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Use of AI-Based Agents and Chatbots for Dietary and Nutrition Recommendations Among Adults: Patterns, Trust, and Behavioral Influence

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ABSTRACT

Artificial intelligence (AI)-based chatbots and conversational agents are increasingly consulted by adults seeking dietary and nutrition-related guidance, yet population-level patterns of use, trust, and behavioral influence remain insufficiently characterized. **Objectives:** To assess use patterns of AI chatbots for dietary recommendations among adults, and examine trust, verification behavior, professional consultation, and their sociodemographic and inter-variable associations. **Methods:** A cross-sectional survey was conducted among 200 adults using a structured, self-administered questionnaire; descriptive statistics, the chi-square test, and Spearman's rank-order correlation were applied. **Results:** Sixty-nine percent (n=138) of the sample reported using AI chatbots for dietary advice. Most commonly, ChatGPT (69.6%), primarily for weight management (27.5%), every week (37.7%). Most users perceived AI recommendations as reliable (76.8%) and trustworthy (79.7%), and 73.9% reported that AI had influenced their food choices; however, only 29.0% had consulted a qualified professional. AI use was significantly associated with age and gender ($p < 0.050$) but not education. Reliability, trust, and influence were strongly and positively intercorrelated ($\rho = 0.92-0.95$), while verification behavior showed negative correlations with trust and reliability ($\rho = -0.316$ to -0.346), suggesting that greater trust may paradoxically reduce critical appraisal of AI-generated advice. **Conclusions:** AI chatbots are widely used and trusted for dietary guidance despite limited professional oversight, highlighting a need for structured digital nutrition literacy and closer integration of AI tools with professional dietetic care.

INTRODUCTION

As generative artificial intelligence (AI) is rapidly spreading across society, adults are turning to conversational AI tools like ChatGPT, Gemini, and DeepSeek to seek health-related information, particularly about their diet and nutrition. Since the launch, ChatGPT has been rapidly embraced, and its always-on, conversational nature makes it an attractive addition or alternative to conventional dietetic counseling [1]. Experimental evaluations suggest these tools can provide broadly appropriate dietary guidance: "ChatGPT responses for non-communicable disease management are rated as appropriate in more than half to nearly three-

quarters of cases," and "overall, the diet quality scores for the CHATBOT-generated diet plans for weight loss were satisfactory, with a wide range of accuracy in matching the prescribed caloric targets and macronutrient balance across the different CHATBOTs" [2]. Systematic and scoping reviews also identify personalized, scalable coaching by AI chatbots as a potential intervention to support healthy eating and physical activity, and weight loss [3, 4], whilst AI-powered mobile nutrition applications have been associated with better goal engagement and meal adherence [5]. Meanwhile, direct comparisons



between advice from AI-powered chatbots and that of dietitians continue to show that these tools lack individualization, portion accuracy, and nutrient estimation, with several studies pointing to the fact that AI is not yet a replacement for credentialed nutrition counselling [6-9]. In parallel to these accuracy discussions, more studies have been conducted on the degree of public trust and acceptance of AI in the healthcare context. A significant minority of the general adult population is now seeking health information from AI chatbots, while trust in AI in health-related queries is somewhat lower than in other practical or technical queries [10, 11]. Trust, perceived usefulness, and social influence are key factors in chatbot adoption, regardless of age, as revealed in studies on technology acceptance [12, 13]. In addition, young adults have become more reliant on social media and AI-generated information sources that can be misleading when it comes to nutrition information and, at times, quite unreliable [14]. Ethical reflections also caution about the potential harm of unsupervised usage of chatbots related to weight and dietary behaviors for vulnerable groups like those who are prone to disordered eating [15]. In lower-resource settings like Pakistan, there is some positive evidence of increased and yet fragmented knowledge of AI in healthcare among the public and healthcare providers, and also the increased use of AI-generated chatbots and medical websites for self-directed health choices, such as self-medication [16-18]. While this growing body of work has investigated the technical accuracy of AI-generated dietary content in experimental settings, or the AI's acceptance in the broader healthcare landscape, a small number of quantitative studies on the actual use of, and trust in, AI dietary content by ordinary adults, as well as the extent to which this use leads to changes in dietary behaviors, has so far been conducted.

However, few population-level quantitative studies have explored how ordinary adults actually use AI chatbots for dietary and nutrition decisions, how much they trust these messages, whether they verify them, or whether they measurably influence their food choices, despite the growing body of work on the technical accuracy of AI-generated dietary content in experimental settings, or on the acceptance of AI in the broader healthcare landscape. There is a specific lack of linkages between patterns of using AI chatbots and trust, verification behavior, professional consultation, and sociodemographic characteristics in one adult sample. The purpose of this study, therefore, was to investigate the extent to which adult users of AI chatbots use them for dietary recommendations and what they use them for, how often they use them, what platform they use the chatbot on, perceived reliability, trust, verification behavior, behavioral

influence, and professional consultation, as well as their socio-demographic and inter-variable associations.

METHODS

This cross-sectional survey was conducted at the Department of Nutrition and Dietetics, University of Management and Technology from September 2025 to November 2025. All participants provided informed consent before participation. A quantitative survey was conducted among adults aged 18 years and above using a structured, self-administered questionnaire administered online. Adults who were able to provide informed consent and who had internet access were eligible for inclusion; individuals below 18 years of age, those who declined consent, and those with incomplete or duplicate responses were excluded. For this study, 'adults' were defined as community-dwelling individuals aged 18 years or older, irrespective of their occupation or socioeconomic status, who had access to the internet and were capable of providing informed consent. Participants were recruited using a non-probability convenience sampling technique, consistent with comparable cross-sectional surveys [16, 18]. They were approached through university email lists, social media platforms (e.g., Facebook, WhatsApp), and academic forums, with a link to the survey shared in these groups. The sample size was calculated using the formula for cross-sectional studies. Assuming a 50% proportion of adults reporting AI chatbot use for dietary advice (to maximize sample size), a 95% confidence level, and a 7% margin of error, the minimum required sample size was 196. The final analytic sample comprised 200 adults. The structured questionnaire was developed by the research team based on a review of relevant literature. It was pre-tested on a small sample of 10 adults to assess clarity and comprehensiveness, and minor wording adjustments were made based on their feedback. The final questionnaire captured sociodemographic characteristics (age, gender, and educational attainment); patterns of AI chatbot use (purpose, frequency, and platform used); and perceptions of AI-generated dietary advice. Perceptions were measured using four-point Likert-type items (1=Disagree to 4=Strongly Agree) assessing perceived reliability, trust in AI, verification behavior, and the influence of AI on dietary choices. Additionally, participants were asked whether they had consulted a doctor, dietitian, or nutritionist regarding AI-obtained dietary advice.

Statistical analysis was conducted using SPSS version 26.0. Descriptive statistics (frequencies and percentages) summarized sociodemographic characteristics and patterns of AI use. Because the perception and behavior variables were measured on an ordinal Likert scale

(1=Disagree to 4=Strongly Agree), non-parametric procedures were selected. The chi-square test was employed to examine associations between AI use and sociodemographic characteristics (age group, gender, education). Spearman's rank-order correlation was used to examine inter-relationships among perceived reliability, trust, verification behavior, and behavioral influence. A *p*-value of less than 0.050 was considered statistically significant.

RESULTS

A total of 200 adults were included in the study. Among the participants, 74 (37.0%) belonged to the 18–24-year age group, followed by 66 (33.0%) aged 25–34 years, 40 (20.0%) aged 35–44 years, and 20 (10.0%) aged 45–54 years; no participants were aged ≥55 years. Females constituted 102 (51.0%) of the sample, while males accounted for 98 (49.0%). Regarding educational attainment, 120 (60.0%) were undergraduates, and 90 (40.0%) were postgraduates. Overall, 138 (69.0%) of participants in this convenience sample reported having used an AI-based chatbot or agent to obtain dietary or nutrition-related recommendations, whereas 62 (31.0%) reported that they had never used AI for this purpose (Table 1).

Table 1: Sociodemographic Characteristics and Use of AI for Dietary Recommendations

Variables	Category	n (%)
Age Group	18-24 Years	74 (37.0%)
	25-34 Years	66 (33.0%)
	35-44 Years	40 (20.0%)
	45-54 Years	20 (10.0%)
	≥55 Years	0 (0.0%)
Gender	Female	102 (51.0%)
	Male	98 (49.0%)
Education	Undergraduate	120 (60.0%)
	Postgraduate	80 (40.0%)
AI Use	Yes	138 (69.0%)
	No	62 (31.0%)

Among the 138 participants who reported using AI for dietary or nutrition-related recommendations, weight loss or weight management was the most commonly reported purpose (*n*=38, 27.5%), followed by meal planning (*n*=22, 15.9%), healthy eating recommendations (*n*=20, 14.5%), and calorie or nutrient information (*n*=20, 14.5%). Food substitutions or recipes were reported by 18 (13.0%) participants, while 12 (8.7%) used AI for supplement-related information and 8 (5.8%) for disease-specific dietary advice. Regarding frequency of use, weekly use was the most common pattern (*n*=52, 37.7%), followed by monthly use (*n*=40, 29.0%) and rare use (*n*=34, 24.6%); daily

or almost-daily use was reported by 12 (8.7%) participants. ChatGPT was the most commonly used AI tool, reported by 96 (69.6%) AI users, followed by DeepSeek (*n*=22, 15.9%) and Gemini (*n*=20, 14.5%) (Table 2).

Table 2: Patterns and Purposes of AI Use for Dietary Recommendations

Variables	Category	n (%)
Purpose of AI Use	Weight Loss / Weight Management	38 (27.5%)
	Meal Planning	22 (15.9%)
	Healthy Eating Recommendations	20 (14.5%)
	Calorie / Nutrient Information	20 (14.5%)
	Food Substitutions / Recipes	18 (13.0%)
	Supplements	12 (8.7%)
	Disease-Specific Dietary Advice	8 (5.8%)
Frequency of AI Use	Daily / Almost Daily	12 (8.7%)
	Weekly	52 (37.7%)
	Monthly	40 (29.0%)
	Rarely	34 (24.6%)
AI Tool Used	ChatGPT	96 (69.6%)
	DeepSeek	22 (15.9%)
	Gemini	20 (14.5%)

Among AI users, 86 (62.3%) participants agreed, and 20 (14.5%) strongly agreed that AI-generated dietary recommendations were reliable; 22 (15.9%) were neutral, and 10 (7.2%) disagreed, so that 106 (76.8%) participants overall expressed agreement or strong agreement regarding the reliability of AI-generated dietary recommendations. Similarly, 88 (63.8%) participants agreed, and 22 (15.9%) strongly agreed that they trusted AI to provide useful information about nutrition and diet, while 18 (13.0%) were neutral and 10 (7.2%) disagreed; overall, 110 (79.7%) participants expressed a positive level of trust in AI for nutrition-related information. Verification of AI-generated recommendations was highly prevalent: 88 (63.8%) participants agreed, and 42 (30.4%) strongly agreed that they verified AI-generated dietary recommendations using another source before following them; 8 (5.8%) were neutral, and none disagreed, so that 130 (94.2%) participants reported agreement or strong agreement with verifying AI-generated dietary recommendations. Regarding the influence of AI on food or dietary choices, 80 (58.0%) participants agreed, and 22 (15.9%) strongly agreed that AI-generated dietary recommendations had influenced their food or dietary choices, while 36 (26.1%) were neutral and none disagreed; overall, 102 (73.9%) participants reported that AI-generated recommendations had influenced their dietary choices. Despite this relatively high level of trust and reported influence, consultation with qualified professionals was less common: only 40 (29.0%) AI users

reported consulting a doctor, dietitian, or nutritionist regarding dietary advice obtained from AI, whereas 98 (71.0%) had not consulted a nutrition or medical professional (Table 3).

Table 3: Perceptions, Trust, Verification, and Influence of AI-Generated Dietary Recommendations

Variables	Response	n (%)
AI Recommendations are Reliable	Disagree	10 (7.2%)
	Neutral	22 (15.9%)
	Agree	86 (62.3%)
	Strongly Agree	20 (14.5%)
I Trust AI to Provide Useful Nutrition Information	Disagree	10 (7.2%)
	Neutral	18 (13.0%)
	Agree	88 (63.8%)
	Strongly Agree	22 (15.9%)
I Verify AI Recommendations Using Another Source	Disagree	0 (0.0%)
	Neutral	8 (5.8%)
	Agree	88 (63.8%)
	Strongly Agree	42 (30.4%)
AI Recommendations Influenced my Food / Dietary Choices	Disagree	0 (0.0%)
	Neutral	36 (26.1%)
	Agree	80 (58.0%)
	Strongly Agree	22 (15.9%)
Consulted Doctor / Dietitian / Nutritionist	No	98 (71.0%)
	Yes	40 (29.0%)

Chi-square analysis revealed a significant association between AI use and age group ($\chi^2=35.45$, $df=3$, $p<0.001$). AI use was also significantly associated with gender ($\chi^2=13.05$, $df=1$, $p<0.001$). No significant association was observed with educational level ($\chi^2=0.06$, $df=1$, $p=0.802$) (Table 4).

Table 4: Sociodemographic Characteristics by AI Use Status

Variables	Category	AI Users, n (%)	Non-users, n (%)
Age Group	18–24 Years	52 (70.3%)	22 (29.7%)
	25–34 Years	58 (87.9%)	8 (12.1%)
	35–44 Years	24 (60.0%)	16 (40.0%)
	45–54 Years	4 (20.0%)	16 (80.0%)
Gender	Female	82 (80.4%)	20 (19.6%)
	Male	56 (57.1%)	42 (42.9%)
Education	Undergraduate	82 (68.3%)	38 (31.7%)
	Postgraduate	56 (70.0%)	24 (30.0%)

Spearman correlation analysis was conducted among AI users ($n=138$). Spearman's rank-order correlation analysis demonstrated strong associations among perceived reliability, trust, verification behavior, and influence on dietary choices. Perceived reliability was very strongly and positively correlated with trust in AI ($\rho=0.946$, $p<0.001$) and with the reported influence of AI on dietary choices ($\rho=0.940$, $p<0.001$), and trust in AI was also very strongly and positively correlated with influence on dietary choices ($\rho=0.921$, $p<0.001$). Verification behavior showed significant

negative correlations with perceived reliability ($\rho=-0.316$, $p<0.001$), trust in AI ($\rho=-0.346$, $p<0.001$), and influence on dietary choices ($\rho=-0.245$, $p=0.003$) (Table 5).

Table 5: Spearman Correlation Matrix for AI-Related Variables

Variables	Reliability	Trust	Verification	Influence
Reliability	1.000	0.946**	-0.316**	0.940**
Trust	0.946**	1.000	-0.346**	0.921**
Verification	-0.316**	-0.346**	1.000	-0.245*
Influence	0.940**	0.921**	-0.245*	1.000
* $p<0.005$, ** $p<0.001$	—	—	—	—

Overall, 69.0% of participants reported using AI-based chatbots or agents for dietary or nutrition-related recommendations. Weight loss and weight management were the most frequently reported purposes of AI use, while weekly use was the most common pattern, and ChatGPT was the most commonly used AI tool. Most AI users expressed trust in and perceived the reliability of AI-generated dietary information, and 73.9% reported that AI recommendations had influenced their food or dietary choices. Although 94.2% reported verifying AI-generated recommendations using another source, only 29.0% had consulted a doctor, dietitian, or nutritionist regarding dietary advice obtained from AI.

DISCUSSION

Our finding that 69.0% of participants reported using AI chatbots for dietary recommendations is substantially higher than the approximately one-third of adults reported in a 2026 KFF tracking poll for general health information [14]. This discrepancy suggests the current finding is partially supported by the literature but represents a higher proportion of reported use, likely attributable to our sample being younger and more digitally engaged. The high proportion of participants aged 18–34 years (70.0%) aligns with previous research consistently reporting that younger adults are the most frequent users of AI for health information [10, 14], and this association is strongly supported by Kauttonen *et al.* [12]. ChatGPT was the most commonly used tool (69.6%), followed by DeepSeek (15.9%) and Gemini (14.5%). This dominance is strongly supported by the literature, with Ponzo *et al.* and Kirk *et al.* both utilizing ChatGPT in their comparative studies [1, 6]. The most prevalent reason was weight loss or weight management (27.5%), followed by meal planning (15.9%). This is in line with previous systematic reviews [3, 4] which found that chatbots are an emerging weight loss coaching tool. This may be because structured medical nutrition therapy is a resource-intensive intervention [15] and is thus popular, and AI provides an accessible option. A remarkable result was the high degree of trust and perceived reliability, with 76.8% saying they trusted AI to give them reliable recommendations and 79.7% saying they trusted AI. This is somewhat at odds with the general sentiment that there is relatively low trust in AI for health-related queries [10, 14].

Kauttonen *et al.* noted that transparency was a major barrier to adoption of AI in healthcare [12]. The current results are corroborated by Presiado *et al.* who found that perceived usefulness and trust were influential in the acceptance of chatbots [11]. The level of trust seen could be context-dependent, as users may view dietary advice as a less risky area. Interestingly, 94.2% of the AI users said they checked AI suggestions with a different source. This high rate of verification is a discovery and is not widely reported. The negative correlation between verification and trust ($p = -0.346$, $p < 0.001$, $n = 138$), however, indicated that the more trustworthy participants were the least likely to verify, and the more dubious were the most likely to verify. This is similar to the notion of automation bias [10, 11] in which users become overly dependent on automated systems. Almost three-quarters (73.9%) said that AI recommendations had impacted their food choices. The values of reliability, trust, and influence are very high and positive, which are consistent with the Unified Theory of Acceptance and Use of Technology (UTAUT) [11, 13], but are very high for these constructs and may not be sufficiently separated in our measurement process. This warrants caution in interpreting them as independent predictors of behavioral influence ($p = 0.921-0.946$) warrant careful interpretation. These are very high correlations indicating high conceptual similarity between these constructs—especially since they were measured on single-item scales instead of multi-item scales. These correlations do not represent three separate determinants of behavioral influence but rather were likely due to the fact that participants who had positive attitudes toward AI were likely to have positive attitudes toward AI in all aspects [19–22]. The results of the bivariate Chi-square analysis revealed significant associations with age and gender in relation to AI use, and no association was found with educational level. This result is consistent with prior research [10, 14] that showed a higher prevalence of reported use of AI among younger adults. The rates were higher for females (80.4%) than for males (57.1%) and are similar to those found by Sadiq *et al.* who found that nutrition-related digital content is particularly targeted to young women [17]. This is also confirmed by Kauttonen *et al.* who also yielded null results for education acceptance of AI [12]. The current results corroborate the evidence presented by Habib *et al.* and Mahdi *et al.* in the Pakistani context, indicating the rise of self-directed health decisions driven by AI [16, 18].

This study has a few limitations. Because of the cross-sectional design, causal inferences cannot be made. Recall and social-desirability bias may occur with self-reported data. Limitations for generalizability are related to the non-probability convenience sampling. The distribution of age was skewed, with no participants 55 years and older; thus,

the observed relationship between age and AI use may not apply to older adults. For future research, two types of sampling designs: longitudinal and representative designs are suggested.

CONCLUSIONS

While not fully endorsed by health professionals, AI-powered chatbots, such as ChatGPT, are now a trusted source of nutrition advice for adults and have a significant impact on their dietary choices. There is a clear need for structured digital nutrition literacy initiatives and for AI tools to be more deeply integrated with care provided by professionals to better align with the demonstrated food literacy needs of people, given the perceived gaps between these food literacy needs and the actual accuracy of AI-generated nutrition advice. The issue of measurement should be taken into consideration when interpreting the relationships among these variables, and future research should use validated multi-item scales to better distinguish these theoretically distinct variables.

Authors' Contribution

Conceptualization: AN

Methodology: AN

Formal analysis: AN

Writing and Drafting: SND, AN

Review and Editing: SND, AN

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

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