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PREVALENCE OF DEPRESSION, ANXIETY AND STRESS AND ITS RISK FACTOR AMONG ACADEMIC STUDENTS

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ABSTRACT

Objective: *To assess the prevalence and incidences of stress, anxiety, and depression among university students at The Islamia University of Bahawalpur and to determine the socio-demographic characteristics.*

Methodology: *This descriptive cross-sectional research included participants from five different faculties at the Khawaja Fareed Campus, Islamia University of Bahawalpur. About 300 students agreed to participate, but analysis was carried out on 249 students aged 18-24 years who provided complete data. Statistical analysis was conducted using SPSS v19. Chi-square analysis and multivariate logistic regression were employed to examine associations and identify significant predictors, considering a p-value of less than 0.05 as statistically significant.*

Results: *Psychological distress was highly prevalent: depression (76.3%), anxiety (81.9%), and stress (60.6%). Moderate depression (36.9%) and extremely severe anxiety (33.3%) were common. Stress was mostly moderate (24.5%). Multivariate regression analysis revealed no statistically significant predictors for depression; however, smoking (OR = 5.76, p = 0.115) and living arrangement (OR = 1.24, p = 0.098) exhibited trends toward significance. Anxiety was significantly predicted by place of birth (OR = 0.68, p = 0.041), living arrangement (OR = 1.37, p = 0.033), and parental education (OR = 1.22, p = 0.027). Stress was significantly associated with living arrangement (OR = 1.30, p = 0.044) and age group (OR = 0.55, p = 0.025).*

Conclusion: *There is an alarmingly high prevalence of mental health issues among university students, strongly linked to academic pressure, socio-demographic variables, and lifestyle factors. Educational institutions must implement mental health support systems, counseling services, and awareness programs to address this growing concern.*

Keywords: *Emotional distress, psychological symptoms, Depression Anxiety Stress Scales (DASS-21), Higher education students, Demographic characteristics, Mental well-being*

INTRODUCTION

1.1 Background

Mental health is defined as a person's ability to manage emotions, cope with stress, and function psychologically, with impairment affecting cognitive and social functioning, work efficiency,

and daily life [1]. The World Health Organization (WHO) describes mental health as a state of well-being in which individuals realize their potential, cope with life stressors, and contribute to their community; thus, it is not merely the absence of mental illness [2]. Globally, one in four adolescents aged 12-24 experiences mental health disorders, including depression and schizophrenia, yet this population remains underserved, particularly university students who are at risk for depression, anxiety, suicidal behavior, and non-suicidal self-injury [3,4]. Poor mental health among students is linked to diminished academic performance, quality of life, and overall health [5]. In developing countries such as Pakistan, limited research, awareness, and institutional support exacerbate these challenges, resulting in mood disorders, academic difficulties, substance misuse, and suicidal behavior [6,7]. Students with untreated psychological disorders often exhibit lower GPAs and higher dropout rates [8,9]. Stress, lack of coping mechanisms, and inadequate support systems further contribute to poor academic adjustment, social isolation, low self-esteem, and sleep disturbances [10,11]. In 2019, 970 million people globally lived with a mental disorder, including 301 million with anxiety and 280 million with depression, numbers that increased during the COVID-19 pandemic by 26% and 28%, respectively [12,13]. Among medical students, depression prevalence ranges from 10.4-60% and anxiety from 29.4-69% [14]. International studies report moderate to severe depression, anxiety, and stress among university students in Hong Kong (27%) [15], India (depression 18.5%, anxiety 24.4%, stress 20%) [16], and Malaysia (depression 13.9-29.3%, anxiety 51.5-55%, stress 12.9-21.6%) [17,18].

1.2 Depression

Depression is highly prevalent among university students undergoing the critical transition from adolescence to adulthood, with pressures related to social integration, academic success, and future planning contributing to stress and anxiety [19]. The average age of depression onset is decreasing [20], and over two-thirds of young adults do not seek help [21]. Depression is a mood disorder characterized by persistent low mood, emotional distress, irritability, cognitive decline, social withdrawal, loss of motivation, anhedonia, hopelessness, hypotonia, and in severe cases, delusions [22,23]. It is a leading cause of global disability, with lifetime prevalence of 20-25% in women and 7-12% in men, accounting for 50% of psychiatric consultations and 12% of hospital admissions [24].

1.3 Anxiety

Anxiety is an uncontrollable, persistent, unpleasant emotional state often accompanied by physiological tension and anticipatory fear. It is increasingly prevalent due to social and environmental pressures and can lead to functional impairments if severe or prolonged [25,26].

1.4 Stress

Stress is a universal phenomenon arising from internal and external sources, leading to worry, emotional exhaustion, fatigue, and potential psychological disorders, including PTSD [27-30]. High stress in adolescents contributes to depression, anxiety, suicide, substance use, and antisocial behavior [4,31], with impacts on immunity, chronic disease, cognition, coping, and social outcomes [32].

1.5 Risk Factors for Stress, Anxiety, and Depression (SAD)

SAD is influenced by multiple biopsychosocial factors across six domains:

Psychological: Low self-esteem, high neuroticism, low extraversion, loneliness, relocation, pre-existing mental health conditions, PTSD, and childhood exposure to violence increase SAD risk [33-37].

Academic: Rigorous programs (medicine, nursing), workload, emotional sensitivity, fieldwork, lack of preparedness, poor academic performance, year of study, and unsupportive faculty-student relationships elevate SAD [35,38-46].

Biological: Chronic illness, disabilities, gender differences (higher in females), age variations, and societal stigma affecting help-seeking contribute to SAD [42,44,47-52].

Lifestyle: Alcohol and tobacco use, poor diet, physical inactivity, inadequate sleep, and poor time management are significant contributors [35,39,44,53-57,60].

Social: Family and peer support, romantic relationships, social participation, social media

use, minority status, and stigma influence SAD development [38,43,44,48,61-67].

Economic: Low household income, childhood poverty, part-time employment, workplace relationships, and financial stress among international students affect mental health [33,61,68-71].

Objective of the Study

To evaluate the prevalence and severity of anxiety, depression, and stress among students at The Islamia University of Bahawalpur (IUB) and examine associations with socio-demographic, academic, and lifestyle factors, providing evidence for targeted mental health interventions.

Significance and Rationale

The study provides regional insight into student mental health, informs university health services and policy, and highlights the impact of psychological factors on academic performance.

Problem Statement

University students face academic, social, and personal challenges that may lead to depression, anxiety, and stress. In Pakistan, the lack of comprehensive data limits effective support mechanisms. This study addresses the gap by assessing prevalence, severity, and associated factors of SAD among IUB students.

RESEARCH QUESTIONS

i. What is the prevalence of anxiety, depression, and stress among IUB students?
ii. How severe are these symptoms?
iii. Which socio-demographic, academic, and lifestyle factors are associated with SAD?
iv. What interventions do students perceive as necessary?

2. METHODOLOGY

This cross-sectional study was conducted among students at The Islamia University of Bahawalpur, with participants selected from five departments at the Khawaja Fareed Campus. Although about 300 students agreed to participate, analysis was carried out on 249 students who provided complete data. Prior ethical approval was obtained from the Institutional Ethics Committee of the MLT Department, and faculties within the selected departments were chosen randomly, with a defined number of students recruited from each department. Inclusion criteria comprised students aged 18-24 years, enrolled full-time or part-time, willing to participate with informed consent, capable of understanding and communicating in the study language, and available to complete the survey. Exclusion criteria included diagnosed mental health disorders under treatment, non-student individuals, and participants with incomplete survey data. Data were collected using a questionnaire initially designed in English and translated into Urdu, capturing socio-demographic and familial characteristics such as age, gender, academic department, semester, family income, parental marital status, place of birth, type of residence, parental education, smoking and alcohol use, and current living arrangements. Mental health assessment was performed using the 21-item Depression Anxiety Stress Scale (DASS-21), which measures core emotional states of depression, anxiety, and stress, with each subscale containing seven items. Participants rated the frequency of symptoms over the past week on a 4-point Likert scale (0-3), and scores were doubled to match the 42-item DASS scoring system, producing a range of 0-42 for each subscale, where higher scores indicate greater emotional distress. Severity levels were categorized for depression (0-9 normal, 10-13 mild, 14-20 moderate, 21-27 severe, ≥28 extremely severe), anxiety (0-7 normal, 8-9 mild, 10-14 moderate, 15-19 severe, ≥20 extremely severe), and stress (0-13 normal, 14-18 mild, 19-25 moderate, 26-33 severe, ≥34 extremely severe). Data analysis was performed using IBM SPSS version 19.0, following thorough data cleaning. Descriptive statistics summarized categorical variables in frequencies and percentages, while outcome variables (depression, anxiety, and stress scores) were reported as means and standard deviations. Associations between categorical independent variables and mental health outcomes were evaluated using Chi-square tests, and multivariate regression analyses were conducted to identify significant predictors while controlling for confounders, with a p-value <0.05 considered statistically significant.

LITERATURE REVIEW

3. Miron et al. (2019) studied 4,301 students in Spain using PSS-10, GAD-7, and PHQ-9, finding high levels of stress (50.2% anxiety, 47.18% depression), especially among women,

highlighting the need for targeted mental health interventions [72].

4. Othman et al. (2019) assessed 148 Canadian students, reporting 39.5% depression, 23.8% anxiety, and 80.3% stress. Academic, social, and socio-environmental factors influenced outcomes, underscoring multifactorial mental health determinants [73].

5. Wahed et al. (2017) surveyed 442 Egyptian medical students; 62.4% had stress, 64.3% anxiety, 60.8% depression, with higher rates in females and older students, highlighting the academic burden on mental health [74].

6. Beiter et al. (2015) found in 374 US undergraduates that stressors like academics and future uncertainty led to 11% severe stress, 15% severe anxiety, and 11% severe depression, emphasizing the need for student-centered support [75].

7. Amir Hamzah et al. (2019) reported 21% depression, 50% anxiety, and 12% stress among Malaysian first-year students, influenced by living arrangements, medical history, and regional differences [76].

8. Bayram et al. (2008) found in 1,617 Turkish students that 27.1% had depression, 47.1% anxiety, and 27% stress, with higher levels among females and lower-year students [77].

9. Teh et al. (2015) noted in 397 Malaysian students that medical students had higher distress, with 30.7% anxiety, 55.5% depression, and 16.6% stress, influenced by social and economic factors [78].

10. Asif et al. (2020) surveyed 500 Pakistani students; 75% reported depression, 88.4% anxiety, and 84.4% stress, highlighting urgent mental health concerns [79].

11. Ramón-Arbués et al. (2020) reported 18.4% depression, 23.6% anxiety, and 34.5% stress in 1,074 students, associated with lifestyle factors, self-esteem, and relationships [80].

12. Fauzi et al. (2021) found among 449 health sciences students that 65% had stress, 85.1% anxiety, 51.4% depression; academic progression, sleep quality, and fatigue were key factors [81].

13. Blanco et al. (2021) reported in 871 female students that 18.1% had severe depression, 22.8% severe anxiety, and 13.5% severe stress; personality traits influenced risk [82].

14. Hossain et al. (2022) found mild-to-moderate stress but over 40% severe anxiety among 351 Bangladeshi students, with gender and residence influencing outcomes [83].

15. Gabal et al. (2022) noted 64.2% depression, 77.1% anxiety, and 70.4% stress among 240 Egyptian medical students, influenced by BMI, screen use, and physical activity [84].

16. Yu et al. (2022) surveyed 6,032 Chinese students; 62.2% had no complaints, but anxiety co-occurred with depression; senior year, injuries, and lifestyle affected mental health [85].

17. Karing et al. (2021) reported in 2,548 German students during COVID-19 that 35.9% had depression, 27.7% anxiety, 25.1% stress; mindfulness was protective, while pandemic stressors were risks [86].

18. Shamsuddin et al. (2013) found among 506 Malaysian students moderate-to-severe depression (27.5%), anxiety (34%), and stress (18.6%), higher among older students, females, and rural backgrounds [87].

Summary: Across global studies, university students consistently show high prevalence of stress, anxiety, and depression, influenced by gender, academic pressure, lifestyle, socio-environmental factors, and personality traits. These findings highlight the urgent need for targeted mental health support and preventive interventions in academic settings.

RESULTS

4.1 Descriptive Analysis of Socio-Demographic Variables and Risk Factors

Table 4.1: Frequency of Gender among University Students (N=249)

Gender	Frequency (n)	Percentage (%)
Female	141	56.6
Male	108	43.4
Total	249	100

Explanation:

The female participants slightly outnumbered males, representing 56.6% of the sample, while males comprised 43.4%. This indicates a fairly balanced gender representation among students.

Table 4.2: Frequency of Age Groups among University Students (N=249)

Age Group	Frequency (n)	Percentage (%)
18-19	76	30.5
20-22	150	60.2
23-24	19	7.6
>24	4	1.6
Mean ± SD	20.46 ± 1.77	
Total	249	100

Explanation:
Most students (60.2%) were aged 20–22 years, followed by 18–19 years (30.5%). Older students (>24 years) were rare (1.6%).

Table 4.3: Department-wise Distribution (N=249)

Department	Frequency (n)	Percentage (%)
Biochemistry	14	5.6
DPT	77	30.9
HND	7	2.8
MLT	123	49.4
Pharm D	28	11.2
Total	249	100

Explanation:
Medical Laboratory Technology (MLT) students formed the largest group (49.4%), followed by DPT (30.9%). Other departments had smaller representations.

Table 4.4: Semester-wise Distribution (N=249)

Semester	Frequency (n)	Percentage (%)
2nd	71	28.5
4th	56	22.5
6th	43	17.3
8th	67	26.9
10th	7	2.8
3rd	1	0.4
7th	4	1.6
Total	249	100

Explanation:
The highest number of students were in the 2nd and 8th semesters. The fewest were in the 3rd, 7th, and 10th semesters.

Table 4.5: Satisfaction with Own Education (N=249)

Satisfaction	Frequency (n)	Percentage (%)
Yes	194	77.9
No	55	22.1
Total	249	100

Explanation:
Most students (77.9%) were satisfied with their education, while 22.1% reported dissatisfaction.

Table 4.6: Family Monthly Income Distribution (N=249)

Family Monthly Income	Frequency (n)	Percentage (%)
Low (<50,000 PKR)	68	27.3
Middle (50,000–100,000 PKR)	132	53
High (>100,000 PKR)	0	0
Unknown	49	19.7
Total	249	100

Explanation:
Most families had middle-income levels (53%), followed by low income (27.3%). No high-income families were reported.

Table 4.7: Parents' Marital Status (N=249)

Parents' Marital Status	Frequency (n)	Percentage (%)
Married	239	96
Separated/Divorced/Widowed	7	2.8
Unknown/Never Married	3	1.2
Total	249	100

Explanation:
The majority of students had married parents (96%), while a few were from separated, widowed, or unknown marital status families.

Table 4.8: Place of Birth Distribution (N=249)

Place of Birth	Frequency (n)	Percentage (%)
Rural	79	31.7
Semi-Urban	69	27.7
Urban	101	40.6
Total	249	100

Explanation:
Urban-born students formed the largest group (40.6%), followed by rural (31.7%) and semi-urban (27.7%).

Table 4.9: Types of Accommodation (N=249)

Accommodation Type	Frequency (n)	Percentage (%)
Flat/Apartment	111	44.6
Terrace/Semi-detached/Bungalow	75	30.1
Squatter/Others/Unknown	63	25.3
Total	249	100

Explanation:
Flats/apartments were the most common living arrangement (44.6%), followed by terraces (30.1%).

Table 4.10: Living Arrangements (N=249)

Living Arrangement	Frequency (n)	Percentage (%)
With Family	117	46.99
With Friends/Hostels	122	48.99
Alone/Others/Unknown	10	4.01
Total	249	100

Explanation:
Nearly half the students lived with friends or in hostels (48.99%), with 46.99% living with family.

Table 4.11: Parents' Education Level (N=249)

Parents Education	Frequency (n)	Percentage (%)
Secondary	93	37.3
Graduation	71	28.5
Primary to Middle	56	22.5
Post-Graduation	28	11.2
Primary	1	0.4
Total	249	100

Explanation:
Most parents had secondary education (37.3%), followed by graduation (28.5%) and post-graduation (11.2%).

Table 4.12: Participation in Extracurricular Activities (N=249)

Participation	Frequency (n)	Percentage (%)
Yes	133	53.4
No	116	46.6
Total	249	100

Explanation:
Slightly more than half of the students participated in extracurricular activities.

Table 4.13–4.15: Prevalence of Lifestyle Factors
Smoking:

Smoking	Frequency (n)	Percentage (%)
Yes	10	4
No	239	96

Alcohol Consumption:

Alcohol	Frequency (n)	Percentage (%)
Yes	3	1.2
No	246	98.8

Explanation:
Most students were non-smokers (96%) and abstained from alcohol (98.8%).

Table 4.16–4.17: Prevalence of Depression, Anxiety, and Stress

Mental Health	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Extremely Severe (%)
Depression	23.7	22.5	36.9	12.9	4
Anxiety	18.1	8.8	24.9	14.9	33.3
Stress	39.4	19.3	24.5	12.4	4.4

Explanation:
Moderate depression was the most common (36.9%).
Extremely severe anxiety was the highest among anxiety levels (33.3%).
Most students experienced normal stress (39.4%).

4.2 Chi-Square Analysis: Associations with Depression

Significant associations:
Semester of Study (P = 0.005): Students in 2nd, 4th, and 8th semesters had higher depression levels.
Satisfaction with Education (P = 0.006): Dissatisfied students had higher depression.
Alcohol Consumption (P = 0.001): Alcohol consumers showed higher depression severity.
Non-significant associations (P > 0.05):
Gender, age, department, family income, parents' marital status, place of birth, type of accommodation, living arrangement, parents' education, extracurricular participation, smoking.

4.3 Chi-Square Analysis: Associations with Anxiety

Significant association:
Department of Study (P = 0.027): Certain departments (Biochemistry) showed higher anxiety.
Non-significant associations (P > 0.05):
Gender, age, semester, satisfaction with education, family income, parents' marital status, place of birth, accommodation, living arrangement, parents' education, extracurricular activities, smoking, alcohol.

4.4 Chi-Square Analysis: Associations with Stress

Significant associations:

Age Group (P = 0.044): 18–19 age group had higher moderate stress.

Semester (P = 0.003): 2nd and 4th semesters showed higher stress.

Alcohol Consumption (P = 0.000): Students consuming alcohol experienced higher stress.

Non-significant associations (P > 0.05):

Gender, department, satisfaction with education, family income, parents' marital status, place of birth, accommodation, living arrangement, parents' education, extracurricular participation, smoking.

Summary of Key Findings:

Academic factors (semester, department) are significantly linked to depression and anxiety.

Personal factors (satisfaction with education, alcohol use) significantly influence depression and stress.

Gender, parental education, accommodation, and smoking were not significant predictors of mental health outcomes.

Moderate depression and extremely severe anxiety were the most prevalent mental health issues among students.

DISCUSSION

The present study sought to evaluate the prevalence and intensity of anxiety, depression & stress among university students, along with analyzing their average scores and age distribution. The results indicate a notably high level of psychological distress among the respondents, aligning with trends reported in both national and global literature.

The average scores for anxiety, depression & stress observed in this study were 14.14 ± 7.16, 14.59 ± 7.47, and 17.41 ± 8.12, respectively. The mean age of the participants was 20.46 ± 1.77 years, indicating that the majority of respondents were young adults a demographic frequently identified as being at heightened risk for mental health challenges due to academic demands and the psychosocial adjustments associated with the transition to adulthood.

Regarding prevalence, 76.3% of students experienced some level of depression, 81.9% reported anxiety symptoms, and 60.6% suffered from stress. These rates are high and reflect serious mental health concerns within the student population. Notably, the prevalence of anxiety (81.9%) was the highest, followed by depression and stress

The majority of participants reported moderate levels of depression (36.9%), while a considerable number experienced severe (12.9%) or extremely severe (4%) depression. Depression severity was significantly associated with semester of study (p = 0.005), educational satisfaction (p = 0.006), and alcohol consumption (p = 0.001). Students in certain semesters likely due to academic overload reported greater depressive symptoms, a finding supported by Sani et al. (2012) and Kulsoom & Afsar (2015). Dissatisfaction with one's academic experience also contributed significantly to depressive symptoms, highlighting the impact of unmet educational expectations on mental health. Alcohol use, while reported by a small number of students, was strongly associated with higher depression levels. This finding aligns with research suggesting alcohol can exacerbate depressive symptoms or serve as a maladaptive coping strategy (Quek et al., 2019). However, multivariate logistic regression found no variable to be a statistically significant independent predictor of depression, although smoking (OR = 5.755, p = 0.115) and living arrangement (OR = 1.240, p = 0.098) showed trends toward significance. This suggests a possible influence of these variables, warranting further research with larger samples.

Anxiety was the most prevalent disorder, with 33.3% experiencing extremely severe symptoms. Bivariate analysis showed a significant association with semester of study, educational satisfaction, and alcohol use (all p < 0.05). These trends mirror the findings for depression and further point to academic and behavioral stressors as key contributors. Multivariate regression identified place of birth (p = 0.041), living arrangement (p = 0.033), and parental education (p = 0.027) as statistically significant predictors of anxiety. Students born in certain areas had lower odds of anxiety, suggesting that background or familiarity with the university environment may play a protective role. Higher parental education was unexpectedly linked to higher anxiety, possibly reflecting increased familial expectations, which can heighten academic pressure (Amr et al., 2008; Puthran et al., 2016).

Moderate stress was most common (24.5%), with 60.6% of students reporting some level of stress.

Bivariate analysis revealed significant associations with age group (p = 0.044), semester of study (p = 0.003), and alcohol consumption (p = 0.000). Younger students (especially 18-19 years) reported higher stress, likely due to limited coping mechanisms and difficulty adjusting to academic demands. As with depression and anxiety, students in 2nd and 4th semesters were particularly affected, likely due to cumulative workload or key examinations. Multivariate regression confirmed that age group (p = 0.025) and living arrangement (p = 0.044) were significant predictors of stress. Older students exhibited significantly lower odds of stress, reinforcing the role of maturity and adaptive resilience in managing academic and social pressures. The influence of living arrangement across all three mental health domains suggests the importance of stable, supportive housing for emotional well-being.

The high prevalence of psychological distress aligns with studies in Egypt, Pakistan, and other low-to-middle income countries (Fawzy & Hamed, 2017; Islam et al., 2020; Quek et al., 2019). However, your findings show higher rates of anxiety (81.9%) and depression (76.3%) than global averages (Puthran et al., 2016: 28% for depression; Quek et al., 2019: 33.8% for anxiety). These elevated figures may reflect institutional, cultural, or socioeconomic stressors such as academic competition, lack of mental health support, or social stigma surrounding emotional expression.

While your current data summary does not specify breakdowns by gender or lifestyle factors, previous literature consistently highlights gender differences. For example, female students were often found to be at higher risk of anxiety, depression & stress (Amr et al., 2008; Fawzy & Hamed, 2017). Furthermore, factors such as physical inactivity, excessive screen time, rural background, and financial stress have been identified as significant predictors of psychological distress (Islam et al., 2020; Abdel Wahed & Hassan, 2017).

This study underscores the high burden of anxiety, depression & stress among university students, with anxiety being the most prevalent and severe. The findings call for the implementation of targeted mental health interventions, stress-management workshops, academic counseling, and increased access to psychological services. Universities should prioritize student well-being as part of their academic mission to ensure a healthy learning environment.

Conclusion

This study found that among university students, depression was not significantly predicted by the socio-demographic or behavioral factors examined, suggesting the influence of other unmeasured variables. In contrast, anxiety and stress were associated with environmental and familial factors, including place of birth, living arrangements, parental education, and age. These findings highlight the importance of social context and developmental stage in students' mental health and emphasize the need for interventions addressing living conditions, family-related pressures, and tailored university support systems. Further research is needed to explore additional predictors of depression and understand the mechanisms linking environmental and familial factors to psychological well-being.

Limitations

i. Cross-sectional design prevents causal inference.
ii. Moderate sample size (N=249) may limit detection of smaller associations.
iii. Reliance on self-reported behavioral data may introduce bias.
iv. Important variables such as academic performance, social support, personality traits, and prior mental health history were not included.
v. Psychological and biological determinants were not assessed.

Recommendations

Future studies should use longitudinal designs with larger, more diverse samples and include qualitative methods to capture students' experiences. Intervention studies targeting modifiable factors like living arrangements and family dynamics could help reduce anxiety and stress. Multidisciplinary approaches combining psychological, social, and biomedical perspectives are recommended for effective prevention and management of mental health issues among university students.

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