Seasonal trend of psychiatric illnesses among patients attending outpatient department of Psychiatry in a tertiary care hospital of Haryana: A record based retrospective cross-sectional study

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Abstract

Background: Psychiatric illness not only induces profound suffering but also affects the lives of patients and their loved ones. Seasonal changes can influence mental health in a variety of ways.

Objectives: 1) To determine seasonal trend of psychiatric illnesses among patients attending outpatient department (OPD) of Psychiatry. 2) To study the seasonal and monthly variations in the number of patients utilising services of outpatient department of Psychiatry. 3) To determine association of demographic profile and psychiatric illnesses among patients attending outpatient department of Psychiatry in a tertiary care hospital of Haryana.

Material and Method: This study was carried out by reviewing the three years records of the patients available in the OPD register of department of Psychiatry. The data regarding age, gender, diagnosis, registration number and date (including month & year) of visit was collected from the OPD registers.

Results: The maximum number of patients with mood disorder visited during autumn & monsoon while lowest during winter season. Maximum number of patients with anxiety disorder visited during autumn, while lowest during winter months. Patients with psychotic disorder had maximum complaint in summer & monsoon and minimum in winter season. Out of total patients 5.2% had substance abuse who visited in maximum numbers in autumn and minimum in winter months. Among substance abuse addiction of opioid was found maximum (51.3%) followed by alcohol addiction (43.7%). The association of psychiatric illnesses with season was found to be statistically highly significant.

Conclusion: This study focusses on interesting relationship between psychiatric disorders and seasonal patterns. A clear seasonal pattern patterns are observed in various psychiatric disorders.

Key words: Psychiatric illnesses, Seasonal trend, Record based, anxiety, mood disorder, depression.

Introduction:

Psychiatric illness not only induces profound suffering but also affects the lives of patients and their loved ones. The human body is an integral part of the environment. So, the quality of life along with climate and environmental factors may affect the health of people[1]. Persons suffering from psychiatric disorders having behaviour, emotional and cognitive problems that significantly impair their social, occupational or interpersonal functioning[2]. As per India Meteorological Department, seasons are denoted as, winter (December to February), summer (March to May), monsoon/rainy season (June to September), and post monsoon/ autumn (October to November). Seasonal trend of disease refers to cyclic increase or decrease in the occurrence of specific illnesses throughout the year. Our brain and body respond profoundly to sunlight, change in temperature, and changing seasons. With each passing season and environment, mental health also changes throughout the year. Changes in season can affect mental health in different ways. These changes affect not only our routine life but also our biological beats, hormonal levels, and mood. Season Affective Disorder (SAD) is an interesting condition

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that can impact a person's quality of life. People with SAD may experience a range of symptoms, from feeling hopeless with low energy, disturbance in sleep and irritability. In this respect, seasonality should be considered to predict the behavior of person suffering from psychiatric illness. Clinical record review or chart review is a previously recorded data to answer clinical queries. Such a study can be used to answer specific clinical questions in a relatively easy and less resource intensive manner. A systematic review of the impact of seasonality on mental health would be useful to policymakers, researchers, and healthcare providers to allocate specific resources and provide targeted interventions. A very few efforts have been made to study the seasonal trend of various psychiatric illnesses from this part of India; hence the present study was planned.

Objectives:

1) To determine seasonal trend of psychiatric illnesses among patients attending outpatient department (OPD) of Psychiatry. 2) To study the seasonal and monthly variations in the number of patients utilising services of outpatient department of psychiatry. 3) To determine association of demographic profile and psychiatric illnesses among patients attending outpatient department of Psychiatry in a tertiary care hospital of Haryana.

Material and Method: After obtaining approval from the Scientific Research Committee (SRC) & Institutional Ethics Committee (IEC) for Human Research, the study was conducted at the department of Community Medicine and department of Psychiatry at Maharaja Agrasen Medical College, Agroha in Haryana. Information regarding demography and diagnosis of the patients is accurately recorded and maintained by the Psychiatric department. This study was carried out by reviewing the three years (January 2022 to December 2024) records of patients available in the OPD register of department of Psychiatry at MAMC, Agroha. The data regarding age, gender, diagnosis, registration number and date (including month & year) of visit was collected from the OPD registers. Initially the data was gathered on monthly basis, then categorized into the seasons as winter (December to February), summer (March to May), monsoon (June to September), and autumn (October to November). We included data of patients who were diagnosed and treated for the following psychiatric disorders: Anxiety Disorder, Childhood Psychiatric Disorder, Chronic Tension Type Headache (CTTH), Dissociative Disorder, Mood Disorder, Psychosexual Disorder, Psychotic Disorder, Seizure, Sleep Disorder, Substance Abuse and Others.

Records of patients with complete information were included in the study. Consecutive data of all patients meeting inclusion criteria were included in the study. Data was coded & entered in MS excel sheet and then exported to Statistical Package for Social Sciences version 20.0 for analysis. Mean, Median, Percentages and Chi square test were used for data analysis.

Results:

This was a retrospective record-based study in which details of 37,753 patients were studied. Out of which, 53.8% (20,304) were male (M) and 46.2% (17,449) were female (F). in each group male patients are more as compare to females. Median age of patients was 37 years and mean age was 38.49 years with standard deviation of 15.177. Month & season wise demographic profile of patients is shown in **Figure 1** and proportion of psychiatric illness among study subjects is shown in **Figure 2.**

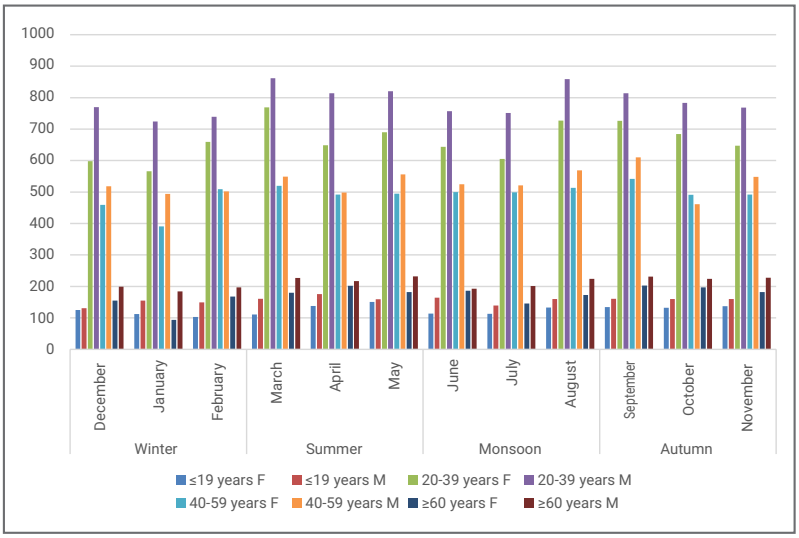

Figure 1: Month/Season wise distribution of study subjects

Figure 1 shows maximum number of patients belonged to 20 to 39 years of age group (46.2%) followed by 40-59 years (32.6%), ≥60 years (12.3%) and ≤ 19 years (8.9%) of age group. Maximum number of patients visited in the season of summer & autumn and month of August & September.

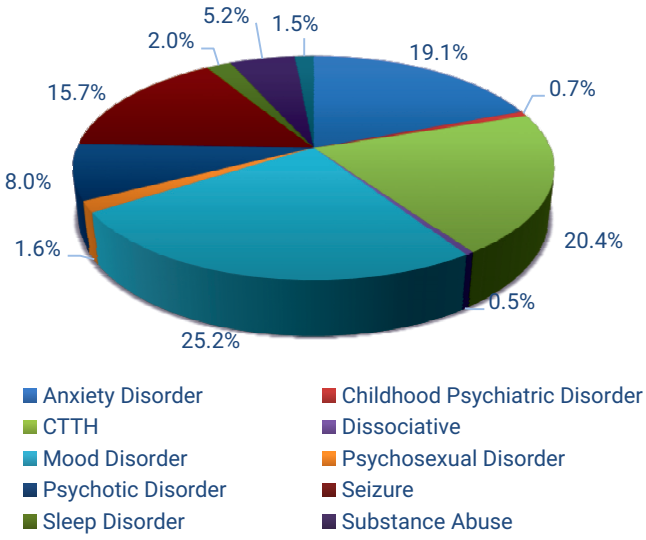

Figure 2: Proportion of psychiatric illnesses among study subjects

Table 1: Seasonal trend of psychiatric illnesses among study subjects

Psychiatric Illnesses	Winter n (row %)	Summer n (row %)	Monsoon n (row %)	Autumn n (row %)	Total n (column %)
Anxiety Disorder	1587 (22%)	1901 (26.3%)	1769 (24.5%)	1969 (27.2%)	7226 (19.1%)
Childhood Psychiatric Disorder	45 (16.7%)	73 (27.1%)	68 (25.3%)	83 (30.9%)	269 (0.7%)
Chronic Tension Type Headache	1908 (24.8%)	2160 (28.0%)	1720 (22.3%)	1920 (24.9%)	7708 (20.4%)
Dissociative	33 (18.4%)	40 (22.3%)	57 (31.8%)	49 (27.4%)	179 (0.5%)
Mood Disorder	2200 (23.2%)	2325 (24.5%)	2450 (25.8%)	2527 (26.6%)	9502 (25.2%)
Psychosexual Disorder	190 (31.7%)	153 (25.5%)	135 (22.5%)	122 (20.3%)	600 (1.6%)
Psychotic Disorder	665 (21.9%)	815 (26.8%)	797 (26.2%)	762 (25.1%)	3039 (8.0%)
Seizure	1373 (23.1%)	1571 (26.4%)	1560 (26.2%)	1440 (24.2%)	5944 (15.7%)
Sleep Disorder	207 (27.2%)	228 (30.0%)	152 (20.0%)	173 (22.8%)	760 (2.0%)
Substance Abuse	400 (20.3%)	448 (22.6%)	548 (27.7%)	581 (29.4%)	1977 (5.2%)
Others	103 (18.8%)	136 (24.8%)	161 (29.3%)	149 (27.1%)	549 (1.5%)
Total	8711 (23.1%)	9850 (26.1%)	9417 (24.9%)	9775 (25.9%)	37753 (100.0%)
X2=187.308, df=30, p value=0.000					

Table 1 shows the seasonal trend of psychiatric illnesses. The highest number of patients had mood disorder (25.2%), which include maximum cases of depression (including major and recurrent depression) followed by cases of bipolar affective disorder and mania. The maximum number of patients with mood disorder visited during autumn & monsoon (maximum during August) while lowest during winter months (minimum during January). Second highest number of patients had chronic tension type headache (20.4%). Maximum number of patients with CTTH visited during summer (maximum during March) while lowest during monsoon season (minimum during August). Out of total, 19.1% patient came with anxiety disorder. Maximum number of patients with anxiety disorder visited during autumn (maximum during September) while lowest during winter months (minimum during January). Out of total 15.7% patient visited for seizure disorder. Maximum number of patients with seizure disorder visited during summer and monsoon (maximum during August) while lowest during winter months (minimum during January). In this study 8.0% patients had psychotic disorder with maximum complaint in summer & monsoon (maximum during August) and minimum in winter season (minimum during January). Out of total patients 5.2% had substance abuse who visited in maximum numbers in autumn (maximum during

September) and minimum in winter months (minimum during February). Among substance abuse addiction of opioid was found maximum (51.3%), followed by alcohol addiction (43.7%), Benzodiazepine drug abuse (4.3%), multidrug abuse (0.4%) and cannabis addiction (0.3%). Only 2% patient had sleep disorder with maximum visit in summer season (but month wise during February) while minimum in monsoon (minimum during July). Psychosexual disorders (1.6%) were reported maximum in winters (maximum during January) and minimum during autumn season (minimum during October). Patients with childhood psychiatric disorder (0.7%) visited in maximum numbers during autumn (but month wise in May) and least in winters (minimum during February). Maximum numbers of patients with dissociative disorder (0.5%) visited during monsoon (maximum during August) while least in winters (minimum during February). The association of psychiatric illnesses with season was found to be statistically highly significant. Seasonal trend of individual psychiatric disorder is shown in Figure 3.

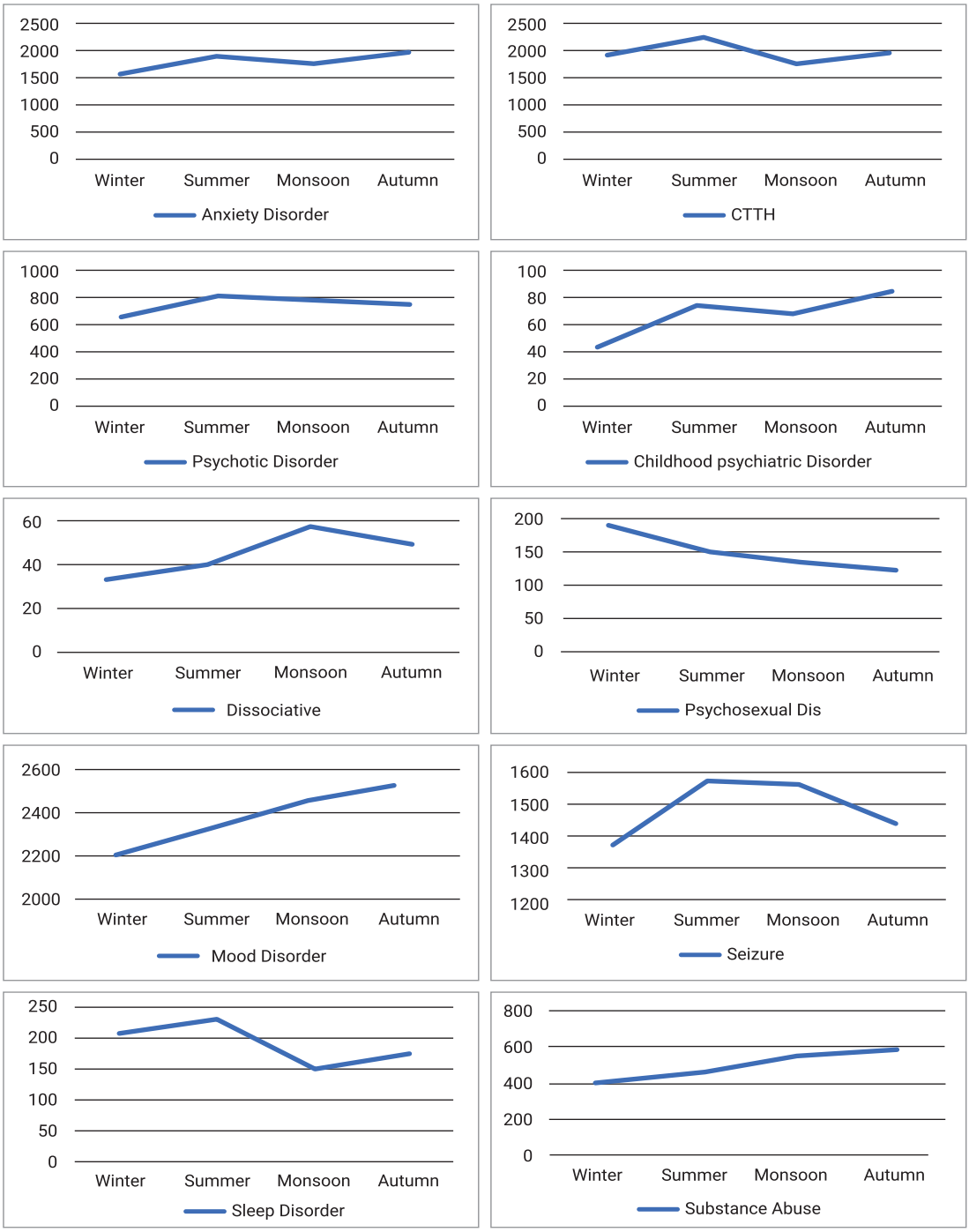

Figure 3: Seasonal trends of different psychiatric illnesses

Table 2: Sex-wise distribution of psychiatric illnesses

Psychiatric Illnesses	Sex		Total
	Female n (%)	Male n (%)	
Anxiety Disorder	3633 (50.3%)	3593 (49.7%)	7226 (100.0%)
Childhood Psychiatric Disorder	69 (25.7%)	200 (74.3%)	269 (100.0%)
Chronic Tension Type Headache	5099 (66.2%)	2609 (33.8%)	7708 (100.0%)
Dissociative	156 (87.2%)	23 (12.8%)	179 (100.0%)
Mood Disorder	4329 (45.6%)	5173 (54.4%)	9502(100.0%)
Psychosexual Disorder	15 (2.5%)	585 (97.5%)	600 (100.0%)
Psychotic Disorder	1350 (44.4%)	1689 (55.6%)	3039 (100.0%)
Seizure	2268 (38.2%)	3676 (61.8%)	5944 (100.0%)
Sleep Disorder	242 (31.8%)	518 (68.2%)	760 (100.0%)
Substance Abuse	43 (2.2%)	1934 (97.8%)	1977 (100.0%)
Others	245 (44.6%)	304 (55.4%)	549 (100.0%)
Total	17449 (46.2%)	20304 (53.8%)	37753 (100.0%)
$\chi 2$=3676.316, df=10, p value=0.000			

Table 2 shows sex-wise distribution of psychiatric illnesses. Anxiety disorder was found approximately equal among both the genders. Chronic tension type headache (66.2%) and dissociative disorder (87.2%) were found more in female patients, while rest all other illnesses are more common in male patients as compare to female. The association of psychiatric illnesses with sex of study subject was found to be statistically highly significant.

Table 3: Age-group-wise distribution of psychiatric illnesses

Psychiatric Illnesses	Age group				Total n (%)
	≤19 years n (%)	20-39 years n (%)	40-59 years n (%)	≥60 years n (%)	
Anxiety disorder	301 (4.2%)	3202 (44.3%)	2652 (36.7%)	1071 (14.8%)	7226 (100.0%)
Childhood Psychiatric Disorder	154 (57.2%)	90 (33.5%)	18 (6.7%)	7 (2.6%)	269 (100.0%)
CTTH	586 (7.6%)	3765 (48.8%)	2525 (32.8%)	832 (10.8%)	7708 (100.0%)
Dissociative	62 (34.6%)	89 (49.7%)	22 (12.3%)	6 (3.4%)	179 (100.0%)
Mood disorder	319 (3.4%)	4056 (42.7%)	3850 (40.5%)	1276 (13.4%)	9501 (100.0%)
Psychosexual disorder	12 (2.0%)	425 (70.8%)	146 (24.3%)	17 (2.8%)	600 (100.0%)
Psychotic disorder	147 (4.8%)	1368 (45.0%)	912 (30.0%)	612 (20.1%)	3039 (100.0%)
Seizure	1732 (29.1%)	2894 (48.7%)	1016 (17.1%)	302 (5.1%)	5944 (100.0%)
Sleep disorder	12 (1.6%)	180 (23.7%)	327 (43.0%)	241 (31.7%)	760 (100.0%)
Substance abuse	38 (1.9%)	1207 (61.0%)	618 (31.2%)	115 (5.8%)	1978 (100.0%)
Others	15 (2.7%)	149 (27.1%)	229 (41.7%)	156 (28.4%)	549 (100.0%)
Total	3378 (8.9%)	17425 (46.2%)	12315 (32.6%)	4635 (12.3%)	37753 (100.0%)
$\chi 2$ =6458.285, df=30, p value=0.000					

Table 3 shows age-group wise distribution of psychiatric illnesses. Maximum illnesses were found among economic productive age group (20-59 years), out of which 20-39 years of age group suffered the most. Dissociative disorder and seizure disorder are more common in patients less than 40 years of age. Among old age patients, sleep disorder (31.7%) was found to be more common followed by psychotic disorder (20.1%) and anxiety (14.8%) as compare to other illnesses. Age group and psychiatric illnesses were found to be statistically highly significant.

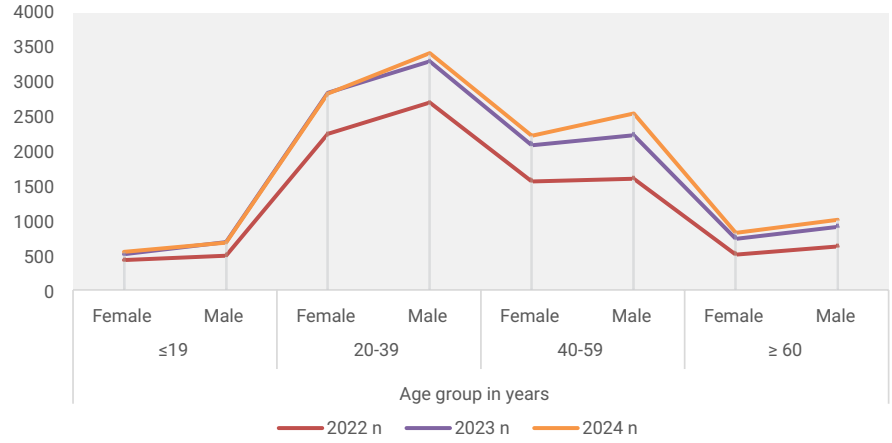

Figure 4: Age/Sexwise time trend of study subjects

Figure 4 shows time trend of psychiatric outpatient service utilization of patients. The number of patients were increased from 2022 to 2024 with more increase during 2023 as compare to 2024. Maximum increase is seen in the age group of 40-59 years male patients during 2024. Minimum increase is noticed in ≤19 years and 20-39 years age group from 2023 to 2024.

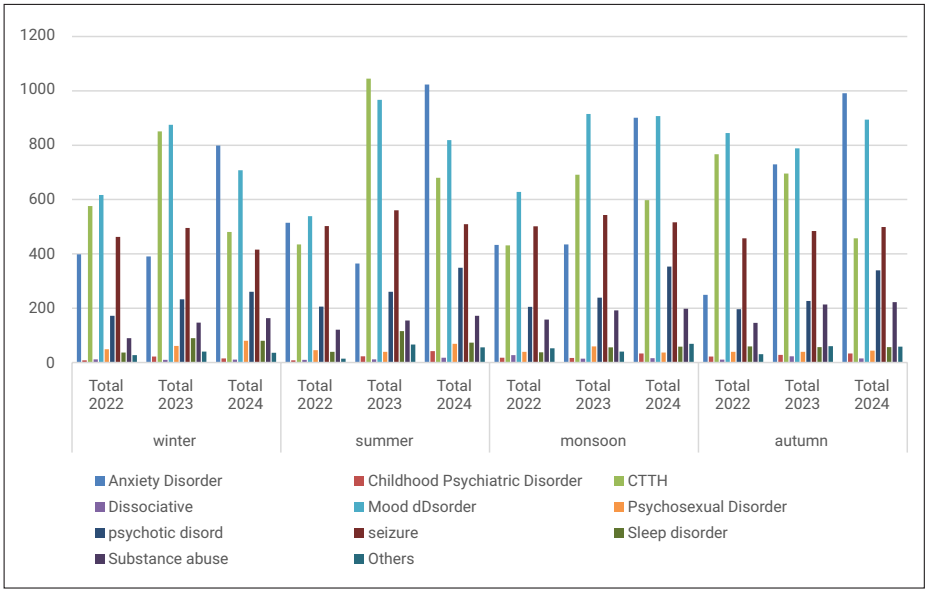

Figure 5: Year wise time trend of psychiatric illnesses

Figure 5 shows time trend of psychiatric illnesses. Anxiety disorder, psychotic disorder, psychosexual disorder, childhood psychiatric disorder and substance abuse are reported maximum numbers during 2024 while seizure disorder, mood disorder sleep disorder and chronic tension type headache were reported during 2023.

Discussion: Present study is one of the very few attempts and perhaps first attempt in this region during last many years to describe the seasonal trend of common psychiatric disorders including mood disorder, anxiety disorder, childhood psychiatric disorder, chronic tension type headache, dissociative disorder, psychosexual disorder, psychotic disorder, seizure disorder, sleep disorder rand substance abuse. Although it is a retrospective record-based study, it is quite reliable because of large data with careful record-keeping and the diagnoses were made in accordance with the ICD-10.

In this study male patient (53.8%) were more as compare to female (46.2%) similar findings were observed by Meena PS et al[3] in their study in which 63.7% male patients visited psychiatry OPD[3]. In the present study maximum number of patients with mood disorder visited during autumn & monsoon (month of August) while lowest during winter months (month of January). Meena PS et al[3], Avasthi A et al[4], Liu J et al[5], Srivastava S et al[6], Rosenthal NE et al[7], Wehr TA et al[8]

observed same finding in their research. In contrast to this Øverland S et al[9], Geoffroy PA et al[10], Partonen T et al[11] found depression peak in winters. Modzelewski S et al[12], explained immune-seasonal theory for peak of depression in winters. Morken G et al[13] observed month wise variations among patient with mania & depression and found a significant monthly variation among male patients with depression and found the highest peak admission being in April.

In the present study, maximum number of patients with anxiety disorder (including somatoform disorder, anxiety, OCD, adjustment disorder and stress) visited during autumn (during September) while lowest during winter months (during January). Singh GP et al[14] observed in their study that maximum number of patients suffered with neurotic stress-related and somatoform disorders during late monsoon and early autumn (July to September). Meena PS et al[3] and De Graf R et al[15] observed maximum case in winters, Zhang H et al[16] observed least cases of anxiety in summer season, while Lepine JP et al[17] observed maximum cases in summers.

In our study patient with psychotic disorders (including schizophrenia, psychosis and ATPD) had maximum complaint in summer & monsoon (during August) and minimum in winter season (during January). Similar findings were observed by Meena et al[3] and Hinterbuchinger B et al[18]. Modzelewski S et al[12] found same finding and explained this by immune-seasonal theory in their study. In a systematic review, Rizavasv I et al[19] demonstrated that exacerbations of major psychiatric disorders, including schizophrenia were significantly more frequent in the spring and summer. Davies G et al[20] & Owens N[21] in their studies from southern hemisphere and Gu S et al[22] from northern hemisphere consistently observed an association of more admission of schizophrenic patients with winter months. An Iranian study conducted by Tapak L et al[23] observed a positive relation between schizophrenia and foggy, rainy days with decreased sunlight. A Chinese study done by Yao Y et al[24] observed maximum number of cases of schizophrenia during winters and lowest during spring.

In the present study patient with substance abuse disorder, visited maximum during autumn (in September) and minimum during winter months (in February). Among substance abuse, addiction of opioid was found maximum (51.3%), followed by alcohol addiction (43.7%), Benzodiazepine drug abuse (4.3%), multidrug abuse (0.4%) and cannabis addiction (0.3%). In contrary to this Meena PS et al[3] observed maximum cases of substance abuse in winters with maximum use of Alcohol (54.8%) followed by Opioid (40.3%). Zhang H et al[16] also observed that maximum number of patients took treatment for substance abuse in winters and the lowest in summer. A study by Uitenbroek DG[25] from Scotland identified in their study a peak of alcohol intake in December, which contradicts with the observations of the present study.

The observed differences from different studies may be due to involvement of different geographic areas.

Limitations: Being a retrospective data-based study researchers had to trust on pre-existing data and as it is a single hospital-based study, the findings may not be generalizable to other regions or settings.

Conclusion: Our study showed a statistically significant relationship between seasonal variation and psychiatric illnesses. Maximum number of patients suffered from mood disorders followed by chronic tension type headache and anxiety disorders. The study reports a clear seasonal pattern in all the psychiatric illnesses reviewed. This variability could increase predictability in these conditions These findings may help timely and effective interventions and management strategies in this study area having extreme climate both in summers and winters.

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