

# Referral Pattern of Inpatients to Psychiatry Department and the Diagnostic Concordance between the Referral Departments and Psychiatry Team- A Retrospective Study

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## ABSTRACT

**Introduction:** The referral of inpatients to psychiatry team is more in India due to the increase in the morbidity rates of people. The referrals to Psychiatric Department with a specific psychiatric diagnosis are considerably very low. Most often, the diagnosis made by the clinicians does not match with that of the psychiatrist. Physical illness is shown to have a strong association with psychiatric co-morbidity. Such association complicates the course and outcome of both the conditions.

**Aim:** To evaluate the pattern of inpatient referral to the Psychiatric Department and to estimate the diagnostic concordance between the referral and psychiatric team.

**Materials and Methods:** This retrospective study, with prior permission from the Department of Psychiatry, included all the inpatient referrals (n=310) to Psychiatry Department by other departments from January 2019 to December 2019. Data collection was done from March 2020 to August 2020 and data analysis from September 2020 to November 2020, in Saveetha Medical College and Hospital, Chennai, Tamil Nadu, India.

Data was obtained from a psychiatry referral register and was statistically analysed using Microsoft Excel (MS Office 2013) for percentage, mean and Standard Deviation (SD) for descriptive variables. Diagnostic concordance to assess the reason for referral and diagnostic accuracy in terms of reason of referral and psychiatric diagnosis was analysed using kappa statistics.

**Results:** The most common psychiatric disorder for referral was alcohol dependence syndrome 102 (32.9%) followed by depression 38 (12.3%) and adjustment disorders 34 (10.9%). Concordance was good for intellectual disorder ( $\kappa=1.00$ ), depression ( $\kappa=0.969$ ) and alcohol dependence syndrome ( $\kappa=0.963$ ). Very low concordance was observed in diagnosing acute confusional state ( $\kappa=0.195$ ) and panic disorder ( $\kappa=0$ ).

**Conclusion:** Alcohol withdrawal syndrome, adjustment disorder and depression were the most common reasons in referring inpatients to psychiatry. Lower concordance for psychiatric disorders like acute confusional state and panic disorder could be explained by inadequate psychiatry exposure and hence be improved by better undergraduate psychiatry training.

**Keywords:** Alcohol, Delirium, Depression, Kappa

## INTRODUCTION

Physical illness is shown to have a strong association with psychiatric co-morbidity. Such association complicates the course and outcome of both the conditions [1,2]. In the western population, the prevalence of psychiatric co-morbidity among general inpatients varies between 26.5% to 60.0% [2,3]. The prevalence of mental disorders among internal medical inpatients and in acutely ill medical patients was found to be 38.7% and 27.2% respectively [2,3]. According to a study in India, psychiatric morbidity among the inpatients and outpatients referred from other departments was reported to be 31.0-34.5%. Yet, the psychiatry referral rates for inpatients remains very low (0.1-3.6%) [4].

The pattern of referral of inpatients by the physician/surgeon to the psychiatry team also varies among countries. In western countries, among the referred inpatients, the most common psychiatric disorder is major depressive disorder [2] whereas in eastern countries, it is delirium [5]. Delirium stands out as the most common diagnosis among patients referred for psychiatric evaluation in a study conducted in Northern India. The other common diagnostic categories were depressive disorders, alcohol dependence syndrome, adjustment disorder and opioid dependence syndrome [4].

The concordance (41.5-47.4%) between the physician's/surgeon's diagnosis and those made by the psychiatrists have been evaluated by very few studies [6,7]. The concordance of diagnosis between physicians/surgeons and the psychiatrists among the elderly patients referred to psychiatric services was evaluated by a study

conducted in Japan. The results reported the highest concordance for organic brain syndromes ( $\kappa=0.47$ ) and low concordance for depression ( $\kappa=0.28$ ) and alcoholism ( $\kappa=0.27$ ) [7], whereas, a study from Northern India, showed a better concordance for the diagnosis of substance dependence ( $\kappa=0.678$ ) and suicidality ( $\kappa=0.655$ ) and very low concordance for depressive disorders and delirium with  $\kappa<0.3$  [4]. Inadequacy in the necessary skills required in diagnosing psychiatric disorders is a reason for failure of psychiatric referrals.

Referral rates and psychiatric diagnosis pattern have been evaluated by several studies in India. But the evaluation of diagnostic concordance between the physicians/surgeons and the diagnosis made by the psychiatrists has been done by only one study in Northern India. So, the present study aimed to evaluate the referral pattern and diagnostic concordance between physicians/surgeons and the psychiatrists among the inpatient referral in South Indian population.

## MATERIALS AND METHODS

This retrospective study was conducted in Saveetha Medical College in Chennai, Tamil Nadu, India, after obtaining the approval from the Institutional Review Board and Ethical Committee (IRB No:SMC/IEC/2020/03/340). The study was conducted for a period of nine months with data collection from March 2020 to August 2020 and data analysis from September 2020 to November 2020. All the referrals (n=310) made to the psychiatry team from the various inpatient wards from (January 2019 to December 2019) entered in the Psychiatric Department referral registry were included in the study.

## Data Collection

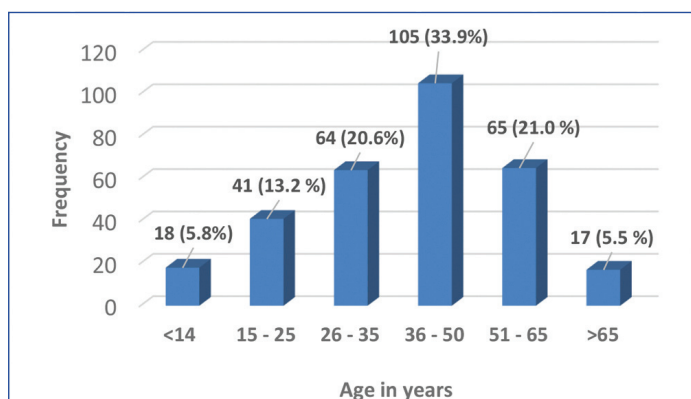
With prior permission from the Psychiatry Department, the data was collected from the referral registry that contains the patients name, age, sex, complaints, referral department diagnosis, co-morbidities if any, primary diagnosis, the complaints related to the referral department and the psychiatric diagnosis made by the psychiatry team. The information about the doctor who made the referral too was also recorded in the registry. A patient referred to the Psychiatry Department was first seen by a junior resident under the supervision of a senior consultant. The final diagnosis was made by senior consultants (n=6) based on the criteria of International Classification of Diseases (ICD) 10 [8]. For critical cases as per ICD 10 [8], evaluation was done after admitting the patient, with regular follow-up till their discharge from the hospital. According to the severity of the psychiatric ailment, the patient was asked to come for a regular visit.

## STATISTICAL ANALYSIS

The data collected was analysed using the Microsoft Excel worksheet (MS office 2013). The frequency, percentage, mean and Standard Deviation (SD) were calculated for the descriptive data. The diagnostic concordance between the diagnosis made by the psychiatry team and the referral team was assessed using the Kappa statistics.

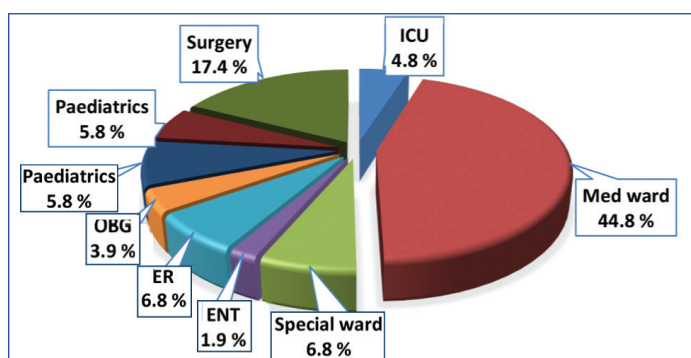
## RESULTS

In the sample of 310 referrals studied, the age of the patients ranged from 2-84 years with the mean age of 40.6 years with a SD of 16.3. Majority of the referred inpatients age ranged between 36-50 years (33.9%). Both paediatric (<14 years) and geriatric age (>65 years) group referrals were least and were 5.8% and 5.5%, respectively [Table/Fig-1].



[Table/Fig-1]: Age-wise distribution of the referred inpatients to the psychiatry department.

Of the 310 patients studied, 199 (64.19%) were males, and 111 (35.81%) were females. Among the referral department, 139 (44.8%) of the referrals were from Medicine Department and 54 (17.4%) from Surgery and 24 (7.7%) were from Orthopaedic surgery. A considerable number of referrals were also obtained from the Emergency (ER) and Paediatric Departments which were about 21 (6.8%) and 18 (5.8%), respectively [Table/Fig-2].



[Table/Fig-2]: Pie-chart showing the percentage of referral by the various departments to the psychiatry team.

Most common diagnosis for referral was alcohol dependence syndrome 102 (32.9%) followed by depression 38 (12.3%), adjustment disorder 34 (10.9%), insomnia and anxiety disorder each 17 (5.5%).

The frequency of the various diagnoses of the referred inpatients by the referral department and psychiatry team were evaluated, and the pattern of referral is represented graphically [Table/Fig-2]. According to the psychiatry team, the most common diagnosis was alcohol dependence syndrome 97 (31.3%) followed by adjustment disorders 48 (15.5%), depression 36 (11.6%), review 31 (10.0%) and anxiety disorder 20 (6.5%).

**Diagnostic concordance between the referral physician/surgeons and psychiatrists:** Kappa statistics was used to diagnose the concordance between the major psychiatric diseases (i.e., alcohol dependence syndrome, depression, anxiety disorders, adjustment disorders) as per referral physician and psychiatrists and tabulated in [Table/Fig-3].

Referred physicians diagnosed 102 patients with alcohol dependence syndrome, whereas psychiatrists diagnosed with the disease in 97 cases, and the kappa ( $\kappa$ ) value for the concordance was found to be 0.963 [Table/Fig-3].

In terms of depression (suicidality, anxiety, crying, not talking, irritability, insomnia), 38 cases were diagnosed with depression by referring physicians while only 36 cases were identified to have depression by psychiatry team. When the concordance value has been calculated using kappa statistics, the  $\kappa$  value was 0.969 [Table/Fig-3].

Diagnosis of anxiety disorder was made by the treating physician, and various symptoms suggestive of an anxiety disorder (crying spells, irrelevant talk, fearfulness, confused state of mind, insomnia, suicidal ideas, worried behaviour) were taken into account for a referral to psychiatrists and 17 cases were identified to have an anxiety disorder, while 20 cases were found to have an anxiety disorder as per psychiatrists and concordance value using kappa statistics was calculated to be 0.914 [Table/Fig-3].

In adjustment disorder, the symptoms were broad, including suicidal attempt (using various substances like all-out, paracetamol, rat killer powder, kerosene, calotropis, iron tablet, ant killer, acid, phenol, alprazolam, cleaning liquid, cetirizine, oleander, insecticide) psychosocial stress, loss of interest, financial crisis, work pressure, sensitive behaviour and interpersonal conflicts. In 34 cases, the referring physician referred the patients for adjustment disorder; however, in the overall sample, diagnosis of adjustment disorder was made in 48 cases by the psychiatrist. The concordance, between the psychiatrist and referring physician, it was evaluated to 0.804 [Table/Fig-3].

Based on the kappa value, the concordance of the diagnosis between the referral and psychiatry team was in perfect agreement ( $\kappa=0.81-1.00$ ) for intellectual disorders (e.g. global developmental delay and Intellectual disability) ( $\kappa=1$ ), depression ( $\kappa=0.969$ ), alcohol dependence syndrome ( $\kappa=0.963$ ), psychosis ( $\kappa=0.958$ ), schizophrenia ( $\kappa=0.921$ ), anxiety disorder ( $\kappa=0.914$ ), delirium ( $\kappa=0.856$ ), seizure disorder ( $\kappa=0.83$ ) and adjustment disorder ( $\kappa=0.804$ ) [Table/Fig-3].

The agreement between the referral team and psychiatry team was substantial ( $\kappa=0.61-0.80$ ) in the diagnosis of hyperventilation syndrome ( $\kappa=0.798$ ), nicotine dependence syndrome ( $\kappa=0.747$ ), affective disorder ( $\kappa=0.723$ ), autism spectrum disorder ( $\kappa=0.665$ ) and bipolar disorder ( $\kappa=0.665$ ) [Table/Fig-3].

The concordance in diagnosing the obsessive-compulsive disorder (n=3,  $\kappa=0.498$ ) and by the referral and psychiatry team was with a moderate agreement ( $\kappa=0.41-0.60$ ). Fair agreement ( $\kappa=0.21-0.40$ ) between the teams was observed in diagnosing conversion disorder (n=4,  $\kappa=0.397$ ), insomnia (n=3,  $\kappa=0.288$ ), Alcohol withdrawal syndrome (n=2,  $\kappa=0.258$ ). There was slight ( $\kappa=0.01-0.20$ ) or no agreement ( $\kappa=0$ ) between the referral and psychiatry team for acute confusional state (n=9,  $\kappa=0.195$ ) and panic disorder (n=6,  $\kappa=0$ ) respectively [Table/Fig-3].

Final diagnosis	As per referral department	As per Psychiatry Department	Kappa (κ) value	Agreement
Intellectual disorder	6	6	1.000	Perfect agreement
Depression	38	36	0.969	
Alcohol dependence syndrome	102	97	0.963	
Psychosis	12	13	0.958	
Schizophrenia	6	7	0.921	
Anxiety disorder	17	20	0.914	
Delirium	4	3	0.856	
Seizure disorder	7	5	0.830	
Adjustment disorder	34	48	0.804	
Hyperventilation syndrome	3	2	0.798	
Nicotine dependence syndrome	3	5	0.747	
Affective disorder	4	7	0.723	
Bipolar disorder	1	2	0.665	
Autism spectrum disorder	2	1	0.665	
Obsessive compulsion disorder	1	3	0.498	Moderate agreement
Conversion disorder	1	4	0.397	Fair agreement
Insomnia	17	3	0.288	
Alcohol withdrawal syndrome	13	2	0.258	
Acute confusional state	1	9	0.195	Poor agreement
Panic disorder	0	6	0.000	No agreement

**[Table/Fig-3]:** Frequency of the diagnosis made by the referral and psychiatry team and the respective kappa value for the diagnosis (N=310).

\*Out of all the 310 patients, final diagnosis of 38 patients could not be made by the referral physicians and the final diagnosis of 31 patients could not be made by the psychiatrists; thus, these patients were recalled on follow-up

## DISCUSSION

The prevalence of psychiatric disorders was reported to be increased in young patients with physical illness (38.7%) [2]. In the present study, the majority of the referred inpatients' age ranged between 36-50 years (33.9%), and mostly male patients were referred 64.19%. Among the referral department, 44.8% of the referrals were from Medicine Department and 17.4% from Surgery, 7.7% from Orthopaedic surgery. A considerable number of referrals were also obtained from the Emergency (ER) and Paediatric Departments.

In general, there is limited data for reasons of referral to psychiatry team by referral department. Lack of integration of psychiatry and medicine at training level, underestimation of psychiatric co-morbidities by clinicians and their general reluctance are the reasons for low referral rates [9-11]. Studies suggest that the physicians/surgeons were able to report the patient in around 57.0% (n=125) cases using specific psychiatric diagnosis [4].

Earlier studies on the pattern of psychiatric disorders among patients referred to psychiatry suggested that the most common diagnosis were that of delirium, self-harm, depression, substance use disorders, and stress and neurotic disorders among various countries [5-7,12] A similar study in Denmark reported that the major diagnoses were somatoform disorders (17.6%), phobias (12.9%), substance use disorders (10.9%), and depression (8.3%) [2]. In a study done in Canada, the most common diagnosis was major depressive disorder (5.1%) followed by adjustment disorder (13.7%), anxiety disorder (5.8%), and alcohol dependence or abuse (5.4%) [3]. A study in India, suggests that delirium (43.4%) was the most common psychiatric diagnosis in patients referred to psychiatry team, and followed by depressive disorders (11.9%), alcohol dependence syndrome (7.3%), adjustment disorder (5.0%), and opioid dependence syndrome (4.6%) [4].

The present study in contrast to the earlier studies showed that the most common psychiatric diagnosis of the inpatients referred to psychiatry team was alcohol dependence syndrome (31.3%) followed by adjustment disorders (15.5%), depression (11.6%), anxiety disorder (6.5%) and psychosis (4.2%). These findings in the present study suggest that curriculum designed for the undergraduate and the

psychiatry team must focus on enhancing knowledge, clinical and management skills for these common disorders.

Although in earlier studies, delirium and depression was the most common diagnosis, the present study reports alcohol dependence syndrome to be the most common. The possible reason for this increase in alcohol dependence syndrome is due to social drinking and binge usage of alcohol. Alcohol intake has been increased among teens due to changing lifestyle and changing patterns in pleasure-seeking which could lead to addiction. Among adults, alcohol intake is increased in people who are indulged in heavy working lifestyle as well as in those with a sedentary lifestyle due to physical and mental stress. So, interventions should be made at an individual level, school level, family level and environmental level to minimise the use of alcohol and its overuse related disorders.

Many studies have reported concordance between the physician/surgeons diagnosis, and the diagnosis made by the psychiatrist as only 41.5%-47.4% [6]. A study was done in Japan on older people for the diagnostic concordance between the referral departments and psychiatrists and showed kappa statistics of 0.47 for organic brain syndrome, 0.27 for alcoholism, 0.28 for depression and 0.32 for neurosis/insomnia suggesting an insufficient level of diagnostic accuracy for psychiatric disorders by the clinicians [7]. In India, a study on the concordance of diagnosis between referral team and psychiatrist has shown low concordance ( $\kappa < 0.3$ ) for depressive disorders and delirium. But substance dependence ( $\kappa = 0.678$ ) and suicidality ( $\kappa = 0.655$ ) had better diagnostic concordance [4].

When compared to other studies, the present study showed overall higher concordance according to kappa values. So, the present study shows that the referral team is better in diagnosing the above disorders. Concordance was low in diagnosing conversion disorder ( $\kappa = 0.397$ ), insomnia ( $\kappa = 0.288$ ), alcohol withdrawal syndrome ( $\kappa = 0.258$ ) and acute confusional state ( $\kappa = 0.195$ ). Panic disorder ( $\kappa = 0$ ) remained undiagnosed by the clinician. This suggests that knowledge on diagnosing the disorders with low concordance is poor among the referring physician/surgeon due to deficit in undergraduate psychiatry training.

Previous studies suggest that low concordance may be due to the incomplete knowledge and training during undergraduate

level [13,14]. In this study, although the concordance for many diagnoses were very high, the concordance for some illnesses like panic disorder and alcohol withdrawal was very poor. This brings us to suggest that, including psychiatry as a full subject in the undergraduate medical curriculum may improve the diagnostic accuracy of clinicians in other departments.

### Limitation(s)

As the study was conducted in a single institute, the results obtained cannot be generalised. Being a retrospective study, the data was not collected in a predesigned proforma as per the specific requirements of the study and so it can affect the accuracy of the data collection. In future, prospective studies with a predesigned proforma can be planned to include several institution functioning in rural and urban areas for generalisability and accuracy of data.

### CONCLUSION(S)

The pattern of referral of inpatients to the psychiatry team was different in the present study setting where alcohol dependence syndrome was the most common psychiatric disorder followed by depression, adjustment disorder and delirium. Concordance was better for common psychiatric disorders like alcohol dependence syndrome, depression, anxiety and psychosis. But there was low concordance in diagnosing conversion disorders, insomnia, alcohol withdrawal syndrome and acute confusion state, whereas, the panic disorder remained undiagnosed. Thus this study suggests providing better attention to psychiatry speciality during undergraduate medical training to improve their clinical skills in diagnosing psychiatric disorders in order to provide holistic healthcare to the patients.

### Acknowledgement

The authors would like to thank the Department of Psychiatry, Saveetha Medical College and Hospital, Chennai, Tamil Nadu,

India and the Institutional Review Board and Ethical Committee for allowing them to conduct the study.

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#### PLAGIARISM CHECKING METHODS: [Jan H et al.]

- Plagiarism X-checker: Feb 11, 2022
- Manual Googling: Apr 02, 2022
- iThenticate Software: Jun 14, 2022 (15%)

#### ETYMOLOGY: Author Origin

#### AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Feb 07, 2022**

Date of Peer Review: **Apr 05, 2022**

Date of Acceptance: **Jun 18, 2022**

Date of Publishing: **Aug 01, 2022**