EVALUATION OF PSYCHIATRIC DISABILITY AMONG PATIENTS WITH SCHIZOPHRENIA IN RELATION TO DURATION OF UNTREATED ILLNESS- A CROSS-SECTIONAL STUDY

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ABSTRACT

BACKGROUND
Schizophrenia is a chronic mental illness associated with major disability in several spheres of a person's functioning. Duration of untreated illness is one of the important reasons for severe disability.
Aim- The study was undertaken to evaluate the association between Duration of Untreated Illness (DUI) in patients with Schizophrenia and Sociodemographic variables and correlation between DUI and Disability.

MATERIALS AND METHODS
This cross-sectional study was undertaken at Government Hospital for Mental Care/ Andhra Medical College, Visakhapatnam. The convenience sampling of 162 patients attending OPD who were diagnosed with Schizophrenia as per ICD-10, age ranging between 18 and 65 years, currently under remission and on regular treatment for the past one year were included in the study.
Statistical Analysis- Sociodemographic profile frequencies were calculated. Mann-Whitney U and Kruskal-Wallis tests were used to compare data (Unequal Sample Size and Non-Normal Distribution) between groups and Spearman's rank correlation coefficient test was used to find the nature of association between DUI and Disability scores.

RESULTS
Duration of Untreated Illness is not showing significant association with Sociodemographic variables, gender, marital status, domicile, education or employment. long DUI not showing significant association with disability (p-value is 0.617) and correlation between DUI and disability scores do not reveal any significant relation (r-value= 0.006, p-value 0.938).

CONCLUSION
There is a huge need to bring a greater number of patients who belong to the group- female, unmarried, low literacy, unemployed and rural, under the umbrella of treatment early. It is conceivable that the reported better outcome for schizophrenia in India is unlikely to be a cause of shorter DUI.

KEY WORDS
Schizophrenia, Duration of Untreated Illness, Disability.

BACKGROUND

Schizophrenia is a chronic mental disorder, which is often associated with marked disability.[1] The outcome of schizophrenia is variable and despite a great amount of existing research we know relatively little about the predictors of outcome. Duration of Untreated Illness (DUI) is defined as the time from first signs of noticeable change in behaviour to time of baseline behaviour to initiation of treatment. Duration of Untreated Psychosis (DUP) is defined as the time from manifestation of the first psychotic symptom to initiation of adequate antipsychotic drug treatment. Several studies have suggested that prolonged Duration of Untreated Illness (DUI) or Duration of Untreated Psychosis (DUP) in patients with schizophrenia may predict poor outcome.[2,3,4]

Given such findings, it has been suggested that decreasing DUI, perhaps by early identification and intervention, might lead to a more favourable outcome. It has also been argued that prolonged untreated illness might be causally related to poor outcomes, perhaps because of a neurotoxic process.[5] It has been postulated that untreated psychosis has a toxic effect through some unknown neurologic or psychological mechanism so that patients with a longer DUI have a poorer prognosis. Prolonged DUI has been associated with certain neurocognitive impairments at presentation and with grey matter changes including reductions in planum temporale, left middle and inferior temporal lobe and occipital and fusiform cortices and grey matter excess in left basal ganglia.[6,7] Nonetheless, it should be noted that results regarding the impact of DUI on brain morphology remain unclear with some studies failing to find such a relationship.[8,9]

DUI in patients with schizophrenia varies widely in various studies, ranging between 22 and 166.4 weeks.[10] More than 10 studies conducted on several continents have described typical durations of untreated psychosis that average 1 - 2 years.[4] Some studies have not found an association between DUI and outcome.[11,12,13,14] The duration of untreated illness is longer in insidious onset and these

patients have a poorer outcome. However, this does not mean that there is a poorer outcome because of the longer duration of untreated illness. It is likely that the outcome is poor, because insidious onset belongs to a different type of schizophrenia with a worse outcome that is independent of early or late treatment.

Alternatively, DUI may be an epiphenomenon of prognostic factors and a marker of a subset of schizophrenia patients having poor clinical and cognitive outcomes. Further, the postulation that greater cognitive impairment may lead to protracted DUI via delayed effective help-seeking. This could not account for findings of significant association between DUI and longitudinal cognitive outcome, as the two DUI groups did not differ in most cognitive measures at baseline. There is considerable evidence that DUI and outcomes of schizophrenia are different in communities. According to World Health Organization, Schizophrenia affects about 24 million people worldwide. In developing countries, around 90% of people with schizophrenia remain untreated. But the outcome of schizophrenia appears to be better in low- and middle-income countries.[15] There are several factors that may influence the outcome like employment, marital status, family support etc.[16]

Aim
The study was undertaken to evaluate the association between Duration of Untreated Illness (DUI) in patients with Schizophrenia and Sociodemographic variables and correlation between DUI and Disability.

MATERIALS AND METHODS
This cross-sectional study was undertaken at Government Hospital for Mental Care/ Andhra Medical College, Visakhapatnam. The convenience sampling of 162 patients attending OPD who were diagnosed with Schizophrenia as per ICD-10, age ranging between 18 and 65 years, currently under remission and on regular treatment for the past one year were included in the study. Subjects who had schizoaffective disorder, mental retardation, H/O substance abuse, epilepsy, organic brain pathology, other chronic diseases and other physical disabilities were excluded. Informed consent was taken. The sociodemographic variables like Gender (Male and Female), Marital status (Unmarried, Married, Single/ Divorced/ Widowed), Education (Uneducated, School education, College education), Domicile (Rural, Sub-Urban, Urban) and Employment (Unemployed, Unskilled work, Skilled work, Housewife) details were enquired. Patients were enquired about Duration of Untreated Illness in days. Disability scores were assessed by applying Indian Disability Evaluation and Assessment Scale (IDEAS). In 2001, the Rehabilitation Committee of the Indian Psychiatric Society developed a tool for assessing psychiatric disability due to mental illness known as Indian Disability Evaluation and Assessment Scale (IDEAS). It has alpha value of 0.8682 with good internal consistency between the items, good criterion validity and face value, measuring the desired qualities and it was field tested in 9 centres all over India and gazette by the Ministry of Human Resources and Empowerment, Government of India as the recommended instrument to measure psychiatric disability to certify psychiatric disability and accord benefits under the welfare schemes to the mentally disabled.[17] In the current study, IDEAS scale was used to assess disability in patients with schizophrenia.

Statistical Analysis
The data was analysed using SPSS-22 trial version. Socio-demographic profile frequencies were calculated. Mann-Whitney U and Kruskal-Wallis tests were used to compare data (unequal sample size and non-normal distribution) between groups and Spearman's rank correlation coefficient test was used to find the nature of association between DUI and Disability scores. A P value of less than 0.05 is considered as statistically significant.

RESULTS
The sample (n= 162) consists of 90 men (56%) and 72 women (44%). The ages ranged between 18 - 65 years, the mean age being 36.84. Out of 162 patients 81 were married, 50 were unmarried and 31 were single (separated, divorced or widowed). The sample consisted of 25% were uneducated, 56% having school education and 19% college education. Most of patients (55%) belonged to rural area. Out of 162 patients 21 (13%) were unemployed, 70 (43%) were unskilled workers, 8 (5%) were skilled workers and 63 (39%) were housewives.

Gender	N	Median DUI (Days)	Interquartile Range IQR	Mann-Whitney U	Sig
Male	90 (56%)	61	243.5	2833.5	0.169 (Not. Sig)
Female	72 (44%)	91	335		

Table 1. Depicting Mean DUI (Days) across Gender Groups

Male 90 (56%) and female 72 (44%) patients with median value of DUI is 61 days, 91 days respectively. Median DUI were compared using Mann-Whitney U test and P-value is more than 0.05. Females have more duration of untreated illness, though it was not statistically significant.

Marital Status	N	Median DUI (Days)	Interquartile Range IQR	K-Wallis H	Sig
Married	81 (50%)	61	319.5	0.452	0.798
Unmarried	50 (31%)	91	345		
Single	31 (19%)	60	167		

Table 2. Depicting Mean DUI (Days) across Marital Groups

In the study, married group consists of 81 (50%) patients with median (DUI) 61 days, unmarried group 50 (31%) with median (DUI) 91 days and single group (Divorced/Separated) 31 (19%) with median (DUI) 60 days respectively. Median DUI of these groups were compared using Kruskal-Wallis with a P-value of 0.798. The duration of untreated illness is more in unmarried group, which is not statistically significant.

Domicile	N	Median DUI (Days)	Interquartile Range IQR	K-Wallis H	Sig
Rural	89 (55%)	90	345	0.891	0.641
Sub-urban	24 (15%)	60.5	331		
Urban	49 (30%)	60	167.5		

Table 3. Depicting Mean DUI (Days) across Domicile Groups

The sample consists of rural group 89 (55%) patients with median DUI 90 days, sub-urban group 24 (15%) with median DUI 60.5 days and urban group 49 (30%) with median DUI 60 days. The median DUI of these groups were compared using Kruskal-Wallis test with a P-value of 0.641. Rural group having more duration of untreated illness when compared to other groups, though it is statistically not significant.

Education	N	Median DUI (Days)	Interquartile Range IQR	K-Wallis H	Sig
Uneducated	41(25%)	90	289.5		
School Education	91 (56%)	90	345	0.744	0.689
College Education	30 (19%)	45	215.5		

Table 4. Depicting Mean DUI (Days) across Education Groups

Uneducated group 41 (25%) patients with a median DUI of 90 days, school education group 91 (56%) has median of 90 DUI and college education group 30 (19%) with median of DUI 45 days. The median DUI of these groups were compared using K-Wallis H. F and P-value is 0.689. Uneducated and School education group having more Duration of Untreated Illness when compared to college education groups, though it is statistically not significant.

Occupation	N	Median DUI (Days)	Interquartile Range IQR	K-Wallis H	Sig
Unemployed	21 (13%)	182	517.5		
Unskilled Work	70 (43%)	61	335		
Skilled Work	8 (5%)	76	289.3	2.848	0.416
Housewife	63 (39 %)	60	172		

*Table 5. Depicting Mean DUI (Days) across Occupation Groups*

The sample consists of unemployed group 21 (13%) patients with median DUI 182 days, Unskilled work group 70 (43%) with median DUI 61 days and Skilled work group 8 (5%) with median DUI 76 days. Housewife group 63 (39%) with median DUI 60 days. The median DUI of these groups were compared using K-Wallis H and P-value was 0.416. Unemployed group having more duration of untreated illness when compared to other groups, though it is statistically not significant.

DUI Groups	N	Median Ideas	Interquartile Range IQR	Mann-Whitney U	Sig
DUI < 180 days	105 (65%)	7.0	7.0		
DUI > 180 days	57 (35%)	7.0	8.0	2850.5	0.617

Table 6. Depicting Mean IDEAS Score in association with DUI Groups

Two groups were made- those who were having Duration of Untreated Illness (DUI) < 180 days (105) and > 180 days (57), the median disability values (IDEAS) in each group were

7.0 and 7.0 respectively indicating similar disability in both groups. These groups were compared with Mann-Whitney U test and p-value was 0.617, which was not statistically significant level.
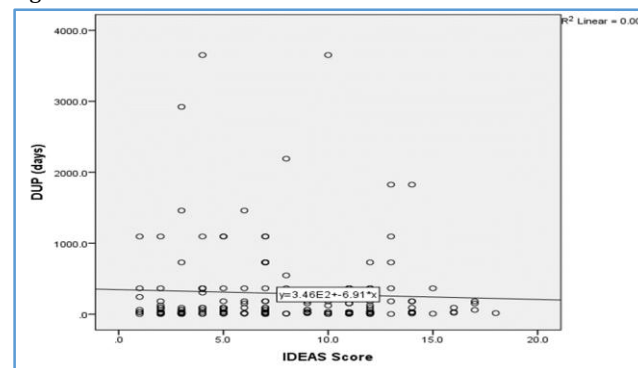
Diagram 1. Depicting Mean IDEAS Score in correlation with DUI in Days

Spearman's rank correlation coefficient test was used to find the nature of association between DUI and Disability scores. It was found to be not significant (r-value= 0.006, p-value 0.938).

DISCUSSION

The role of sociodemographic variables in determining the Duration of Untreated Illness (DUI) among schizophrenia patients has given contrasting results across various studies.[18] Although, demographic factors and methods of measurement were not significantly associated with DUI, this should not be interpreted as evidence that these factors do not influence the assessment of DUI of some individual patients or not important in determining the DUI of some samples.

Numerous studies have reported any relation of DUI with gender.[18,19] Study from Hong Kong reported that males have a longer DUI than females.[20] In this current study female patients having longer median DUI values, though not statistically significant level. The females are brought late to treatment. Some Indian studies show that the clinical remission and recovery are higher in females rather than males.[21] It is unclear whether this is due to the later age of onset, protective nature of hormones such as oestrogens or better drug response.[22]

Schizophrenia manifests maximally at a marriageable age (i.e. around the 20s). The sociocultural factors determining marriage and its maintenance are vastly different from those in Western societies. Most studies from the West have reported low rates of marriage for people with schizophrenia. In contrast, 10-year follow-up study from India found a high marital rate of 70%.[23] Patients whose marriages have broken down in addition to the stress of their mental illness, face hostility from family members and rejection by society. This can be a significant contributing factor of outcome in traditional societies with concern that few had contemplated suicide. Concerns of being a burden to their aged parents and hostile criticism from parents and siblings further reinforced their plight. In the current era of rapid globalisation, the effects of diminishing social support and the increasing prevalence of nuclear family warrant close examination of the effects of these social changes on outcome.[16] An Indian study did not find significant correlation of DUI with the

educational level, marital status and socioeconomic status at baseline assessment, a finding which is like most other studies.[24] According to the present study, DUI is more in unmarried group but not statistically significant.

The current study finds no significant correlation of Duration of Untreated Illness with the educational level, a finding which is like most other studies,[18] but the current study is showing that patients with lower illiteracy had more duration of untreated illness. It was seen that there were several patients living in and around large towns and cities who were untreated for many years despite easy availability of health services in an Indian study.[24] According to present study, rural group is showing high untreated illness duration. Lack of knowledge and availability of psychiatric services to the uneducated and rural group of patients might be the reason for long duration of untreated illness.

Social factors such as unemployment in males, family awareness of the nature of illness and family type are strongly related to treatment-seeking in low- and middle-income countries. Another Indian Study also found no correlation between employment and DUI.[18] Unemployment has a less strong effect on duration of untreated psychoses was the finding of study by Morgan et al, 2006.[25] It is observed that in low- and middle-income countries a large population with schizophrenia remains untreated and engaged in job.[26] Moreover, among untreated Indian people with schizophrenia almost one-third was employed. Generally, high employment rates (Upto 75%) have been found in India in contrary to western population.[27] Maybe it was not too difficult for them to find jobs in the unorganised sector. Absence of state social security benefits and pressure to find work as primary wage earners would also have contributed to the high rate of employment.[26] In meta-analysis study, DUI and employment found no significant association.[28] Current study found no significant association between DUI and employment, but most of the schizophrenia patients are unemployed or in unskilled work or are involved in domestic works. There is delay in treatment of unemployed patients. A study of untreated patients from Chennai, South India, DUI of less than 5 years predicted good clinical but not occupational outcome, although occupational outcome in such regions is influenced by the family and societal response to the illness rather than being a core feature of the disability itself.[29]

Previous studies suggested that the correlation between DUI and outcome in schizophrenia patients in the developing countries was somewhat contradictory, as the DUI tended to be longer, but remission rates were higher and correlation between long DUI and poor outcome was stronger in longer follow-up periods. This does not prove that long DUI cause poor outcome, but may indicate that participants with longer DUI have a different type of illness or different coping mechanisms for the symptoms as well as different cognitive performance from some participants with short DUI. Present study reports no significant association with long DUI (> 180 days group) and disability, the finding is same as other Indian studies. Some of the Indian studies have reported that a longer duration of untreated illness in schizophrenic patients was due to the larger extended joint family, which was able to compensate and cope with the dysfunctional member, concluding that such family system seemed to be a crucial factor related to the delay in treatment.

However, the correlations between DUI and general symptomatic outcome seemed to be smaller in countries with a lower income level. This is particularly relevant in low- and middle-income countries where a significant number of patients come late for treatment. Reasons for this include lack of awareness, a strong belief in magical or religious causes and poor accessibility of healthcare systems and lack of community care.[16,24] Surprisingly, more florid positive such as delusions, hallucinations or aggressive behaviour were not associated with seeking treatment or hospitalisation. However, self-neglect, an unhygienic, unkempt person was more noticeable in public or to visitors to the house and family embarrassment stimulated treatment-seeking for the patient. The use of complementary medicines and consultations with traditional healers is widely acknowledged in low-income countries such as India.[30] A cross-cultural study on pathways to psychiatric care replicated these findings.[31] Most patients are brought for treatment after a significant delay from the onset of symptoms. Following treatment for 1 year, patients with a DUI of 5 years or less had shown clinical outcome. An encouraging observation was the notable treatment response in many years of untreated illness.[28] In the current study, the duration of untreated illness DUI is not showing statistically significant relation with disability.

India, like many other low- and middle-income countries, represents a society in transition. Whether the current sociocultural patterns associated with good outcome will themselves change and in turn the outcome of schizophrenia needs to be examined through prospective studies.

CONCLUSION
Though Duration of Untreated Illness is not significantly associated with sociodemographic variables such as gender, marital status, education, occupation and domicile, patients who belonged to groups like female, unmarried, low literacy, unemployed and rural are showing more untreated illness duration. So, measures to bring these patients under the umbrella of treatment is necessary. It is conceivable that the reported better outcome for schizophrenia in India is unlikely to be because of shorter DUI.

Limitations
1. The study was done on sample taken from the hospital-based population. It may not be a representative sample of patients in the community.
2. The sample size is small, so generalisation of our findings may not be possible.
3. This is a cross-sectional study, so cause and effect relationship between variables cannot be given.

Future Directions
1. Long DUP could be a proxy for insidious onset or some other unmodifiable determinant of outcome, so long-term randomised controlled trials of early intervention should be conducted.
2. The psychosocial interventions targeting during the first few years of illness may have a significant long-term effect in preventing and limiting symptom progression and social disablement. This may require the establishment of a distinct service.

3. In developing countries like India, stigma is more for mentally ill person and their care giver which hinders them in seeking psychiatric treatment at early stage, so steps should be taken to reduce the stigma, thereby duration of untreated illness.

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