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FREQUENCY OF MOOD DISORDERS IN PATIENTS ATTEMPTING SUICIDE WHO ARE REFERRED TO THE PSYCHIATRY WARD IN A TERTIARY CARE HOSPITAL OF KARACHI: A CROSS-SECTIONAL STUDIES

Original Research

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ABSTRACT

Background: Suicide remains a major cause of preventable mortality worldwide, with more than 700,000 deaths recorded annually. Low- and middle-income countries carry the largest burden, yet local data remain limited due to under-reporting and stigma. Pakistan faces a growing concern with suicide attempts, but hospital-based evidence is scarce. Identifying psychiatric morbidity—especially mood disorders—among attempters can guide early detection, treatment allocation, and prevention strategies in tertiary-care settings.

Objective: To estimate the frequency of mood disorders among adults referred to the psychiatry ward following a suicide attempt at a tertiary-care hospital in Karachi and to describe their sociodemographic and clinical characteristics.

Methods: A descriptive cross-sectional study was conducted over six months in the Department of Psychiatry and Behavioral Sciences, Jinnah Postgraduate Medical Centre (JPMC), Karachi. Consecutive adult patients (≥18 years) referred after a medically stabilized suicide attempt were included (n = 385). Data collection involved a structured questionnaire for sociodemographics and clinical history, alongside validated tools: the Patient Health Questionnaire-9 (PHQ-9) and the Young Mania Rating Scale (YMRS). Diagnoses of depressive disorder and bipolar affective disorder were confirmed by consultant psychiatrists using DSM-5 criteria. Data were analyzed in SPSS v26. Continuous variables were expressed as mean ± standard deviation (SD) and categorical variables as frequencies and percentages. Associations between mood-disorder category and past suicide-attempt history were assessed using chi-square tests.

Results: The mean age of participants was 33.16 ± 13.35 years and mean BMI was 24.52 ± 4.37 kg/m². Most participants were married (194, 50.4%) and the majority were referred from the Emergency Department (285, 74.0%). Poisoning was the predominant method of attempt (213, 55.3%), followed by overdose (71, 18.4%) and hanging (35, 9.1%). A past suicide attempt was reported by 108 (28.1%). Current psychiatric diagnosis revealed depressive disorder in 223 (58.0%), bipolar affective disorder in 56 (15.0%), and no mood disorder in 106 (28.0%). PHQ-9 scores averaged 17.65 ± 6.23, falling in the moderately severe range, while YMRS scores averaged 21.85 ± 7.40. No significant association was observed between mood-disorder category and past attempt history (χ^2 p = 0.474).

Conclusion: The study demonstrated that mood disorders, particularly depression, were highly prevalent among adult suicide attempters in a tertiary hospital in Karachi. The high severity of symptoms and predominance of poisoning as a method underscore the urgent need for routine PHQ-9/YMRS screening, structured safety planning, and integrated emergency–psychiatry care pathways. Strengthening hospital-based psychiatric services and follow-up systems is crucial to improve outcomes and reduce recurrence risk in this vulnerable population.

Keywords: Bipolar Disorder; Cross-Sectional Studies; Depression; Mood Disorders; Pakistan; Suicide, Attempted; Tertiary Healthcare.

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INTRODUCTION

Suicide is a leading and preventable cause of premature mortality worldwide. In 2019, an estimated 703,000 people lost their lives to suicide, translating into a global age-standardized rate of 9.0 per 100,000 population (1,2). The burden is disproportionately borne by low- and middle-income countries, where under-reporting and stigma contribute to gaps in reliable estimates. In Pakistan, surveillance remains limited, but national reviews and commentaries highlight growing concern and the urgent need for robust, locally relevant data to inform prevention strategies (3,4). The first psychological autopsy case–control study conducted in Karachi underscored the role of psychiatric morbidity and social determinants in suicide deaths, while emphasizing the importance of systematically identifying modifiable clinical risks in health-care settings (5). Among these clinical risks, mood disorders—primarily major depressive disorder and bipolar affective disorder—are consistently identified as some of the strongest correlates of suicidal behavior. Meta-analytic data reveal that approximately one-third of individuals with bipolar disorder attempt suicide at least once in their lifetime (33.9%, 95% CI 31.3–36.6), a prevalence comparable to that in major depressive disorder and markedly higher than general population baselines (6). Psychiatric comorbidity is almost ubiquitous among suicide attempters, with depressive and anxiety disorders being especially overrepresented in both community- and hospital-based studies (7). Limited evidence from South Asia mirrors these trends, with mood disorders emerging as the most frequent psychiatric diagnoses among individuals presenting to emergency departments following suicide attempts (4).

The consequences of a suicide attempt extend beyond the acute event, carrying significant risks of recurrence and mortality. Around 16–20% of individuals who attempt suicide will re-attempt within one year, while hospital-based self-harm cohorts report suicide mortality rates of 1.6% at one year and nearly 4% at five years. In fact, one in every 25 patients who present to hospital services following self-harm ultimately die by suicide within five years (8–10). These sobering statistics underscore the importance of acute care and timely psychiatric referral as critical opportunities for intervention. Ward-level epidemiology, particularly in tertiary hospitals, can inform triage decisions, guide psychiatric service provision, and support development of targeted treatment pathways. Yet, in Pakistan, the scarcity of structured screening approaches—such as the use of PHQ-9 or YMRS in general hospitals—continues to impede systematic assessment of psychiatric profiles among attempters (11,12). The psychiatry ward of a tertiary-care hospital in Karachi provides an opportune setting to address this evidence gap, as it receives referrals of stabilized suicide attempters from emergency and other departments. Establishing the frequency of mood disorders in this context is not merely descriptive; it forms the foundation for service planning, including the allocation of antidepressant and mood-stabilizer supplies, psychotherapy capacity, and structured follow-up strategies. Furthermore, such data facilitate benchmarking against regional and international trends, while enabling subsequent analysis of predictors and outcomes such as delirium, ICU transfer, and length of stay, which are central to hospital quality improvement. The present study therefore aims to estimate the frequency of mood disorders—specifically major depressive disorder and bipolar affective disorder—among adult patients referred to the psychiatry ward following a suicide attempt at a tertiary-care hospital in Karachi, Pakistan, thereby providing critical context for service development and future outcome-focused research.

METHODS

The study employed a descriptive cross-sectional design and was carried out in the Department of Psychiatry and Behavioral Sciences at Jinnah Postgraduate Medical Centre (JPMC), Karachi, over a period of six months following protocol approval. The study population comprised consecutive adult patients aged 18 years and above who were referred to the psychiatry ward after a medically stabilized suicide attempt from either the emergency department or other hospital wards. Eligibility screening was conducted for all referrals. Written informed consent was obtained from each participant, and in cases where capacity to consent was impaired, consent was secured from a legal guardian or next of kin in line with ethical protocols. Patients younger than 18 years, those with non-suicidal self-injury without intent to die on psychiatric evaluation, individuals with medical instability that precluded psychiatric assessment, and those with severe cognitive impairment without an available surrogate were excluded. Patients with moderate to profound intellectual disability were also not included. The sample size was determined to be 385 using the World Health Organization single-proportion formula, with parameters set at a 95% confidence interval ($Z = 1.96$) and a 5% margin of error. Data collection was conducted using a structured questionnaire that covered socio-demographic details (including age, marital status, education, religion, family structure, and income),

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clinical history (such as prior psychiatric illness, substance use, and history of previous suicide attempts), referral source, and the method of the index suicide attempt (e.g., poisoning, hanging, burning, overdose, or self-inflicted injury such as cutting, jumping, or drowning).

Standardized instruments were applied for symptom assessment. The Patient Health Questionnaire-9 (PHQ-9) was used to quantify depressive symptom severity, with each item scored on a scale of 0–3, producing a total score ranging from 0 to 27, which was categorized according to established severity bands. The Young Mania Rating Scale (YMRS) was used to evaluate manic symptoms, consisting of 11 items, four scored on a 0–4 scale and seven scored on a 0/2/4/6/8 scale. Diagnostic confirmation of major depressive disorder and bipolar affective disorder was carried out by a consultant psychiatrist using DSM-5 criteria. Additionally, the presence of delirium, when applicable, was documented from the medical record. Data management was performed with strict quality checks, including double data entry to minimize error. Continuous variables such as age and body mass index (BMI) were assessed for normality using the Shapiro–Wilk test and evaluated for outliers. Normally distributed data were presented as mean ± standard deviation (SD), while non-normally distributed data were summarized as median with interquartile range (IQR). Categorical variables were expressed as frequencies and percentages. Group comparisons between clinical and demographic characteristics were undertaken using chi-square or Fisher's exact test for categorical variables, and independent t-tests or non-parametric equivalents (e.g., Mann–Whitney U test) for continuous variables, depending on distribution. All statistical analyses were performed using SPSS version 26. Ethical approval was secured from the College of Physicians and Surgeons Pakistan Research Evaluation Unit (CPSP-REU) and the Institutional Review Board of JPMC. The study adhered to the principles of the Declaration of Helsinki, and confidentiality of all participant data was maintained throughout.

RESULTS

The study included 385 adult participants with a mean age of 33.16 ± 13.35 years and mean BMI of 24.52 ± 4.37 kg/m². The majority were married (50.4%), while 37.4% were single, and smaller proportions were widowed (6.0%), divorced (4.2%), or separated (2.1%). Educational levels varied, with 29.4% reporting high school or below, 23.1% intermediate or college, 20.0% bachelor or graduate, 20.0% uneducated, and 9.0% postgraduate or master's degree holders. Islam was the predominant religion (96.0%), followed by Hinduism (2.0%), Christianity (1.0%), atheism (0.5%), and other faiths (0.3%). Family structures were mainly nuclear (45.0%) and joint (27.0%), with fewer reporting extended (14.0%), living alone (7.0%), single-parent (4.0%), or step-family arrangements (3.0%). Most households had a monthly income of PKR 10,000–50,000 (37.0%) or 50,000–100,000 (28.0%), while 16.0% earned 100,000–250,000, 10.0% earned 1,000–10,000, and 9.0% reported incomes above 250,000. Clinically, 51.0% reported no past psychiatric illness, while depressive disorder accounted for 30.0%, bipolar affective disorder 14.0%, schizophrenia/psychosis 4.0%, personality disorder 8.0%, adjustment disorder 4.0%, and other diagnoses 3.0%. Substance use was absent in 62.0% of participants; however, 12.0% used tobacco, 8.0% alcohol, 6.0% cannabis, 6.0% opioids, 6.0% methamphetamines/ATS, and 7.0% benzodiazepines. Most referrals were from the emergency department (74.0%), followed by NPCC (12.0%), other medical and allied departments (9.0%), and surgical and allied departments (6.0%). The most common method of suicide attempt was poisoning (55.3%), followed by overdose (18.4%), hanging (9.1%), cutting (8.0%), jumping (4.0%), burning (3.0%), and drowning (2.0%). A past history of suicide attempt was present in 28.1% of participants.

On the PHQ-9, mean item scores ranged from 1.83 ± 1.14 for energy to 2.01 ± 1.06 for psychomotor changes, with suicidal thoughts reported at 1.97 ± 0.84. The total PHQ-9 score averaged 17.65 ± 6.23. Severity distribution indicated 21.0% severe, 20.3% moderately severe, 19.7% mild, and 9.9% minimal depression. YMRS scores ranged from 1.05 ± 0.92 for sexual interest to 2.88 ± 1.90 for irritability, with a total mean score of 21.85 ± 7.40. Regarding current mood disorder status, 58.0% were diagnosed with depressive disorder, 15.0% with bipolar affective disorder, and 28.0% had no mood disorder. Stratification by past suicide attempt history showed that among repeat attempters, 62.0% had depressive disorder, 14.8% bipolar disorder, and 23.1% no mood disorder, while among first-time attempters, 56.3% had depressive disorder, 14.4% bipolar disorder, and 29.2% no mood disorder. No statistically significant association was observed between past attempt history and current mood disorder status (χ^2 $p = 0.474$). When mood disorder diagnoses were analyzed across key socio-demographic and clinical subgroups, important variations were observed. By gender, depressive disorder was more frequently identified among females (62.4%) compared to males (54.0%), whereas bipolar disorder was slightly more common among males (16.2% vs. 13.1%). With respect to education, depressive disorder was highest among uneducated participants (64.0%) and those with high school education or below (61.9%), while the lowest prevalence was seen in postgraduate or master's educated individuals (48.5%). Income stratification showed that depressive disorder was most frequent in participants earning PKR 1,000–10,000 (66.7%), with a gradual decline in higher income groups; conversely, the proportion without any mood disorder was greater in the highest income

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bracket (>250,000 PKR, 39.4%). Referral source analysis demonstrated that depressive disorder was most prevalent among emergency referrals (59.3%), while bipolar disorder was more frequent in NPCC referrals (19.6%) compared to other departments. These patterns highlight the influence of gender, socioeconomic status, education, and referral pathway on the diagnostic profile of suicide attempters, underscoring the need for targeted service planning in high-burden groups.

Table 1: Lifestyle variables of the participants

Variables		Mean and Frequency
Age (years)		33.16±13.35
BMI (kg/m2)		24.52±4.37
Marital status	Married	194(50.4%)
	Single	144 (37.4%)
	Widowed	23 (6%)
	Divorced	16 (4.2%)
	Separated	8 (2.1%)
Education	High school or below	113 (29.4%)
	Intermediate/College	89 (23.1%)
	Bachelor/Graduate	75 (20%)
	Uneducated	75 (20%)
	Postgraduate/Masters	33 (9%)
Religion	Islam	371 (96%)
	Hinduism	7 (2%)
	Christianity	4 (1%)
	Atheism	2 (0.5%)
	Other	1 (0.3%)
Family structure	Nuclear	174 (45%)
	Joint	103 (27%)
	Extended	55 (14%)
	Living alone	28 (7%)
	Single parent	15 (4%)
	Step	10 (3%)
Monthly income (PKR)	10,000–50,000	143 (37%)
	50,000–100,000	108 (28%)
	100,000–250,000	62 (16%)
	1,000–10,000	39 (10%)
	>250,000	33 (9%)

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Table 2: Clinical variables

Variables		Mean and Frequency
Past psychiatric illness	None	196 (51%)
	Depressive Disorder	114 (30%)
	Bipolar Affective Disorder	52 (14%)
	Schizophrenia/Psychosis	16 (4%)
	Personality Disorder	32 (8%)
	Adjustment Disorder	17 (4%)
	Other	11 (3%)
Substance use	None	240 (62%)
	Tobacco	46 (12%)
	Alcohol	29 (8%)
	Cannabis	21 (6%)
	Opioids	23 (6%)
	Meth/ATS	23 (6%)
	Benzodiazepines	26 (7%)
Referral mode	Emergency Department	285 (74%)
	NPCC	46 (12%)
	Other Medical & Allied	33 (9%)
	Surgical & Allied	21 (6%)
Mode of suicide attempt	Poisoning	213(55.3%)
	Overdose	71 (18.4%)
	Hanging	35 (9.1%)
	Cutting	32 (8%)
	Jumping	17 (4%)
	Burning	11 (3%)
	Drowning	6 (2%)
Past history of suicide attempt		108 (28.1%)

Table 3: PHQ1 survey results

Domains	Mean± S.D
PHQ1-Little interest	1.95±1.08
PHQ2-Down depressed	1.94±1.09
PHQ3-Sleep	1.92±1.13
PHQ4-Energy	1.83±1.14
PHQ5-Appetite	2±1.08

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Domains	**Mean± S.D**
PHQ6-Selfworth	1.99±1.07
PHQ7-Concentration	1.96±1.09
PHQ8-Motor	2.01±1.06
PHQ9-Suicidal thoughts	1.97±0.84
PHQ9 total	17.65±6.23

Table 4: YMRS6 Survey results

Domain	**Mean± S. D**
YMRS1-Elevated mood	1.31±1
YMRS2-Motor activity	1.37±1.02
YMRS3-Sexual interest	1.05±0.92
YMRS4-Sleep	1.56±1.03
YMRS5-Irritability	2.88±1.9
YMRS6-Speech	2.84±2.01
YMRS7-Thought disorder	2.57±1.84
YMRS8-Content	2.39±1.88
YMRS9-Disruptive behavior	2.11±1.87
YMRS10-Appearance	1.68±1.57
YMRS11-Insight	2.08±1.77
YMRS-total	21.85±7.4

Table 5: Frequency of PHQ9 severity level and mood disorders

Category		**Frequency (%)**
PHQ9 severity label	Severe	80 (21%)
	Moderately severe	191 (20.3%)
	Mild	76 (19.7%)
	Minimal	38 (9.9%)
Mood disorder current	Depressive Disorder	223 (58%)
	None	106 (28%)
	Bipolar Affective Disorder	56 (15%)

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Table 6: Stratification of mood disorders with respect to the history of suicide attempt

Past history of suicide attempt	Mood disorder			P Value
	Depressive Disorder	Bipolar Affective Disorder	None	
Yes	67 (62.0%)	16 (14.8%)	25 (23.1%)	0.474
No	156 (56.3%)	40 (14.4%)	81 (29.2%)	

Table 7: Distribution of Current Mood Disorders by Gender, Education, Income, and Referral Source

Variable	n	Depressive Disorder n (%)	Bipolar Affective Disorder n (%)	None n (%)
Gender				
Male (n=193)	193	104 (54.0)	31 (16.2)	58 (30.0)
Female (n=192)	192	119 (62.4)	25 (13.1)	48 (25.0)
Education				
Uneducated (n=75)	75	48 (64.0)	10 (13.3)	17 (22.7)
High school/below (n=113)	113	70 (61.9)	17 (15.0)	26 (23.0)
Intermediate/college (n=89)	89	50 (56.2)	12 (13.5)	27 (30.3)
Bachelor/graduate (n=75)	75	40 (53.3)	12 (16.0)	23 (30.7)
Postgraduate/masters (n=33)	33	16 (48.5)	5 (15.2)	12 (36.4)
Monthly Income (PKR)				
1,000–10,000 (n=39)	39	26 (66.7)	5 (12.8)	8 (20.5)
10,000–50,000 (n=143)	143	87 (60.8)	22 (15.4)	34 (23.8)
50,000–100,000 (n=108)	108	61 (56.5)	15 (13.9)	32 (29.6)
100,000–250,000 (n=62)	62	32 (51.6)	9 (14.5)	21 (33.9)
>250,000 (n=33)	33	13 (39.4)	5 (15.2)	15 (45.5)
Referral Source				
Emergency (n=285)	285	169 (59.3)	41 (14.4)	75 (26.3)
NPCC (n=46)	46	23 (50.0)	9 (19.6)	14 (30.4)
Medical & allied (n=33)	33	17 (51.5)	5 (15.1)	11 (33.4)
Surgical & allied (n=21)	21	14 (66.7)	1 (4.8)	6 (28.5)

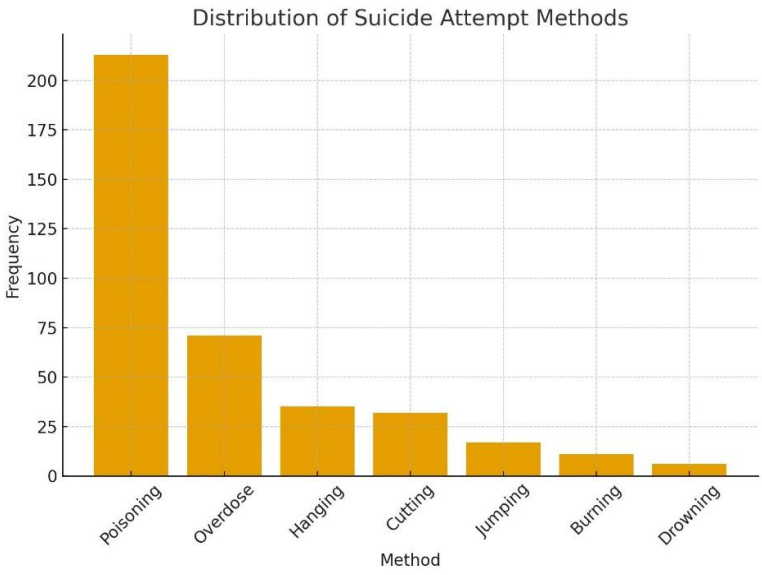

Figure 2 Distribution of Suicide Attempt Methods

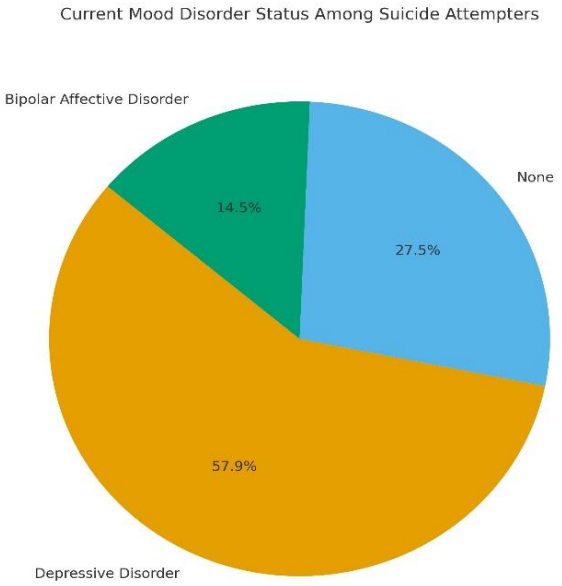

Figure 2 Current Mood Disorder Status Among Suicide Attempters

DISCUSSION

This hospital-based cohort of adult suicide attempters revealed sociodemographic and clinical patterns that were broadly consistent with prior work from Pakistan and the wider South Asian region. The mean age in the early thirties and the predominance of married participants echoed previous reports from Karachi and other South Asian populations, which emphasize that suicidal behavior often emerges among younger adults embedded within family systems (11,12). The finding of poisoning as the leading method of attempt mirrored local emergency-department series and national scoping reviews, where poisoning and hanging repeatedly dominate, highlighting the urgent need for strengthened poison-control services, availability of antidotes, and integration of means-restriction strategies into hospital-based care (12,13). Clinically, the study identified a substantial burden of mood disorders, with depressive disorder accounting for the majority of cases (58%) and a notable proportion of bipolar affective disorder (15%). This distribution aligned with global and regional evidence indicating the strong association between mood pathology and suicidal behavior. Meta-analytic evidence has shown that nearly one-third of individuals with bipolar disorder attempt suicide at least once in their lifetime, which provides context for the bipolar fraction observed in this cohort (14). However, diagnostic mixes differ across settings. In some East Asian cohorts, anxiety disorders rather than depression were the most common diagnoses among attempters, underscoring the heterogeneity introduced by health system pathways, cultural factors, and diagnostic practices (15). In contrast, data from Kashmir highlighted depressive morbidity as highly prevalent among suicide attempters, converging with the current profile and reinforcing the importance of routine mood-disorder screening in acute-care pathways for self-harm (16).

The symptom-severity indices further supported the clinical diagnoses. The mean PHQ-9 score of approximately 18 fell in the "moderately severe" range, with high item scores on suicidal thoughts. Evidence from large health-system studies demonstrates that endorsement of PHQ-9 item 9 strongly predicts subsequent attempts and suicide deaths over one to two years, making this pattern not merely descriptive but clinically prognostic (17). The implication is that embedding PHQ-based safety workflows, including immediate risk assessment, lethal-means counseling, and structured follow-up, could be highly beneficial in this setting. No statistically significant association was found between mood-disorder category and history of past suicide attempt. Literature on this issue remains mixed, with some cohorts reporting more severe psychopathology or aggression among repeat attempters, while others find negligible differences once confounders are accounted for (18). The null association in this study may reflect sample size constraints, grouping by broad diagnostic categories that obscure clinically important specifiers such as mixed features, or unmeasured influences such as comorbid personality disorders and substance-use patterns. Future prospective studies with richer phenotyping and longitudinal follow-up would help clarify whether specific mood-disorder subtypes or symptom clusters carry higher risk of repetition.

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The findings of this study carried important implications for clinical practice. The predominance of poisoning underscored the need for systematic collaboration between psychiatry and emergency toxicology services, including integration of psychosocial assessment into emergency care workflows (19,20). Routine use of standardized screening instruments such as PHQ-9 and YMRS could enhance triage, guide evidence-based treatment choices, and strengthen discharge safety planning (20-22). Moreover, given that diagnostic distributions may vary across systems and regions, ongoing benchmarking against prior Karachi studies and national syntheses remains essential for guiding resource allocation and service planning (21,23). The strengths of this study included its use of standardized severity instruments, diagnostic confirmation by consultant psychiatrists, and a relatively large sample size that enhanced representativeness within a tertiary-care setting. However, limitations should be acknowledged. Being a single-center study, the findings may not be generalizable to other regions of Pakistan. Diagnoses were based on clinical assessment without structured diagnostic interviews, which may introduce variability. The cross-sectional design precluded follow-up of outcomes such as re-attempts or mortality, thereby limiting causal inference. Furthermore, unmeasured confounders, including detailed substance-use patterns, trauma history, and social determinants, may have influenced the diagnostic distribution but were not comprehensively captured. Despite these limitations, the study adds to the limited hospital-based evidence on suicide attempts in Pakistan. It reinforces the central role of mood disorders in suicidal behavior and highlights pragmatic, actionable targets for service improvement, including emergency poison-control integration, standardized screening protocols, and targeted psychosocial interventions. Future research should prioritize multi-center designs with structured interviews, prospective follow-up, and integration of social, cultural, and biological factors to provide a more comprehensive understanding of risk and recovery in suicide attempters.

CONCLUSION

In conclusion, this hospital-based study highlighted that suicide attempts among adults were closely linked with mood disorders, particularly depression, and were most often carried out through poisoning. The absence of significant variation in diagnostic profiles between first-time and repeat attempters emphasizes the pervasive role of psychiatric morbidity across groups. These findings underscore the importance of embedding routine screening with standardized tools such as PHQ-9 and YMRS, implementing rapid safety and follow-up strategies, and strengthening emergency department collaboration with poison-control services. Prioritizing mood-disorder treatment capacity and structured post-attempt care pathways within tertiary hospitals in Karachi can provide a foundation for more effective prevention and service improvement.

AUTHOR CONTRIBUTION

Author	Contribution
Hafsa Zarnab*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Chooni Lal	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Anil Wadhwani	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Shaheryar Ali	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Darshana Kumari	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published

Author	Contribution
Syed Shiraz Mazhar	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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