Knowledge, Attitude and Perceived Impact of Artificial Intelligence in Nutrition and Diet Planning Among College Students

Pooja Bishnoi
Ph. D Scholar, Department of Foods and Nutrition, Government College of Home Science, Chandigarh

***Abstract*—Artificial Intelligence (AI) has emerged as a transformative technology in the field of healthcare, including nutrition and diet planning. It offers new possibilities for personalized dietary guidance and improved nutritional awareness among individuals. In recent years, the use of AI-based applications among young adults has increased significantly; however, its actual influence on dietary behaviour remains unclear. Therefore, the present study was undertaken to assess the knowledge, attitude and perceived impact of Artificial Intelligence in nutrition and diet planning among college students. A quantitative, descriptive cross-sectional study was conducted among 100 college students in Chandigarh using purposive sampling technique. Data were collected through a self-structured questionnaire consisting of sections on knowledge, attitude and perceived impact and were analysed using descriptive and inferential statistical methods. The findings revealed that a majority of respondents had good knowledge regarding AI in nutrition and diet planning. Most respondents exhibited a neutral to slightly positive attitude towards AI. However, the perceived impact of AI on dietary habits was found to be low, with a majority reporting minimal or no influence. The study highlights a gap between knowledge and practical application of AI in nutrition. It is recommended that awareness programs, practical training and integration of AI related concepts into educational curricula should be promoted to enhance its effective use in diet planning.**

***Index Terms*—Artificial Intelligence, Nutrition, Knowledge, Attitude, Perceived Impact**

I. INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative technology with applications across various sectors, including healthcare, education and nutrition. In recent years, AI-based tools such as mobile applications, virtual assistants and personalized recommendation systems have increasingly been used to support dietary assessment, meal planning and nutrition counseling. These technologies provide users with instant access to nutrition-related information and individualized dietary recommendations, thereby improving accessibility and convenience in health management.

College students represent a population with high exposure to digital technologies and are among the most active users of smartphones and online applications. At the same time, this stage of life is often associated with irregular eating habits, increased consumption of convenience foods and limited attention to balanced nutrition due to academic demands and lifestyle changes. Consequently, AI-based nutrition tools may offer practical support in promoting healthier dietary behaviors among this group. Previous studies have reported that students generally possess favorable attitudes toward AI and recognize its potential benefits in healthcare and nutrition-related practices. AI-driven applications have been found useful in enhancing nutritional awareness, supporting dietary decision-making and facilitating personalized health recommendations. However, most existing studies have primarily focused on knowledge, awareness and attitudes toward AI, while limited attention has been given to understanding its actual influence on dietary habits and nutrition-related behaviors.

Despite the growing adoption of AI-based nutrition tools, evidence regarding their perceived impact on diet planning and food-related decision-making among college students remains scarce.

Understanding not only what students know about AI and how they perceive it, but also how they believe it influences their dietary practices, is important for evaluating the role of AI in nutrition promotion.

Therefore, the present study was undertaken to assess the knowledge, attitude and perceived impact of Artificial Intelligence in nutrition and diet planning among college students. The findings are expected to provide insights into the acceptance and influence of AI-based nutrition technologies and contribute to the development of effective strategies for integrating AI into nutrition education and health promotion programs.

Objectives of the Study

1. To assess the level of knowledge regarding Artificial Intelligence in nutrition and diet planning among college students.
2. To evaluate the attitude of college students towards the use of Artificial Intelligence in nutrition and diet planning.
3. To examine the perceived impact of Artificial Intelligence on dietary habits and diet planning practices among college students.

II. MATERIALS AND METHODS

Study Design and Participants

A quantitative, non-experimental, descriptive cross-sectional research design was adopted to assess the knowledge, attitude and perceived impact of Artificial Intelligence (AI) in nutrition and diet planning among college students. The study was conducted in Chandigarh, India, among students enrolled in various government and private colleges. A total of 100 college students were selected using purposive sampling based on predefined eligibility criteria. Students who were currently enrolled in academic programs, had awareness or exposure to AI-based applications and provided informed consent were included in the study. Individuals who were not college students, had no awareness of AI-based applications or submitted incomplete responses were excluded from the analysis.

Data Collection Tool

Data were collected using a self-structured questionnaire developed after an extensive review of relevant literature on Artificial Intelligence and nutrition. The questionnaire consisted of four sections: demographic information, knowledge regarding AI in nutrition and diet planning, attitude towards the use of AI in nutrition and diet planning and perceived impact of AI on dietary habits and diet planning practices. The questionnaire included multiple-choice questions and five-point Likert scale statements to obtain standardized responses. Prior to data collection, the tool was pre-tested among a small group of students to ensure clarity, relevance and comprehensibility of the items. Necessary modifications were made based on the feedback received.

Validity and Reliability

The validity and reliability of the questionnaire were established before the final survey. Internal consistency was assessed using Cronbach's alpha, and the overall reliability coefficient of the instrument was found to be 0.92, indicating excellent reliability. Construct validity was evaluated through factor analysis, which supported the multidimensional structure of the questionnaire and confirmed its suitability for measuring knowledge, attitude and perceived impact related to AI in nutrition and diet planning.

Data Collection Procedure

Data were collected through an online survey using Google Forms. An informed consent statement was provided at the beginning of the questionnaire, explaining the purpose of the study, voluntary participation and confidentiality of responses. The questionnaire link was distributed through appropriate digital platforms among eligible participants. Completed responses were automatically recorded, screened for completeness and checked for consistency before analysis. Incomplete or invalid responses were excluded from the final dataset.

Scoring and Interpretation

Knowledge was assessed using ten multiple-choice questions. Each correct response was assigned one point, while incorrect or "Not Sure" responses received zero points. The maximum obtainable score was 10. Knowledge scores were categorized as poor (<50%), average (50–74%) and good (≥75%).

Attitude and perceived impact were measured using ten statements each on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly

Agree). Total scores ranged from 10 to 50. For both attitude and perceived impact, scores ≤24 were categorized as negative, scores between 25 and 35 as neutral and scores ≥36 as positive.

Statistical Analysis

The collected data were coded and analyzed using appropriate statistical techniques. Descriptive statistics, including frequency, percentage, mean and standard deviation, were used to summarize respondent characteristics and study variables. Inferential analysis was performed using a one-sample Z-test to determine whether the mean scores for knowledge, attitude and perceived impact differed significantly from the predetermined benchmark or neutral values. Statistical significance was considered at $p < 0.05$.

III. RESUTLS

A total of 100 college students participated in the study. The majority of respondents belonged to the 18–20 years age group (61%), were female (70%), pursuing undergraduate studies (64%), and belonged to the science stream (81%). Awareness regarding Artificial Intelligence (AI) was high, with 94% of respondents reporting familiarity with AI technologies.

Table 1. Socio-Demographic Characteristics of Respondents (n = 100)

Variable	Category	Frequency	Percentage (%)
Age	18–20 years	61	61.0
	21–23 years	14	14.0
	24–26 years	15	15.0
	Above 26 years	10	10.0
Gender	Female	70	70.0
	Male	30	30.0
Course	Undergraduate	64	64.0
	Postgraduate	26	26.0
	Other	10	10.0
Stream	Science	81	81.0
	Arts	10	10.0
	Commerce	6	6.0
	Other	3	3.0

Table 2. Awareness of Artificial Intelligence Among Respondents (n = 100)

Response	Frequency	Percentage (%)
Yes	94	94.0
No	6	6.0
Total	100	100.0

The findings indicate a high level of awareness of Artificial Intelligence among college students, reflecting the widespread exposure of young adults to digital technologies and AI-powered applications.

Table 3. Frequency of Artificial Intelligence Use Among Respondents (n = 100)

Frequency of Use	Frequency	Percentage (%)
Daily	52	52.0
Weekly	19	19.0
Occasionally	21	21.0
Rarely	8	8.0
Total	100	100.0

More than half of the respondents (52%) reported using AI tools daily, indicating that AI has become an integral component of students' routine academic and personal activities.

Table 4. Distribution of Respondents According to Knowledge Level (n = 100)

Knowledge Level	Frequency	Percentage (%)
Good	68	68.0
Average	22	22.0
Poor	10	10.0
Total	100	100.0

The majority of respondents (68%) demonstrated good knowledge regarding Artificial Intelligence in nutrition and diet planning, whereas only 10% exhibited poor knowledge.

Table 5. Distribution of Respondents According to Attitude Level (n = 100)

Attitude Level	Frequency	Percentage (%)
Negative	11	11.0
Neutral	51	51.0
Positive	38	38.0
Total	100	100.0

More than half of the respondents (51%) showed a neutral attitude towards the use of AI in nutrition and diet planning, while 38% reported a positive attitude. Only a small proportion (11%) exhibited a negative attitude.

Table 6. Distribution of Respondents According to Perceived Impact Level (n = 100)

Perceived Impact Level	Frequency	Percentage (%)
Negative	29	29.0
Neutral	53	53.0
Positive	18	18.0
Total	100	100.0

The majority of respondents (53%) perceived a neutral impact of Artificial Intelligence on their dietary habits and diet planning practices, whereas only 18% reported a positive impact.

Table 7. Summary of Knowledge, Attitude and Perceived Impact Scores (n = 100)

Variable	Mean ± SD	Z-value	p-value
Knowledge Score	8.02 ± 1.26	7.915	<0.05
Attitude Score	33.38 ± 6.32	5.35	<0.05
Perceived Impact Score	29.86 ± 6.94	-0.31	>0.05

The mean knowledge score (8.02 ± 1.26) was significantly higher than the benchmark value, indicating a good level of knowledge regarding AI in nutrition and diet planning. Similarly, the mean attitude score (33.38 ± 6.32) was significantly higher than the neutral value, reflecting an overall favorable attitude towards AI-based nutrition tools. However, the mean perceived impact score (29.86 ± 6.94) did not differ significantly from the neutral value ($p > 0.05$), suggesting that although students possess adequate knowledge and generally positive attitudes towards AI, its influence on their actual dietary habits and diet planning practices remains limited.

Overall, the findings reveal a gap between awareness and practical influence. While college students are knowledgeable about Artificial Intelligence and demonstrate a willingness to accept its use in nutrition and diet planning, the perceived impact of AI on their everyday dietary behavior is still modest.

IV. DISCUSSION

The present study assessed the knowledge, attitude and perceived impact of Artificial Intelligence (AI) in nutrition and diet planning among college students. The findings revealed a high level of awareness regarding AI, with 94% of respondents reporting familiarity with AI technologies. More than half of the participants (52%) reported using AI tools daily, indicating that AI has become an integral part of students' academic and personal activities. This finding supports the observations of Almulhem et al. (2026), who reported a high willingness among students to adopt AI-based tools for health-related purposes.

The study further demonstrated that the majority of respondents (68%) possessed good knowledge regarding AI in nutrition and diet planning. The mean knowledge score was significantly higher than the benchmark value, indicating that college students are generally well informed about AI concepts and their applications in nutrition. These findings are consistent with those reported by Alhazmi et al. (2025), who observed adequate knowledge levels among dietitians regarding the use of AI in dietetic practice. The increasing availability of AI-powered applications, digital learning platforms and online information sources may have contributed to the high knowledge levels observed among students.

With respect to attitude, more than one-third of the respondents (38%) exhibited a positive attitude, while the majority (51%) demonstrated a neutral attitude towards AI in nutrition and diet planning. Although the mean attitude score was significantly higher than the neutral value, the predominance of neutral responses suggests that students are still developing confidence in the practical use of AI-based nutrition tools. Similar findings were reported by Garapati et al. (2024), who found that students generally held positive attitudes towards AI while expressing concerns regarding reliability, ethical issues and future implications. The neutral attitude observed in the present study may be attributed to limited practical experience with nutrition-specific AI applications despite general awareness of AI technologies.

The findings related to perceived impact revealed that AI has not yet exerted a substantial influence on students' dietary habits and diet planning practices. More than half of the respondents (53%) reported a neutral perceived impact, while only 18% reported a positive impact. Furthermore, the mean perceived impact score did not differ significantly from the neutral value. These findings suggest that although students are knowledgeable about AI and use it frequently, its integration into actual dietary decision-making remains limited. Similar observations were reported by Balakrishnan and Manimegalai (2022), who found that despite positive perceptions of AI, the practical utilization of AI-based nutrition applications among students remained relatively low.

The discrepancy between knowledge and perceived impact highlights an important gap between awareness and practical implementation. Students may recognize the potential benefits of AI-based nutrition tools;

however, factors such as limited exposure to specialized nutrition applications, concerns regarding accuracy and reliability, lack of personalized guidance and dependence on traditional sources of nutrition information may restrict their effective utilization. Consequently, awareness alone may not be sufficient to produce meaningful behavioral changes in dietary practices.

Overall, the findings suggest that Artificial Intelligence is gaining acceptance among college students and is increasingly recognized as a useful tool in nutrition and diet planning. However, its practical impact on dietary behavior remains limited. Therefore, efforts should be directed towards improving digital nutrition literacy, promoting evidence-based AI nutrition tools and providing practical training to enhance the effective integration of AI into everyday dietary management.

V. CONCLUSION

Based on the findings of the present study, it can be concluded that Artificial Intelligence is gaining recognition among college students, particularly in the context of nutrition and diet planning. Students demonstrate a good level of knowledge and a generally positive attitude towards AI, reflecting their openness to technological advancements in health-related areas. However, despite this awareness and acceptance, the actual impact of AI on dietary behaviours remains limited. This suggests that AI is still in the early stages of practical adoption in nutrition among students. Therefore, there is a need to bridge the gap between knowledge and application by enhancing practical exposure, improving accessibility and encouraging the effective use of AI-based tools in everyday dietary practices.

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