *World Psychiatry*. 2021;20(1):75-95.
- [8] Thirthalli J, Channaveerachari N, Subbakrishna D, Cottler L, Varghese M, Gangadhar B. Prospective study of duration of untreated psychosis and outcome of never-treated patients with schizophrenia in India. *Indian Journal of Psychiatry*. 2011;53(4):319.
- [9] Oduola S, Craig T, Morgan C. Ethnic variations in duration of untreated psychosis: report from the CRIS-FEP study. *Social Psychiatry and Psychiatric Epidemiology*. 2020;56(6):931-41.
- [10] Takizawa N, Melle I, Barrett E, Nerhus M, Ottesen A. The influence of mental health literacy, migration, and education on the duration of untreated psychosis. *Frontiers in Public Health*. 2021;9.
- [11] Myaba J, Mwale CM, Jumbe VC. Clinical predictors of duration of untreated psychosis: exploring psychosocial and clinical predictors of duration of untreated psychosis in first-episode psychotic patients in Mzuzu, Malawi. *Malawi Med J*. 2021;(33):23-29.
- [12] Shrivastava A, Shah N, Johnston M, Stitt L, Thakar M, Chinnasamy G. Effects of duration of untreated psychosis on long-term outcome of people hospitalized with first episode schizophrenia. *Indian Journal of Psychiatry*. 2010;52(2):164.
- [13] World Health Organisation ICD-10 Classification of Mental and Behaviour Disorder. Geneva, Switzerland: World Health Organisation; 1992.
- [14] Overall JE, Gorham DR. The Brief Psychiatric Rating Scale. *Psychol Rep*. 1962;10(3):799-812.
- [15] Wani RT. Socio-economic status scales-modified Kuppaswamy and Udai Pareekh's scale updated for 2019. *J Family Med Prim Care*. 2019;8:1846-49.
- [16] Maximo J, Nelson E, Armstrong W, Kraguljac N, Lahti A. Duration of untreated psychosis correlates with brain connectivity and morphology in medication-naïve patients with first-episode psychosis. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*. 2020;5(2):231-38.
- [17] Drake RJ, Haley CJ, Akhtar S, Lewis SW. Causes and consequences of duration of untreated psychosis in schizophrenia. *British Journal of Psychiatry*. 2000;177(6):511-15.
- [18] Canino G, Alegria M. Psychiatric diagnosis- is it universal or relative to culture? *Journal of Child Psychology and Psychiatry*. 2008;49(3):237-50.
- [19] Leighton A, Hughes J. Cultures as a causative of mental disorder. *Milbank Quarterly*. 2005;83(4):Online-only-Online-only.
- [20] van Beek A, de Zeeuw J, de Leeuw M, Poplawska M, Kerkvliet L, Dwarkasing R, et al. Duration of untreated psychosis and pathways to care in Suriname: a qualitative study among patients, relatives and general practitioners. *BMJ Open*. 2022;12(2):e050731.
- [21] "Kerala best State on health parameters, Uttar Pradesh worst: NITI Aayog," 27 December 2021.

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