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Original Article

Profile of Internet Addiction, Anxiety, and Depression in Patients of Mixed Anxiety and Depressive Disorders

Rishab Verma, Darpan Kaur, Rakesh Ghildiyal

Department of Psychiatry, Mahatma Gandhi Missions Medical College and Hospital, Navi Mumbai, Maharashtra, India

Abstract

Background: The Internet plays a very valuable role in knowledge, learning, and skills enhancement. There is scarce literature regarding the profile of internet addiction (IA) in patients of mixed anxiety and depressive disorders among developing countries. **Aims:** The aim of this study was to assess the profile of IA, anxiety, and depression in patients of mixed anxiety and depressive disorders. **Methodology:** This study was conducted at the Department of Psychiatry, MGM Medical College and Hospital, Navi Mumbai, India. Inclusion criteria comprised adult patients who were diagnosed with ICD 10 diagnostic criteria for mixed anxiety and depressive disorder, having access to the internet, and willing to participate in the study. Patients not having access to the internet and not willing to participate were excluded from the study. The patients were assessed using the IA test (IAT), Hamilton Depression Rating Scale (HAM-D), and Hamilton Anxiety Rating Scale (HAM-A). Informed consent and Institutional Ethics Committee Clearance was obtained. Data were analyzed biostatistically. **Results:** Our sample size of n = 60 comprised 60% (n = 36) males and 40% (n = 24) females. The mean age of the sample was 32.6 years. Majority of patients came from the semi-urban area. The mean HAM-D score of the sample was 18.96 and the mean score HAM-A score was 20.2. The mean score of IAT was 34.7. **Conclusions:** We conclude that the IA is prevalent in patients with mixed anxiety and depressive disorders and clinical rating scales can provide additional symptom profiles for anxiety and depression.

Keywords: *Anxiety, depression, internet addiction, mixed anxiety depressive disorder, profile*

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Introduction

Background literature highlights that there has been a tremendous increase in internet usage since the last decade globally. As per the World Bank (2017) report, around 49% of the world population and 34.45% of the Indian population is using the internet.[1] Problematic internet use or excessive internet use is characterized by excessive or poorly controlled preoccupations, urges, internet access that leads to impairment or distress. High comorbidity of internet addiction (IA) was found across many cross-sectional studies on samples of patients with psychiatric disorders such as affective disorders (including depression), anxiety disorders (generalized anxiety disorder [GAD], social anxiety disorder), and attention-deficit/hyperactivity disorder (ADHD).[2] There is an association of severe IA with depression and low self-esteem[3] Relationship between anxiety, depression, and IA has been reported in the literature. However, there is sparse literature on clinical samples of patients of anxiety and mood disorders and the developmental trajectory courses of IA as well as the individual differences over time.[4] Recognizing patients with potential IA is pertinent and it can frequently co-exist together with other mental

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Address for correspondence: Dr. Darpan Kaur, Associate Professor, Department of Psychiatry, Mahatma Gandhi Missions Medical College and Hospital, Sector 01, Kamothe. Navi Mumbai 410209. Maharashtra, India.
E-mail: kaur.darpan@gmail.com

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issues and interventions ought to incorporate IA as well as related psychosocial stressors, for example, stress, insomnia, anxiety, depression, or both.[5]

Mixed anxiety and depressive disorders are clinically diagnosed when symptoms of both anxiety and depression are present, but neither set of symptoms, considered separately, is sufficiently severe to justify a separate diagnosis.[6]

It is not clear, however, why anxiety and depressive symptoms coexist at a subthreshold level. For lack of specific criteria, it is recommended that researchers set their own criteria to understand the different aspects of this particular disorder.[7] There is sparse literature on the profile of anxiety, depression, and IA in patients of mixed anxiety depressive disorders. Hence, the need for our study.

Aims and objectives

The aim of the study was to assess the profile of IA, anxiety, and depression in patients of mixed anxiety depressive disorders. The objectives were (i) to assess the profile of IA pattern using IA test (IAT) (ii) To assess the profile of depressive symptoms using Hamilton Depression Rating Scale (HAM-D) (iii) To assess the profile of anxiety symptoms using Hamilton Anxiety Rating Scale (HAM-A) (iv) To assess demographic factors.

Methodology

This was a cross-sectional study conducted at the Department of Psychiatry, Mahatma Gandhi Missions Medical College and Hospital, Navi Mumbai. The study population included patients attending the psychiatry outpatient department who were diagnosed with mixed anxiety and depressive disorder as per ICD-10 criteria by the treating psychiatrist. The ICD-10 criteria defined mixed anxiety depressive disorder as co-occurring, subsyndromal symptoms of anxiety and depression, severe enough to justify a psychiatric diagnosis, but neither of which are clearly predominant. A calculated sample size was initially thought of with adequate power at the time of the beginning of the study, however a retrospective recce of the outpatient records of the psychiatry department and careful screening we noticed that ICD-10 diagnosis of mixed anxiety and depressive disorders was diagnosed in a very smaller number of patients. A convenience sample of 60 patients satisfying the inclusion criteria were selected for the study. The following patients were included (a) Adult patients diagnosed with mixed anxiety and depressive disorder (F41.2) on the basis of the ICD-10 classification. (b) Patients having access to the internet. (c) Patient who could read and understand the English language. The following patients were excluded (a) Patients who were severely symptomatic rendering them uncooperative for assessment (b) Patients not willing to participate. A predesigned data collection was administered for demographic and clinical factors. IAT, HAM-A, and HAM-D were administered to the patients willing to participate in the study. The data were collected on the same day of the index presentation of the patient. The data collected were tabulated in Excel Sheet and analyzed for descriptive analysis. The HAM-D is a multiple item questionnaire used to provide an indication of depression, and as a guide to evaluate recovery. Scoring is based on the 17-item scale and scores of 0–7 are considered as being normal, 8–16 suggest mild depression, 17–23 moderate depression, and scores over 24 are indicative of severe depression[8] The HAM-A is 14 item questionnaire used by clinicians to rate the severity of a patient's anxiety Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 m moderate severity and 25–30 severe.[9] The IAT is a validated and reliable measure of addictive use of the Internet. The Youngs's IAT is a 20-item questionnaire that measures mild, moderate, and severe levels of IA.[10] We have not attempted any language translations or validation of the above-mentioned scales in our study as our population comprised of patients who could understand English and the investigator administered the tool to the patient in English itself. The primary investigator clinically interviewed stable patients of mixed anxiety and depressive disorders with these three scales which are reliable and valid instruments. The study was approved by the Institutional Ethics Committee of MGM Medical College, Navi Mumbai, letter number N-EC2019/04/64, dated 30/04/2019].

Informed consent was obtained for the study. Data were collected, tabulated, and summarized using descriptive statistics.

Results

The study sample (n = 60) comprised of 60% (n = 36) males and 40% (n = 24) females [Figure 1]. The mean age of the sample was 32.6 years with the minimum age being 19 years and maximum age being 53 years in our study.

We found that 57% (n = 34) of the sample were from semi-urban areas, 27% (n = 16) urban areas and 16% (n = 10) from rural areas [Figure 2]. The educational profile of the sample comprised secondary school certified (SSC) passed (13.3%), higher SSC passed (66.7%), and graduates (20%).[Table 1]

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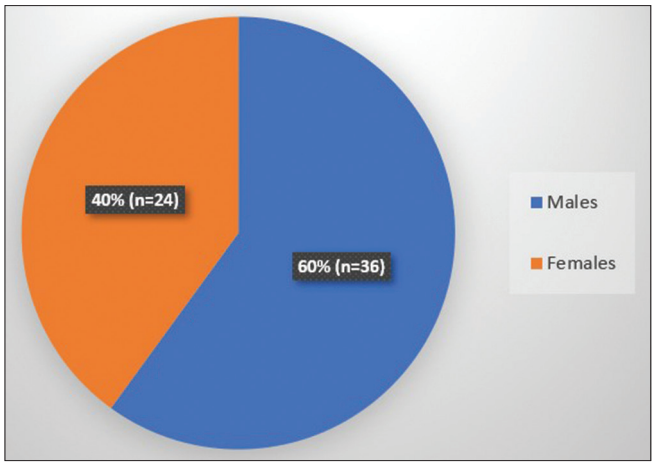


Figure 1: Sex ratio of the sample

Table 1: Education status of the sample

	Frequency (%)
Illiterate	0 (0)
Primary	8 (13.3)
Higher Secondary	40 (66.7)
Graduation	12 (20)
Total	60 (100)

Forty-three percent (n = 26) of the people were employed, whereas 30% (n = 18) were students and 27% (n = 16) were housewives.

The HAM-A, the HAM-D, and the IAT was administered to the entire sample of 60 patients. The analysis of the HAM-A revealed that 33.3% (n = 20) cases were having mild anxiety, 50% (n = 30) had moderate anxiety and 16.7% (n = 10) had severe anxiety score [Figure 3]. We found that the mean HAM-A score was 20.2. This indicates that the mean anxiety level of the entire sample was moderate levels of anxiety. It was found that palpitations were the most common symptom (74%) in the entire sample on item wise analysis of the HAM-A.

The analysis of the HAM-D revealed that 46.7% (n = 28) cases had mild depression, 30% (n = 18) had moderate depression and 23.3% (n = 14) had severe depression score [Figure 4]. We found that the mean HAM-D score was 18.96. This indicates that the mean depressive symptoms level was moderate levels of depression in the entire sample. We further found that low mood was the most common symptom (68%) in the item-wise analysis of the HAM-D.

The analysis of the IAT revealed that majority of the cases 43.33% (n = 26) were found out to be having mild levels of IA [Figure 5]. We further found that 30% (n = 18) were having moderate levels of IA. It was found that only 3.33% (n = 2) were found to have severe levels of IA symptoms. We also observed that

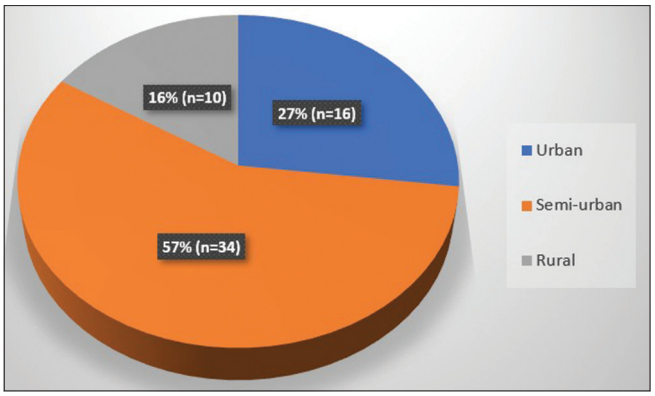


Figure 2: Resident profile of the sample

23.34% (n = 14) were having no IA symptoms as per the cutoffs of the IAT scale. The mean IAT score of the sample was found out to be 34.7. Hence, the mean of the entire sample for levels of IA was mild level.

Discussion

IA has emerged as an important problem and the prevalence of IA varies from country to country.[11] We found that the IAT profile revealed 43.33% had mild IA, 30% had moderate IA and only 3.33% had severe IA. The mean IAT score of our study was found out to be 34.7. Younes *et al*. found that the average Young's IAT (YIAT) score was 30 ± 18.474; Potential IA prevalence rate was 16.8 and it was significantly different between males and females (P = 0.003), with a higher prevalence in males (23.6% vs. 13.9%). They also found significant correlations between potential IA and insomnia, stress, anxiety, depression, and self-esteem (P < 0.001).[5] We found that majority of our patients were from semi-urban areas (57%) and males comprised the majority (60%) However, Saikia *et al*. conducted a study on IA in urban adolescents and found that the majority (73.1%) of the respondents were females, and mean age was 17.21 years. The prevalence of IA was 80.7%. The main purpose of using the internet was social networking (71.4%), followed by study (42.1%), and majority (42.1%) reported spending 3–6 h a day on internet.[12] Kitazawa *et al*. found that the mean IAT score (±standard deviation) was 37.87 ± 12.59, and 38.2% of participants were classified as problematic internet use and 61.8% as non-problematic internet use. They further found on multiple logistic regression analyses the factors that contributed to an increased risk of problematic internet use were: being female (odds ratio [OR] = 1.52), being older (OR = 1.17), having poor sleep quality (OR = 1.52), having ADHD tendencies (OR = 2.70), having depression (OR = 2.24), and having anxiety tendencies (OR = 1.43).[13] Enagandula *et al*. found that the prevalence of IA among

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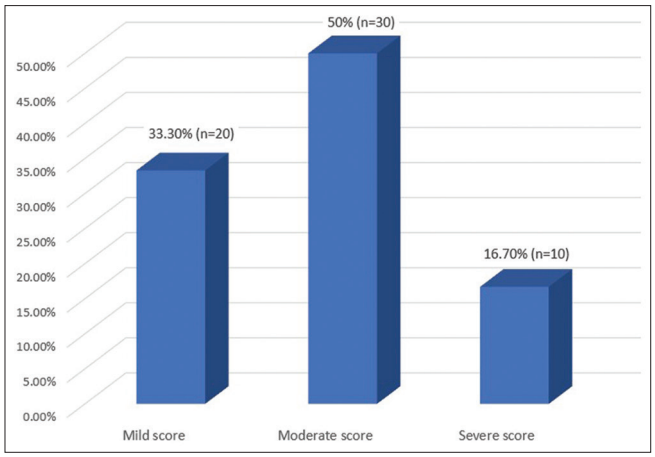


Figure 3: Profile of Hamilton Anxiety Rating Scale scores of the sample

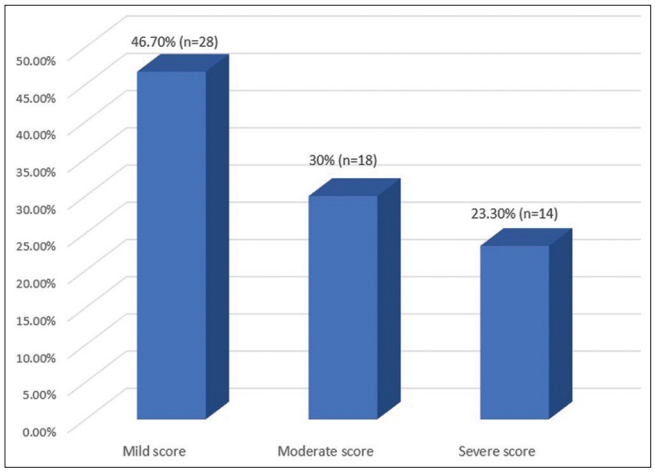


Figure 4: Profile of Hamilton Depression Rating Scale scores of the sample

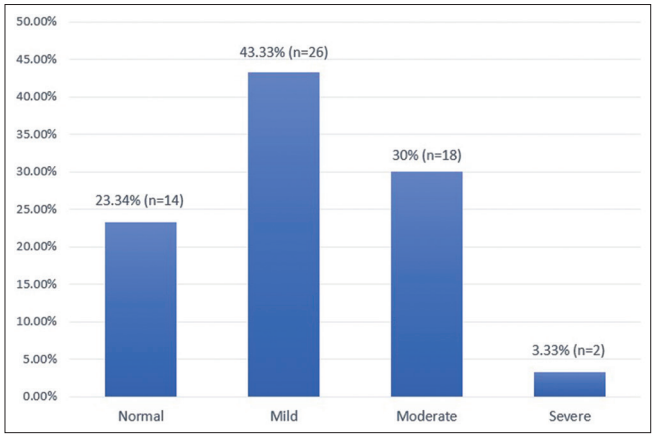


Figure 5: Profile of internet addiction test scores of the sample

ADHD children was 56%. They further found that this was statistically significant ($P < 0.05$) in comparison with normal children where only 12% had IA.[14] Petersen *et al*. found that the prevalence rates of IA worldwide ranged from 1.5% to 8.2%.[15] Durkee *et al*. found that the overall prevalence rate of IA among high school students across 11 European countries was 4.4%.[16] Muller *et al*. report that IA has become a growing health problem worldwide with prevalence rates up to 3%.[17] Chi *et al*. found that the prevalence rates of IA and depression among adolescents were about 20.44% and 28.16%, respectively.[18]

Tenzin *et al*. found that depression and anxiety were highly comorbid with IA. They also found that boredom, stress, anxiety, and peer pressure were triggers of internet use and IA affected academic performance, social interactions, and sleep.[19] Teenagers with depression have higher risks of developing IA, and such addiction is likely to affect their daily functioning.[20] Soulioti *et al*. explored the relationship between psychopathology and IA and found that anxiety symptomatology was moderately correlated with the overall score at IAT and it was found to predict in regression analysis the IA. However, they did not find any statistically significant association between IA and depressive symptomatology.[21] Depressive symptoms and anxiety symptoms mediate the association between peer victimization and IA.[22] Te Wildt recommends that in the diagnosis and treatment of IA, comorbid disorders such as depression, anxiety disorders, ADHD, and substance-related dependencies should be taken into consideration for appropriate clinical management.[23] Sevelko *et al*. found that self-esteem was associated with IA even after adjustment for substance use disorders, mood disorder, and eating disorder. They recommend that self-esteem and psychopathology should be considered in prevention, intervention measures, as well as in the conception of etiological models.[24]

We found that the HAM-D score in our patients in mixed anxiety and depressive disorder showed that 23.3% had severe depression score. The analysis of the HAM-A scale revealed that 16.7% had severe anxiety score. Mixed anxiety and depressive disorder can be defined by the presence of mixed symptoms of depression and anxiety that are below the diagnostic threshold for either one of these diagnoses. Symptoms of depression and anxiety often accompany each other.[25] Anxiety and depression diagnoses tend to co-occur and their symptoms are highly correlated.[26] Anxiety with depression predicts poor outcomes with a higher percentage of treatment resistance than either disorder occurring alone. They highlight that the overlap of anxiety and depression complicates diagnosis and renders treatment challenging.[27] Rumination also predicted anxiety symptoms and may be particularly characteristic of people with mixed anxiety/depressive symptoms.[28] We found palpitations and low mood as the most common symptoms. Małyszczak *et al*.

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found the most frequent symptoms of mixed anxiety and depressive disorder are symptoms of GAD and depression. A pattern of mixed anxiety and depressive disorder symptoms locates this disorder between depression and generalized anxiety disorder.[7]

Certain authors have critically evaluated the concepts of mixed anxiety disorder and IA. Mixed anxiety and depressive disorder appear to be very common, particularly in primary care, although prevalence estimates vary, often depending on the diagnostic criteria applied. The validity and clinical usefulness of mixed anxiety and depressive disorder as a diagnostic category are under debate.[29] Mixed anxiety and depressive disorder differ significantly from GAD only in higher rates of depressed mood and lower rates of somatic anxiety symptoms. Distress and interference with personal functions in mixed anxiety and depressive disorder are similar to that of other anxiety disorders.[7] Chang and Hung report that the internet is used by addicts as a means of avoiding and dealing with underlying psychological problems.[30] Kuss *et al.* comment that IA is associated with a number of sociodemographic, psychosocial factors, as well as comorbid symptoms and disorder in adolescents and adults.[31] Mihajlov M states that the term "addiction" has received criticism by peer scientists as a result of which many terms have come into use such as Internet dependency, pathological internet use, problematic internet use, compulsive computer. Certain researchers highlight that the internet is a medium to fuel their specific addictions.[32] Hamza *et al*. states in their research of internet use pattern, results indicate no significant difference in terms of internet use pattern and gender in relation to urban and rural areas. However, a significant difference exists with respect to Internet use and its relation to depression, anxiety, or both.[33]

Conclusions

We conclude the profile on IA in our study was severe IA score (3.33%), mild IA score (43.33%), moderate IA score (30%), and no IA (23.34%). The profile of anxiety was mild anxiety score (33.3%), moderate anxiety score (50%), and severe anxiety score (16.7%). The profile of depression showed that mild depression score (46.7%), moderate depression score (30%), and severe depression score (23.3%).

The strengths of the study were clinical sample and use of validated scales. The limitations being the small sample size and associations or correlations were hence not explored. A calculated sample size was initially thought of with adequate power at the time of the beginning of the study, however a retrospective recce of the outpatient records of the psychiatry department and careful screening we noticed that the ICD-10 diagnosis of mixed anxiety and depressive disorders was diagnosed in a very small number of patients. We had collected basic data such as the duration on daily basis, preferred device, profile of internet use, and preferred browsing sites. However, we have not studied this aspect of internet usage in great detail as the objective of our study was to study the prevalence of anxiety depression IAT using scales such as HAM-A, HAM-D, and IAT Another important limitation being that the concepts of mixed anxiety and depressive disorders and IA are critically debated by many researchers, hence the findings of our study should be interpreted accordingly. Our study setting comprised predominantly urban profile, hence it is relevant as per our study settings. We recommend that further studies may assess IA in clinical hospital samples with better methodology and plan interventions accordingly for patients with anxiety, depression, and IA. The clinical implications of our study being that patients with mixed anxiety depressive disorders must be clinically screened for problematic internet use and appropriate interventions to be planned. Future studies may explore for comorbidities as well as associations focusing on IA in rural communities.

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Conflicts of interest

There are no conflicts of interest.

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