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Research Article

A Study on Depressive Symptoms and AI-Driven Mental Health Support Design Among First-Semester Female Students at Government Mata Karma Girls College, Mahasamund (C.G.): Focusing on B.A., B.Sc., and B.Com. Students for the 2026–27 Academic Session

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Abstract

The present study aims to examine depressive symptoms, academic stress, awareness of artificial intelligence (AI), and perceived usefulness and acceptability of AI-based mental health support among first-semester BA, B.Com., and B.Sc. female students at Government Mata Karma Kanya Mahavidyalaya, Mahasamund (Chhattisgarh). The study used primary data collected by the researcher. The original Excel data contained responses from a total of 50 female students: 20 BA, 20 B.Com., and 10 B.Sc. students. The questionnaire included 10 statements related to depression, 5 related to academic stress, 5 related to AI awareness, and 5 related to the usefulness/acceptability of AI-based mental health support. All valid responses were coded on an ordinal scale of 1–5, and ambiguous responses, such as multiple choices, were marked as missing.

For data analysis, mean, standard deviation (SD), percentage, one-way analysis of variance (One-Way ANOVA), and Pearson correlation were employed. The findings indicated that the overall mean for depression-related symptoms among female students was 2.56/5 (SD=0.57). By course of study, the mean stood at 2.33 for B.A., 2.75 for B.Com., and 2.65 for B.Sc. Variations in the average depression scores were noted across courses, though a one-way ANOVA revealed that these differences were not statistically significant [$F(2,47)=3.122, p=0.053$].

The average score for AI awareness was 3.56 out of 5, and the average score for the perceived usefulness of AI-based mental health support was 3.67 out of 5. Additionally, a moderate, statistically significant positive correlation was observed between AI awareness and the perceived usefulness of AI-based mental health support (Pearson $r=0.431, p=0.002$). This finding suggests that higher AI awareness among the female students participating in the study corresponded to a relatively higher perceived usefulness of AI-based mental health support.

The study findings indicate a positive awareness and potential acceptance of AI-based mental health support among first-semester female students. However, since the current study did not include an actual AI-based mental health intervention and pre-test–post-test measurements, no definitive conclusions can be drawn regarding the therapeutic or therapeutic effectiveness of AI. Therefore, AI is more appropriate to view as a means of providing early intervention, mental health information, self-monitoring, and access to appropriate specialist services when needed, rather than as a substitute for a mental health professional.

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KEYWORDS: Depressive symptoms, mental health, college students, first semester, artificial intelligence, AI chatbots, stress management, digital mental health, student well-being.

1. INTRODUCTION

Mental health is a vital component of a student's academic success, social connections, emotional equilibrium, and everyday functioning. Transitioning to college life requires students to adapt to a new academic and social setting. Especially for female students in their first semester, the new curriculum, teaching methods, examinations, time management, adjustment with peers, family expectations, and future-related anxieties can be potential factors impacting mental health. In this regard, it becomes crucial to comprehend the mental health-related experiences of female students and their support requirements.

The first semester represents the early transition into college, as young women step out of the school atmosphere and into the independent, new world of higher education. Adjusting to academic and social growth is essential during this phase. If one fails to cope effectively with these conditions, it can lead to feelings of stress, emotional distress, and depression-related symptoms. Consequently, examining the mental health conditions of female college students in a local context is valuable from an academic perspective.

Students attending Government Mata Karma Girls College in Mahasamund, Chhattisgarh, come from a wide range of social and geographical backgrounds. Data shows that among 50 students, 42 come from rural backgrounds and 8 from urban backgrounds. Therefore, by taking into account the social and geographical backgrounds of the female students in the study, examining their mental health experiences and perspectives on seeking help may assist in comprehending the local academic environment.

As we live in a digital age, artificial intelligence (AI) is increasingly used in areas such as education and healthcare. AI-powered chatbots, mood tracking, general tips for managing stress, and guidance to reach mental health experts or other suitable services can act as potential mediums for early digital help. However, studying the awareness and acceptance of AI-based tools among students—particularly those requiring mental health information or early support—could be significant in the mental health domain.

Along with the use of AI come critical issues like privacy, data security, transparency, human oversight, accountability, and expert involvement. The information generated by AI should not be treated as a replacement for professional medical diagnosis or treatment. Hence, while examining AI-driven mental health assistance, we must acknowledge its perceived utility and acceptance alongside its inherent limitations.

In this context, the present study examines depressive symptoms, academic stress, AI awareness, and the perceived usefulness and acceptability of AI-based mental health support among first-semester B.A., B.Com., and B.Sc. female students of Government Mata Karma Kanya Mahavidyalaya, Mahasamund. This study does not examine the clinical diagnosis or therapeutic effectiveness of AI, but rather provides a statistical analysis of the female students' experiences and perceptions expressed through questionnaires at the local level. The aim of the study is to understand the relationship between

female students' mental health status and their perceptions of AI-based digital support.

2. Need and Significance of the Study

The goal of education is not merely imparting subject-specific knowledge to students, but also guaranteeing their physical, mental, social, and emotional growth. During the first semester of college, female students step into a novel academic and social setting. Throughout this period, students may encounter various academic and psychological stresses stemming from coursework, examinations, scheduling, peer integration, familial factors, and anxieties regarding their future. Consequently, it is crucial to proactively address mental health needs and pinpoint suitable support systems early on. At present, digital tools based on artificial intelligence (AI) are developing as potential means to access early information regarding mental health, general guidance, self-monitoring, and appropriate support services. Therefore, it is important to understand the mental health conditions among female students, along with their awareness of AI and the perceived utility of AI-based mental health assistance.

3. In this context, the significance of the present study is as follows:

1. Understanding the local situation of mental health: This study helps in understanding the local situation of depressive symptoms and other mental health indicators among first semester girl students of Government Mata Karma Kanya Mahavidyalaya, Mahasamund.

2. Comparison of depression scores by course: The research contrasts the depression levels among female BA, B.Com., and B.Sc. students, offering insight into the variations present among groups from different academic disciplines.

3. Pinpointing academic stress dimensions: This study is useful for comprehending the primary factors of academic stress in female students, which can involve anxieties about studying, tests, scheduling, coursework, and the future.

4. Investigating AI Awareness and Perceived Usefulness: The study reveals the degree of artificial intelligence awareness and the perceived helpfulness of AI-based mental health support among female students.

5. Foundation for college mental health services: Study conclusions can assist in formulating practical recommendations to enhance mental health awareness, counselling, early support, and access to specialist care in higher education.

6. Foundation for the development of digital mental health support: By understanding female students' awareness and perceptions of AI, the study can provide a starting point for future research on the potential for responsible and safe digital mental health support.

7. Foundation for future interventional research: While the current study did not include an actual AI intervention and pre-test–post-test measurements, its findings can provide a foundation for future, comprehensive research examining the effectiveness of AI-based mental health interventions.

Thus, the present study seeks to understand the relationships between female students' mental health indicators, academic stress, AI awareness, and perceived usefulness of AI-based mental health support within the local educational context. Furthermore, it can provide a useful basis for practical initiatives related to mental health and digital support at the college level.

Research Problem

“An investigation into depressive symptoms and the acceptance of AI-driven mental health support among first-year BA, BSc, and BCom female students at Government Mata Karma Girls College, Mahasamund, during the 2026–27 academic session.”

4. OBJECTIVES OF THE STUDY

The main objectives are:

1. To study depressive symptoms among first-semester female students of Government Mata Karma Kanya Mahavidyalaya, Mahasamund.
2. To compare depression scores of first-semester female students of BA, B.Com., and B.Sc. programs.
3. To study the level of academic stress and its key dimensions among first-semester female students.
4. To study female students' awareness of artificial intelligence (AI).

5. To study the perceived usefulness of AI-based mental health support.
6. To study female students' perceptions of the acceptability of AI-based mental health support, including privacy and security.
7. To study the relationship between awareness of AI and the perceived usefulness of AI-based mental health support.
8. Based on the study findings, to offer practical suggestions regarding mental health and AI-based digital support in the college.

5. Research Hypotheses

1. **H₀1:** There will be no statistically significant difference in the mean depression symptom scores among B.A., B.Com., and B.Sc. students.
2. **H₀2:** There will be no statistically significant difference in the perceived utility of AI-based mental health support across the three courses.
3. **H₀3:** There will be no statistically significant relationship between AI awareness and the perceived utility of AI-based mental health support.

6. RESEARCH METHODOLOGY

1. Nature of Research

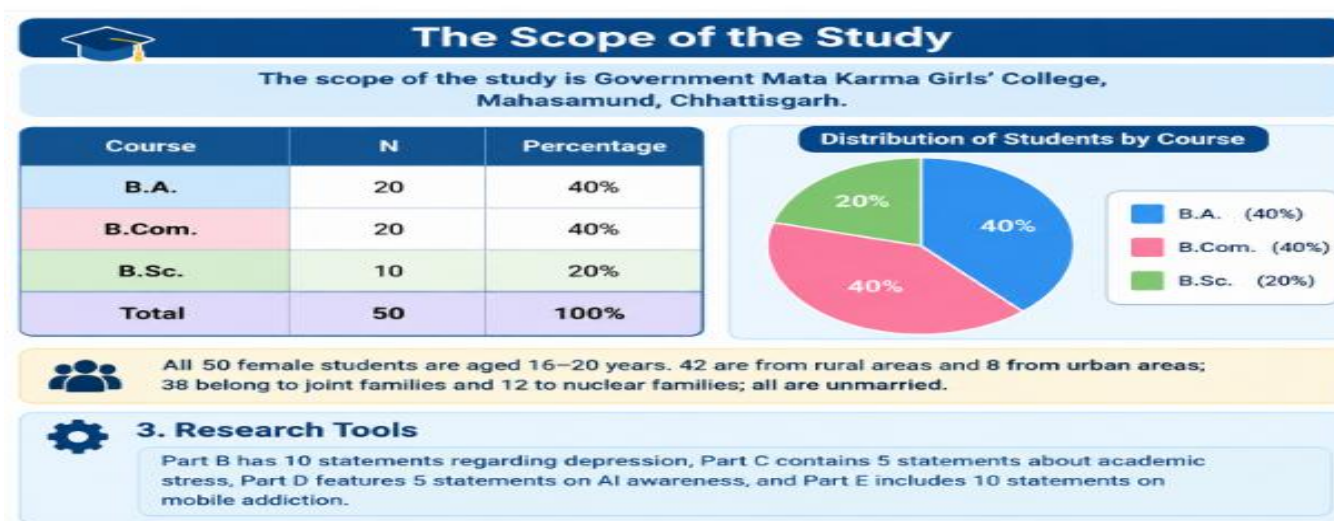
The study is descriptive-correlational and is based on available primary survey data.

2. Sample

The scope of the study is Government Mata Karma Girls' College, Mahasamund, Chhattisgarh.

Table 1. Distribution of Students by Course

Course	N	Percentage
B.A.	20	40%
B.Com.	20	40%
B.Sc.	10	20%
Total	50	100%



3. Research Tools.

Part B has 10 statements regarding depression, Part C contains 5 statements about academic stress, Part D features 5

statements on AI awareness, and Part E includes 5 statements regarding AI-driven mental health support.

Table 2. Response Coding Scale Used in the Study

Answer	Number
Never	1
Rarely	2
Sometimes	3
Often	4
Almost always	5
Strongly disagree	1
Disagree	2
Unsure	3
Agree	4
Strongly agree	5

1. Depression: Question-wise average

Table 3. Question-wise Average of Depression-related Symptoms

Sl.	Aspects	Meaning
1	Feeling sad most of the time	2.33
2	Lack of interest in studies	2.22
3	Anxiety about the future	3.32
4	Difficulty sleeping properly	2.57
5	Feeling like a failure	2.2
6	Lack of enjoyment in activities	2.31
7	Getting tired easily	2.66
8	Difficulty making decisions	2.96
9	Loneliness	2.4
10	Lack of self-confidence	2.64

The highest average was for anxiety regarding the future (3.32), followed by trouble making decisions (2.96) and fatigue (2.66). This is not a clinical depression diagnosis.

level mean for each dimension was derived from the valid responses available.

4. Data Coding: Responses with multiple options, such as "occasionally, sometimes" or "agree, strongly agree", were considered missing for the relevant question. The student-

5. Statistical Methods: Mean, SD, frequency, percentage, One-Way ANOVA, and Pearson correlation were utilized. Alpha was set at 0.05 for statistical significance. Data Analysis and Results

2. Course-wise breakdown

Table 4. Course-wise Depression Scores

Course	N	Mean	SD
B.A.	20	2.33	0.46
B.Com.	20	2.75	0.42
B.Sc.	10	2.65	0.87
Total	50	2.56	0.57

ANOVA: $F(2, 47) = 3.122$, $p = 0.053$. As p is greater than 0.05, the variance in depression scores across the curricula was

not statistically significant. There was not enough evidence to reject H_0 .

3. Academic Stress

Table 5. Dimensions and Mean Scores of Academic Stress

S. No.	Dimension	Mean
11	Excessive stress during exams	3.50
12	Perceiving the syllabus as difficult	2.98
13	Anxiety about securing good marks	3.94
14	Parental expectations	2.98
15	Difficulty with time management	3.12

The overall academic stress mean was 3.31/5 (SD=0.71), with the highest average score (3.94) attributed to the anxiety of securing good grades. An ANOVA test revealed F (2,47)

=7.741, p=0.001, showing a statistically significant difference across course groups at the 0.05 level.

Table 6. Course-wise Academic Stress Scores

Courses	Mean	SD
B.A.	2.93	0.49
B.Com.	3.71	0.68
B.Sc.	3.28	0.79

4. AI Awareness

Table 7. AI Awareness Statements and Mean Scores

S. No.	Statement	Mean
16	Knowledge about AI	3.27
17	Use of ChatGPT/other AI	3.67
18	AI can provide mental health support	3.33
19	AI can assist in stress management	3.62
20	Colleges should have an AI-based counselling system	3.92

The mean score for AI awareness was 3.56/5 (SD=0.55; valid N=49). ANOVA: F (2,46) =3.397, p=0.042; a statistically

significant difference in AI awareness was found among the course groups in this sample.

Table 8. Course-wise AI Awareness Scores

Courses	Mean	SD
B.A.	3.33	0.66
B.Com.	3.64	0.47
B.Sc.	3.84	0.31

5. Perceived utility of AI-based mental health support

Table 9. Perceived Utility of AI-based Mental Health Support

S. No.	Features	Mean
21	Initial advice from an AI chatbot	3.73
22	AI-based mood tracking	3.43
23	AI-driven stress reduction techniques	3.72
24	Encouragement to consult an expert	3.59
25	AI usage with guaranteed privacy	3.83

The utility of AI assistance had a mean of 3.67/5 (SD=0.73; valid N=49). The statement about usage when privacy is

protected had the highest average of 3.83.

Table 10. Course-wise Perceived Utility of AI-based Mental Health Support

Courses	Mean	SD
B.A.	3.43	0.77
B.Com.	3.87	0.69
B.Sc.	3.74	0.69

ANOVA: F (2, 46) = 1.857, p = 0.168. As p>0.05, the difference in AI usefulness among the courses is not statistically significant. There is not enough evidence to reject Ho2.

7. Correlation between AI awareness and utility

Pearson correlation: r=0.431, p=0.002, pairwise valid N=49. A positive r indicates a tendency in this sample for higher AI awareness to be associated with a perception of AI assistance as

more useful. The relationship is statistically significant as p<0.05.

This correlation does not establish a cause-and-effect relationship. Thus, while sufficient statistical evidence was found to reject Ho3, this does not prove that increasing awareness will necessarily lead to an increased perception of utility.

Basic statistical formulas explained simply: Mean = Total of all valid scores divided by the count of valid answers. SD = How

spread out the answers are from the average. For ANOVA, a p-value under 0.05 was taken as statistically significant, while a p-value over 0.05 meant there wasn't enough evidence in the

sample. Pearson r falls between -1 and +1. Since r is +0.431 here, it shows a moderate positive relationship.

Consolidated results

Table 11. Consolidated Statistical Results of the Study

Analysis	Result	p	Conclusion
Depression Mean	2.56	—	Descriptive
Depression ANOVA	F=3.122	0.053	Non-significant
Academic Stress Mean	3.31	—	Descriptive
Academic Stress ANOVA	F=7.741	0.001	Significant
AI Awareness Mean	3.56	—	Descriptive
AI Awareness ANOVA	F=3.397	0.042	Significant
AI Utility Mean	3.67	—	Descriptive
AI Utility ANOVA	F=1.857	0.168	Non-significant
AI Awareness–Utility	r=0.431	0.002	Significant positive relationship

8. DISCUSSION

In depression-related queries, future anxiety and decision-making difficulties were relatively higher. In academic stress, anxiety about getting good marks was the highest. Therefore, in the first year, exam stress, study skills, time management, and future-related guidance can be useful topics. The average of both AI awareness and AI assistance utility remained above 3. The average of privacy-secure usage was 3.83, which indicates that the security of personal information is an important condition for the acceptability of digital assistance.

9. RESULTS

A correlation of $r=0.431$, $p=0.002$ was observed between AI awareness and utility. This must be viewed strictly as a correlation rather than a causal effect. The present study analysed data from 50 female students in total. The mean depression level among the students was 2.56/5. Categorized by academic program, the average depression scores were 2.33 for B.A., 2.75 for B.Com., and 2.65 for B.Sc. One-way ANOVA results indicated a statistically significant difference in depression levels across these three groups. No significant difference was found, $F(2,47) = 3.122$, $p=0.053$. The overall average of academic stress was 3.31, in which the average for anxiety about obtaining good marks was 3.94, emerging as the most prominent factor related to academic stress in the study. Among female students, the average awareness regarding AI was 3.56 and the average usefulness of AI assistance was 3.67. Additionally, provided there is assurance of privacy protection, AI...The mean usage tendency was 3.83. Regarding AI utility, ANOVA results across the different courses were $F(2,46) = 1.857$, $p=0.168$, indicating no statistically significant difference between the groups. In contrast, a statistically significant difference was found across courses regarding AI awareness: $F(2,46) = 3.397$, $p=0.042$. Furthermore, a moderate, positive, and statistically significant correlation was observed between AI awareness and AI utility ($r=0.431$, $p=0.002$), suggesting that greater awareness of AI is associated with a higher perception of its utility.

However, based on the data from the current study, no conclusions can be drawn regarding the clinical effectiveness of

AI, as the study did not directly evaluate actual clinical therapeutic outcomes.

10. Recommendations

1. Regular mental health awareness and counselling sessions should be organized for first-year female students.
2. Short training programs should be conducted on exam stress, anxiety regarding grades, and time management.
3. The scope of AI should be limited to providing initial information, self-monitoring, general stress management, and referral support.
4. Confidentiality of personal and mental health data within the AI system must be ensured.
5. The AI should not be presented as a substitute for a physician or psychologist.
6. In cases of severe or persistent symptoms, the student should be connected with a trained mental health professional.
7. Future studies should incorporate pre-test/post-test assessments and controlled intervention designs.

11. Limitations

1. The sample is limited to 50 female students and a single college.
2. The data is based on a single point in time.
3. No actual AI intervention took place.
4. Depression questionnaire scores cannot be considered a clinical diagnosis.
5. Multiple-choice responses were missing.
6. The results should not be directly generalized to the entire district or all female college students.
7. While the ANOVA result for AI awareness is significant, post-hoc tests were not conducted to determine which specific groups differed.

12. Academic and Practical Significance of the Research

1. This study presents preliminary evidence regarding the mental health of female students at Government Mata Karma Girls' College, Mahasamund.

2. The study indicates a need to focus specifically on issues such as concerns about the future, decision-making, self-confidence, and fatigue among the students. It also reveals a positive outlook towards AI-based support.
3. Therefore, a combined model integrating human counselling, digital support, and AI-based initial guidance could be developed for the college.
4. In this model, AI would provide only first-level support, with students being referred to a college counsellor or mental health specialist when necessary.

13. CONCLUSION

The study reveals that mental health-related factors—such as anxiety about the future, difficulty in decision-making, and concerns regarding academic achievement—were significant among first-semester female students. Awareness of AI and the perceived utility of AI-based mental health support were relatively positive, with a significant positive correlation observed between the two. Based on these findings, human counselling, digital support, and AI-based initial guidance could be integrated within the college setting. However, as the clinical efficacy of AI was not evaluated in this study, it would be more appropriate to utilize AI not as a substitute for human experts, but as a complementary medium for providing safe, confidential initial support and facilitating access to expert counselling.

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