

“A STUDY TO ASSESS THE IMPACT OF OVER RELIANCE TO AI DIALOGUE ON COGNITIVE ABILITY AND ACADEMIC STRESS AMONG GENERATION-Z STUDENTS IN SELECTED COLLEGE OF NURSING, MEERUT”

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ABSTRACT

Introduction: The rapid advancement of AI technologies has transformed the way students access and process information. AI dialogue tools provide instant responses, personalized learning experiences, and academic assistance, making learning more efficient and accessible. A descriptive correlational study among nursing students reported that approximately **92.7%** of students used ChatGPT and other AI tools for educational purposes. However, many participants expressed concerns regarding the accuracy, ethical implications, and excessive dependence on AI-generated information. The study also revealed that the majority of students experienced **moderate academic stress (75.5%)**, indicating that increased reliance on AI tools may be associated with higher levels of academic stress and reduced engagement in independent learning activities. (Mason, T., et al. 2025). Nursing cognitive ability (87%), and moderate academic stress (75.5%). The study found that increased students revealed that the majority of students had moderate AI reliance (99%), average reliance on AI dialogue tools is associated with reduced cognitive ability and higher academic stress. Therefore, balanced and responsible use of AI tools is important to promote independent thinking, cognitive development, and stress management among nursing students.

Objective: To assess AI reliance, cognitive ability, and academic stress, and examine their relationships and associations with selected demographic variables among Generation-Z nursing students.

Methodology: The study was conducted in College of Nursing, L.L.R.M Medical College, Meerut among 200 Nursing students by using the convenience sampling technique who met the eligibility criteria and provide written consent. Descriptive correlation research design was adopted. The data was collected with demographic questionnaire and self-structured level of AI usage, self-structured Academic stress questionnaire and self-structured cognitive tool. Descriptive and inferential statistics were used for data analysis.

Results: The study findings revealed that the majority (99%) of Generation-Z Nursing students had a moderate level of AI reliance, 87% demonstrated average cognitive ability, and 75.5% experienced moderate academic stress. A statistically significant negative correlation was found between AI reliance and cognitive ability (Karl Pearson's Correlation Coefficient, $r = 0.42$, $p = 0.001$), indicating that increased AI reliance was associated with reduced cognitive ability. A statistically significant positive correlation was observed between AI reliance and academic stress (Karl Pearson's Correlation Coefficient, $r = 0.36$, $p = 0.002$), suggesting that higher AI reliance was associated with increased academic stress. Furthermore, a statistically significant negative correlation was found between cognitive ability and academic stress (Karl Pearson's Correlation Coefficient, $r = -0.31$, $p = 0.004$). Significant associations were also observed between selected demographic variables (age, area of living, monthly family income, year of study, and type of AI tool used) and the major study variables using the Chi-square (χ^2) test at the $p < 0.05$ level of significance.

Conclusion: The study found that most Generation-Z nursing students had moderate AI reliance, average cognitive ability, and moderate academic stress. Statistical analysis showed that increased AI reliance was significantly associated with decreased cognitive ability ($r = 0.42$, $p < 0.05$) and increased academic stress ($r = 0.38$, $p < 0.05$). A significant negative relationship was also found between cognitive ability and academic stress ($r = -0.45$, $p < 0.05$), indicating that students with better cognitive ability experienced less academic stress. These findings highlight the importance of using AI tools responsibly to support cognitive development and reduce academic stress.

KEYWORDS: Artificial intelligence, AI Dialogue, Over Reliance, Cognitive Ability, Generation-Z, Academic stress.

INTRODUCTION

Artificial Intelligence (AI) has become an important part of higher education, particularly among Generation Z students who frequently use AI-powered tools such as ChatGPT, Gemini, and Microsoft Copilot for academic purposes. While these tools enhance learning efficiency and accessibility, excessive reliance on AI may negatively affect cognitive development, critical thinking, and independent learning. Academic stress, a common challenge among nursing students, can further influence the use of AI technologies. A study by Kosmyna et al. (2025) reported that frequent use of large language models was associated with reduced memory retention and cognitive engagement. Similarly, Al Kaabi (2025) found that 78.3% of students relied on AI for assignments, and 94.5% reported negative effects on critical thinking skills. Acosta-Enriquez et al. (2025) also found that academic stress significantly predicted AI dependency ($\beta = 0.398$, $p < 0.001$). Furthermore, Zhang et al. (2024) reported that excessive AI use reduced creativity, independent thinking, and critical thinking abilities. These findings are consistent with the present study, which revealed a significant negative correlation between AI reliance and cognitive ability ($r = -0.42$, $p = 0.001$) and a significant positive correlation between AI reliance and academic stress ($r = 0.36$, $p = 0.002$). Therefore, balanced and responsible use of AI dialogue tools is essential to promote cognitive development, independent thinking, and effective stress management among nursing students.

OBJECTIVES OF THE STUDY WERE:

1. To assess the level of reliance to AI dialogue, cognitive ability and academic stress among Generation-Z students.
2. To assess the impact of AI reliance on cognitive ability & academic stress among GenerationZ students.
3. To examine the relationship between cognitive ability and academic stress among GenerationZ students.
4. To find out the association between the level of AI reliance and level of academic stress and level of cognitive ability with their selected demographic variables among Generation-Z students.

METHODOLOGY

A quantitative research approach with a descriptive correlational research design was adapted for the study. The study was conducted among Generation-Z nursing students of the College of Nursing, L.L.R.M Medical College, Meerut. Formal written permission was obtained from Principal of the college and consent obtained from all the participants of the study. The data collection was carried out from 8 April 2026 to 16 April 2026. The total 200 Participants meeting the inclusion and exclusion criteria were selected through Non-probability Convenience Sampling technique. The baseline assessment was conducted on 8 April 2026 through a Google Form. Demographic data including age, gender, educational level, year of study, area of residence, and other relevant characteristics were collected from eligible Generation-Z students. The final data collection was conducted on 16 April 2026. A total of 200 students. The researcher assembled the participants and administered the study tools. Clear instructions regarding the completion of the questionnaires were provided before data collection. Participants were given 45 minutes to complete all the tools. The researcher remained available to clarify any doubts during the process. All completed questionnaires were collected and checked for completeness before proceeding to data analysis. Data were analysed using descriptive and inferential statistics, and ethical principles including informed consent, confidentiality, and voluntary participation were maintained throughout the study.

Inclusion criteria

- 1- Generation-Z students (Born Year 1997-2012).
- 2- Currently enrolled in the Nursing programme at College of Nursing, L.L.R.M, Medical College, Meerut.
- 3- Willing to participate and provide written informed consent.
- 4- Using AI dialogue.

Exclusion criteria

- 1- Decline to provide consent or unwilling to comply with study instructions.
- 2- Students diagnosed with psychological disorders such as depression, anxiety & severe stress.
- 3- If the students have any medical illness (any accidental trauma, TB, COVID, communicable disease) at the time research study.

RESULTS

The finding of the study is presented according to the objectives of the study. The data is prepared under the subsequent sections: -

Table 1: Distribution of Frequency and percentage demographic variables among Generation-Z nursing students.

(N = 200)

S. No.	Demographic Variable	Categories	Frequency (f)	Percentage (%)
1	Age in years	17–19 years	24	12%
		20–22 years	112	56%
		23–25 years	61	30.5%
		26–28 years	3	1.5%
2	Gender	Male	52	26%
		Female	148	74%
3	Religion	Hindu	181	90.5%
		Muslim	15	7.5%
		Christian	2	1%
		Other	2	1%
4	Area of living	Rural	48	24%
		Urban	119	59.5%

		Town/City	25	12.5%
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		Semi-urban	8	4%
5	Type of family	Nuclear	146	73%
		Joint	49	24.5%
S. No.	Demographic Variable	Categories	Frequency (f)	Percentage (%)
		Single parent family	4	2%
		Extended family	1	0.5%
6	Monthly family income	Less than ₹5000	22	11%

		₹5001–15,000	49	24.5%
		₹15,001–25,000	46	23%
		Above ₹25,000	83	41.5%
7	Current course	B.Sc. Nursing	200	100%
8	Semester/Year of study	1st Year	87	43.5%

		2nd Year	37	18.5%
		3rd Year	1	0.5%
		4th Year	75	37.5%
9	Type of AI tool used	ChatGPT	109	54.5%
		Google	29	14.5%
		Meta AI	2	1%
		All of the above	60	30%
		None	0	0

Table 2: Frequency & Percentage Distribution on level of AI usage.

(N = 200)

S. No	Level of AI Usage	Score Range	Frequency(f)	Percentage (%)
1	Low Level	18-42	1	0.5%
2	Moderate Level	43-66	198	99%
3	High Level	67-90	1	0.5%

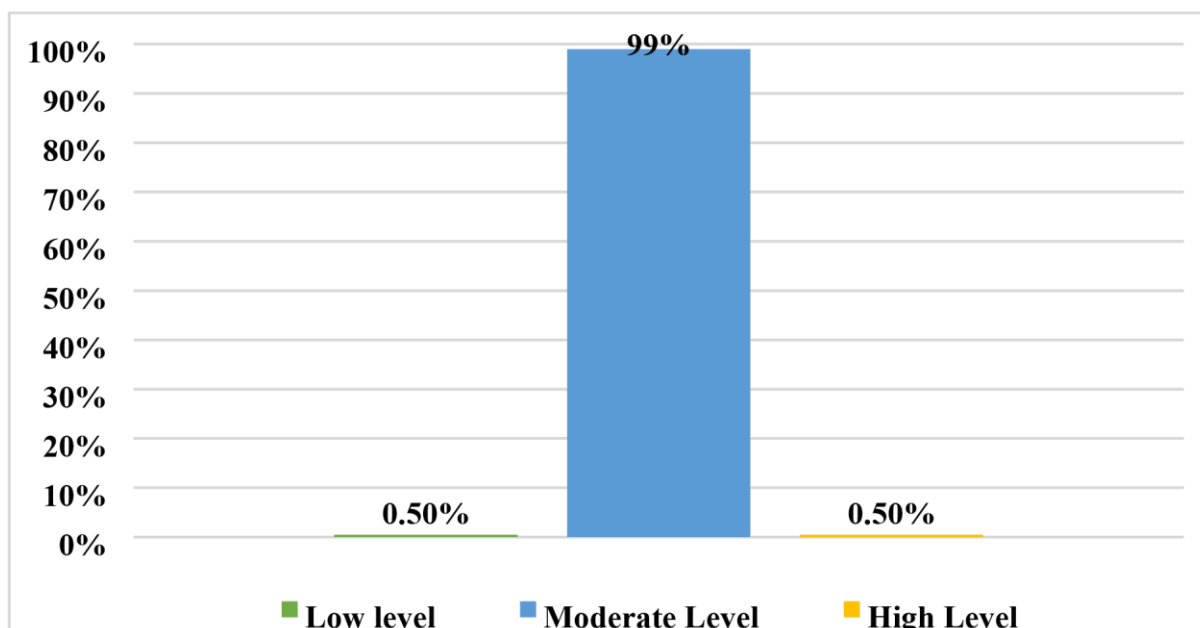


Figure 1 Percentage distribution of generation-Z students according to level of AI Usage

TABLE 3: Frequency & Percentage distribution on level of cognitive ability(N = 200)

S. No	Level of Cognitive ability	Score Range	Frequency(f)	Percentage (%)
1	Low cognitive ability	0-5	12	6%
2	Moderate cognitive ability	6-10	174	87%
3	High cognitive ability	11-15	14	7%

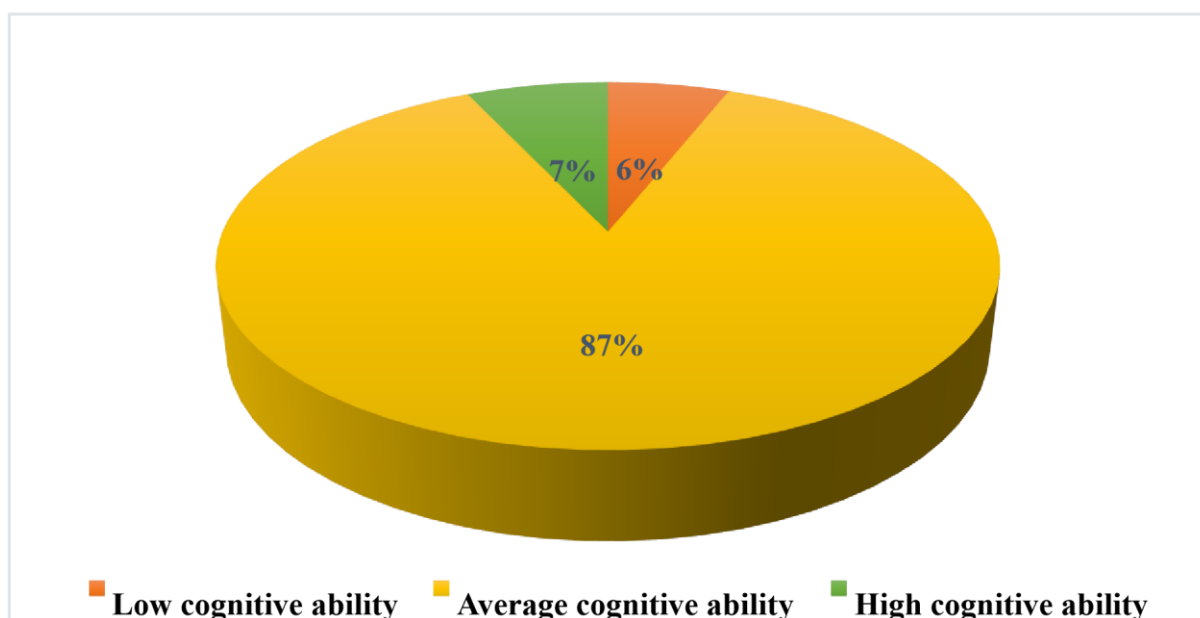


Figure 2 Percentage distribution of generation-Z students according to level of cognitive ability

TABLE 4: Frequency & Percentage distribution on level of Academic stress(N=200)

S. No	Level of Academic stress	Score Range	Frequency(f)	Percentage (%)
1	Low level	25-58	49	24.5%
2	Moderate level	59-92	151	75.5%
3	High level	93-125	0	0

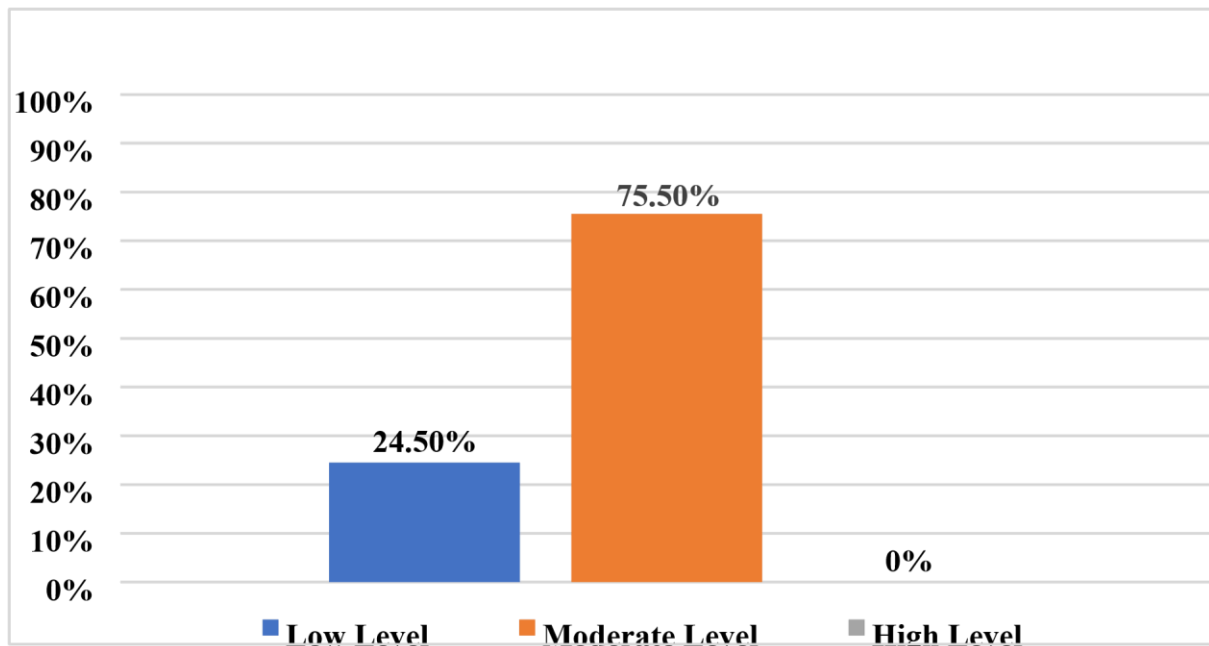


Figure 3 Percentage distribution of generation-Z students according to level of Academic stress.

TABLE 5: Relationship Between Level of AI Usage And Cognitive Ability Among Generation-Z StudentsN=200

Variables	Standard Deviation	Mean	Mean Difference	Correlation (r)	p-value	Level of significance
AI reliance	6.2	54.6	46.5	-0.42	0.001	Significant*
Cognitive Ability	2.3	8.1				

*Significant at $p < 0.05$ level of significance

TABLE 6: Relationship Between Level of AI Usage and Level of Academic Stress Among Generation-Z Students N=200

Variables	Standard Deviation	Mean	Mean Difference	Correlation (r)	p-value	Level of significance
AI reliance	6.2	54.6	-12.8	0.36	0.002	Significant*
Academic stress	8.1	67.4				

*Significant at $p < 0.05$ level of significance

TABLE 7: Relationship Between Level of Cognitive Ability and Level of Academic Stress Among Generation-Z StudentsN=200

Variables	Standard Deviation	Mean	Mean Difference	Correlation (r)	p-value	Level of significance
Cognitive ability	2.3	8.1	-59.3	-0.31	0.004	Significant*
Academic stress	8.1	67.4				

*Significant at $p < 0.05$ level of significance

Table 8: Association between Level of AI Usage Demographic and Selected Variables among Generation-Z Nursing Students (N=200)

S. No	Demographic	df	χ^2 Value	p-value	Interpretation
1	Age in Year	4	8.21	0.041	Significant *
2	Gender	2	2.16	0.339	Not Significant
3	Area of living	6	6.42	0.038	Significant*
4	Type of Family	4	2.91	0.572	Not Significant
5	Religion	4	1.84	0.765	Not Significant
6	Monthly Family Income	6	7.15	0.029	Significant *
7	Semester/Year of Study	6	9.26	0.018	Significant *
8	Type of AI Tool Used	8	11.42	0.012	Significant *

*Statistically significant at $p < 0.05$ level

Table 9: Association between Level of cognitive ability and selected demographic variables among Generation-Z students(N=200)

S. No	Demographic	df	χ^2 Value	p-value	Interpretation
1	Age in Year	4	7.84	0.049	Significant*
2	Gender	2	1.92	0.382	Not Significant
3	Area of living	6	5.16	0.041	Significant *
4	Type of Family	4	3.02	0.554	Not significant
5	Religion	4	2.14	0.643	Not significant
6	Monthly Family Income	6	6.88	0.031	Significant *

7	Semester/Year of Study	6	8.64	0.022	Significant *
8	Type of AI Tool Used	8	10.26	0.015	Significant *

*Statistically significant at p<0.05 level

Table 10: Association between level of Academic stress and selected demographic variables among Generation-Z students.(N=200)

S. No	Demographic	df	χ^2 Value	p-value	Interpretation
1	Age in Year	4	8.42	0.039	Significant*
2	Gender	2	2.08	0.351	Not Significant
3	Area of living	6	6.24	0.004	Significant*
4	Type of Family	4	3.11	0.539	Not Significant
5	Religion	4	1.96	0.742	Not significant
6	Monthly Family Income	6	7.48	0.027	Significant*
7	Semester/Year of Study	6	8.95	0.021	Significant*
8	Type of AI Tool Used	8	10.84	0.014*	Significant*

*Statistically significant at p<0.05 level *(NS) *(N)

• Table 1 findings revealed that most Generation-Z nursing students were aged 20–22 years (56%), female (74%), Hindu (90.5%), and from urban areas (59.5%). The majority belonged to nuclear families (73%) and had a monthly family income above ₹25,000 (41.5%). All participants were B.Sc. Nursing students, with most studying in the 1st year (43.5%). ChatGPT was the most commonly used AI tool (54.5%), indicating widespread use of AI technologies among nursing students.

• Table 2 findings showed that **the majority of the Generation-Z students 198 (99%) had moderate level of AI reliance**, while only 1 (0.5%) student had low level and 1 (0.5%) had high level AI reliance. Table 3 **majority of students 174 (87%) had average cognitive ability**, whereas 14 (7%) had high cognitive ability and 12 (6%) had low cognitive ability. Table 4 finding showed that **The majority of students 151 (75.5%) had moderate academic stress**, while 49 (24.5%) had low academic stress. No participants were found to have a high level of academic stress. Table 5 showed that there is moderate negative correlation ($r = -0.42$) between level of AI reliance and level of cognitive ability among Generation-Z students, which was statistically significant at $p < 0.05$ level. Table 5 shows that there is a positive correlation ($r = 0.36$) between AI reliance and academic stress, which was statistically significant at $p < 0.05$ level. Table 6 depicts that there is a negative correlation ($r = 0.31$) between cognitive ability and academic stress among Generation-Z students, which was statistically significant. Table 7, the findings revealed that age, area of living, monthly family income, year of study, and type of AI tool used had significant association with level of AI reliance, whereas gender, religion, and type of family had no significant association. Table 8, the findings revealed that age, area of living, monthly family income, year of study, and type of AI tool used had significant association with cognitive ability, whereas gender, religion, and type of family had no significant association. Table 9, the findings revealed that age, area of living, monthly family income, year of study, and type of AI tool used had significant association with academic stress, whereas gender, religion, and type of family had no statistically significant association. The findings revealed that age, area of living, monthly family income, year of study, and type of AI tool used were significantly associated with

AI reliance, cognitive ability, and academic stress ($p < 0.05$). However, gender, religion, and type of family showed no significant association with these study variables.

DISCUSSION

The study found that most Generation-Z nursing students had moderate AI reliance, average cognitive ability, and moderate academic stress. A significant negative correlation was observed between AI reliance and cognitive ability ($r = -0.42$, $p < 0.05$), while a significant positive correlation was found between AI reliance and academic stress ($r = 0.36$, $p < 0.05$). Cognitive ability was also negatively correlated with academic stress ($r = -0.31$, $p < 0.05$). These findings are consistent with studies by **Zhang et al. (2024)** and **von Garrel and Mayer (2023)**, which reported that excessive dependence on AI tools may reduce independent thinking and cognitive engagement while contributing to higher academic stress among students. However, these findings contrast with the study conducted by **Wang et al. (2025)**, which found that the effective use of AI technology significantly improved students' critical thinking and academic achievement. The study suggested that AI can enhance cognitive development when used appropriately as a learning support tool rather than as a substitute for independent thinking and problem-solving.

NURSING IMPLEMENTATION

Nursing Education

- Students should be encouraged to develop critical thinking, problem-solving ability, and independent learning skills rather than excessive dependence on AI tools. The findings of the study can be used as educational material for teaching nursing students about responsible AI usage, cognitive development, and stress management in academic settings.

Nursing Practice

- Nursing professionals should create awareness among students regarding the appropriate and balanced use of AI dialogue tools in academic activities. The findings of the study can help nurses and educators encourage healthy study habits and reduce academic stress among nursing students.

Nursing Management

- The findings of the study highlight the need for nurse educators to promote the responsible and balanced use of AI tools among Generation-Z nursing students. Educational strategies that strengthen critical thinking, problem-solving, independent learning, and cognitive skills should be integrated into the nursing curriculum.

Regular monitoring of students' academic stress and guidance on the appropriate use of AI technologies may help reduce over-reliance on AI and enhance academic performance and professional competence.

Nursing Research

- The findings of this study provide evidence for future nursing research on the impact of AI reliance on students' cognitive ability and academic stress. Further studies with larger and more diverse samples are recommended to explore the long-term effects of AI use and to develop interventions that promote the effective and responsible use of AI technologies in nursing education.

RECOMMENDATION

1. Similar studies can be conducted on larger samples to improve the generalizability of the findings related to AI reliance, cognitive ability, and academic stress among Generation-Z nursing students.
2. Awareness Programmes and educational sessions regarding responsible and balanced use of AI dialogue tools should be implemented in nursing institutions to promote independent thinking and healthy learning practices among students.
3. Further research can focus on the long-term impact of over-reliance on AI dialogue tools on students' cognitive development, academic performance, and professional decision-making skills.

LIMITATIONS

- The study was conducted on a relatively small sample of 200 Generation-Z Nursing students, which may limit the generalizability of the findings to a larger population.
- The study was limited to selected Colleges of Nursing in Meerut; therefore, the findings may not be generalizable to nursing students in other institutions or regions.

CONCLUSION

- The present study concluded that most Generation-Z students had moderate AI reliance, average cognitive ability, and moderate academic stress. The study found that increased reliance on AI dialogue tools is associated with reduced cognitive ability and higher academic stress. Therefore, balanced and responsible use of AI tools is important to promote independent thinking, cognitive development, and stress management among nursing students.

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