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Research Article

Assessment of Academicians' Knowledge Level and Attitudes Towards the Use of Artificial Intelligence Related to Nutrition

Akademisyenlerin Beslenme ile İlgili Yapay Zeka Kullanımına Yönelik Bilgi Düzeyi ve Tutumlarının Değerlendirilmesi

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Abstract

Aim: This study was planned to examine the knowledge and attitudes of academicians towards the use of artificial intelligence (AI) in the field of nutrition. **Materials and Methods:** The study was conducted on 248 academicians who agreed to participate in the study voluntarily between October 2024 and December 2024. An online survey form and Likert scoring charts were applied to the academicians who participated in the study. SPSS 25.0 package program was used to evaluate the data. **Results:** A total of 248 people, 136 (55%) female and 112 (45%) male, with an average age of 38.7±9.49 years, participated in the study. 73.4% of the academicians who participated in the study stated that they use AI applications in their daily lives. 41.7% of male academicians and 58.3% of female academicians reported that they use AI applications to assess nutritional status. While the average knowledge level score of male academics was 13.7±7.60 and the average attitude level score was 40.6±10.35, the average knowledge level score of female academics was 13.1±6.59 and the average attitude level score was 44.6±9.33. A statistically significant difference was found between the attitude level scores according to gender ($p<0.05$). **Conclusion:** AI applications in the field of nutrition are increasing day by day. The level of attitude towards these applications differs between women and men. All health workers, especially dietitians, should receive training on current AI algorithm applications and the accuracy of these applications, and the level of attitude of the society on the subject should be examined more comprehensively.

Öz

Amaç: Bu çalışma, akademisyenlerin beslenme alanında yapay zeka (YZ) kullanımına yönelik bilgi ve tutumlarını incelemek amacıyla planlanmıştır. **Gereç ve Yöntem:** Çalışma, Ekim 2024 ile Aralık 2024 tarihleri arasında gönüllü olarak çalışmaya katılmayı kabul eden 248 akademisyen üzerinde yürütülmüştür. Çalışmaya katılan akademisyenlere çevrimiçi anket formu ve Likert puanlama çizelgeleri uygulanmıştır. Verilerin değerlendirilmesinde SPSS 25.0 paket programı kullanılmıştır. **Bulgular:** Çalışmaya 136 (%55) kadın ve 112 (%45) erkek olmak üzere toplam 248 kişi katılmıştır ve yaş ortalamaları 38,7±9,49 yıldır. Çalışmaya katılan akademisyenlerin %73,4'ü günlük yaşamlarında YZ uygulamalarını kullandıklarını belirtmiştir. Erkek akademisyenlerin %41,7'si ve kadın akademisyenlerin %58,3'ü beslenme durumunu değerlendirmek için YZ uygulamalarını kullandıklarını bildirmiştir. Erkek akademisyenlerin ortalama bilgi düzeyi puanı 13,7±7,60, ortalama tutum düzeyi puanı 40,6±10,35 iken, kadın akademisyenlerin ortalama bilgi düzeyi puanı 13,1±6,59, ortalama tutum düzeyi puanı 44,6±9,33 olarak bulunmuştur. Cinsiyete göre tutum düzeyi puanları arasında istatistiksel olarak anlamlı bir fark bulunmuştur ($p<0.05$). **Sonuç:** Beslenme alanında YZ uygulamaları her geçen gün artmaktadır. Bu uygulamalara yönelik tutum düzeyi kadın ve erkekler arasında farklılık göstermektedir. Tüm sağlık çalışanları, özellikle diyetisyenler, güncel YZ algoritma uygulamaları ve bu uygulamaların doğruluğu konusunda eğitim almalı ve toplumun konu hakkındaki bilgi ve tutum düzeyi daha kapsamlı olarak incelenmelidir.

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INTRODUCTION

The term "Artificial Intelligence (AI)" was first proposed in 1955 by computer scientist John McCarthy in a research project at Dartmouth College (1). Since then, developments in this field have been increasingly implemented in both experimental and clinical medicine. In recent years, the use of AI technologies has expanded into various domains including government policy, psychology, medicine, biomedical sciences, nutritional science, and related research fields (2–4). According to a report published by the European Food Safety Authority (EFSA), by the year 2030, intensified collaboration with the public and AI-supported risk assessment are expected to be at the forefront of food safety and health research. Specifically, the integration of machine learning for diet model analysis and the use of big data are projected to play a crucial role in identifying foodborne illnesses, evaluating food toxicity, enabling medical imaging diagnostics, and supporting personalized nutrition strategies (5).

Known applications of AI in the field of nutrition generally include the assessment of food intake (through the use of food images and wearable devices), dietary planning, menu design for individuals and groups, identification of diet-disease relationships, and conducting anthropometric measurements (2,6).

AI technologies, which are making significant advancements across various disciplines today, are also becoming increasingly prevalent in the field of nutrition. Existing literature documents various applications of AI, including the monitoring of dietary habits, diet planning, the development of personalized nutrition recommendations, and the analysis of diet–disease relationships. Nevertheless, there is a lack of research specifically investigating academics' knowledge and attitudes toward these technologies, particularly through the use of adapted and validated measurement scales. This gap underscores a notable deficiency in the current body of knowledge. Accordingly, the present study seeks to address this gap by systematically examining academics' knowledge and attitudes regarding the integration of AI into the field of nutrition.

Based on the purpose and scope of this research, the following hypotheses were developed:

H1: There is a difference between male and female academicians in terms of the areas where they use AI tools in daily life.

H2: There is a difference between male and female academicians regarding the use of AI applications in the field of nutrition.

H3: There is a difference between male and female academicians in their attitudes toward the use of AI in the field of nutrition.

H4: There is a difference between male and female academicians in their knowledge levels regarding the use of AI in the field of nutrition.

H5: There is a difference among academicians with different academic titles in their attitudes toward the use of AI in the field of nutrition.

H6: There is a difference among academicians with different academic titles in their knowledge levels regarding the use of AI in the field of nutrition.

MATERIALS and METHODS

Sample Selection

Academicians constitute a critical group in the context of emerging technologies due to their central role in knowledge production and dissemination, as well as their responsibility in educating future professionals. As opinion leaders within higher education, they not only contribute to the advancement of scientific research but also shape societal perspectives through teaching and academic discourse. Their perspectives are therefore of particular importance in understanding how new technologies may be integrated into specific fields such as nutrition. This cross-sectional and descriptive study was conducted on academicians who actively work at universities in Türkiye, represent the social structure and educate the individuals of the future, and whose knowledge and attitudes on the relevant subject are considered important. The inclusion criteria for this study were academics actively working at universities in Türkiye, those who agreed to participate voluntarily, and those who completed the survey completely. Exclusion criteria included those without an academic position, those who provided incomplete or inaccurate survey data, and those who chose not to participate in the study. Data were collected by contacting academics via their institutional email addresses between October 2024 and December 2024.

In this study, a convenience sampling method consisting of volunteer participants was used since

the survey was conducted by reaching the academicians via e-mail. The population of this study consists of academicians working at universities in Türkiye. Since the total number of academicians across the country is considerably high and not precisely available, approximately 500 academicians working at universities in Antalya, as reported in the YOK Academic database, were taken as a reference for the sample size calculation. However, the sample selection was not limited to Antalya, and academicians from different regions of Türkiye were also included.

As a result of the preliminary evaluation conducted by the Baskent University Statistical Consultancy and Research Center, the required sample size was determined through a power analysis (using G*Power software). With α=0.05, d=0.05, and p=0.50, the minimum sample size was calculated as 218 at the 95% confidence level. A total of 248 academicians participated in the study, thereby exceeding the minimum requirement and ensuring adequate statistical power. The study was initiated after receiving approval from Baskent University Non-Interventional Clinical Research Ethics Committee on September 28, 2024 with project number 24/173.

Data Collection Method

Data were prepared using “Google Forms” and collected using an online survey method. The survey was created as a mixture of closed-ended and Likert-scale questions to facilitate quantitative data collection. The survey questions were developed by the researcher based on a comprehensive review of the relevant literature (2-6) and with expert opinions from five faculty members with doctoral degrees, one research assistant, and three instructors from the fields of Nutrition and Dietetics, Gastronomy and Culinary Arts, Software Engineering, and Cooking Programs. The survey questions were sent to the experts via email, and they were asked to evaluate the items in terms of clarity, scope, representativeness of the relevant dimension, phrasing, accuracy, and redundancy. Based on the feedback received from the experts, the survey questions were finalized. This method of survey development aligns with established practices in questionnaire design, emphasizing content validity through expert review (7). The first section of the survey form included socio-demographic questions about the participants (age, gender, academic title, department, height-weight, etc.). The second section included previous dieting status, use of AI in daily life, and the third section included Likert scoring charts created to determine the attitude and knowledge level regarding the use of AI in the field of nutrition.

Measurement Scales Adaptation

In this study, scale items were adapted in accordance with the Technology Acceptance Model (TAM) framework to evaluate academicians' knowledge and attitudes toward AI technologies used in the field of nutrition (8). Within this framework, knowledge is defined as an individual's cognitive awareness, perceived competence, and conceptual understanding of AI. Attitude, on the other hand, reflects an individual's emotional evaluation, level of acceptance, and behavioral inclination toward AI technologies. Knowledge level was assessed through self-reported evaluations, which were considered appropriate for capturing the relationship between individuals’ perceived technological competence and their behavioral intention to adopt AI. The attitude items were developed based on the core principles of TAM-namely, perceived usefulness, perceived ease of use, and intention to use-to measure the extent to which participants trust and are willing to adopt AI-based nutritional applications.

For knowledge statements, all items are in 5-point Likert type, and the responses are 5 points = I am quite knowledgeable, 4 points = I have sufficient knowledge, 3 points = I am undecided, 2 points = I have little knowledge, 1 point = I have no knowledge. For attitude statements, all items are in 5-point Likert type, and the responses are 5 points = I strongly agree, 4 points = I agree, 3 points = I am undecided, 2 points = I disagree, 1 point = I strongly disagree. Seven questions were asked to measure the level of knowledge and the maximum score that individuals can be obtained is 35. Thirteen questions were asked to measure the level of attitude and the maximum score that can be obtained is 65. Higher scores indicate a higher level of knowledge and attitude towards the use of AI in nutrition-related areas (9).

The applied likert measurement questions were adapted to suit for the academicians and the context of nutrition by using the knowledge and attitude questions used in the scale developed by Serbaya et al. (2024) for health professionals (10). The knowledge questions in the reference study measure awareness of broad areas such as improving patient outcomes in healthcare settings using AI, early diagnosis, personalized treatment, medical imaging, data security, predictive analysis, and patient management. In this study, the items in question were adapted to the field of nutrition. For example, the question “nutrient analysis applications based on food

images taken with a smartphone" reflects awareness of early diagnosis and nutritional assessment technologies. Questions such as "diet planning applications" and "personalized automatic menu planners" correspond to personalized treatment approaches. In addition, items such as "acoustic-based wearable devices" and "smart belts that measure bowel movements" have been associated with AI-supported patient management through the use of wearable technologies in nutrition monitoring. The attitude items in the reference study cover various dimensions such as trust, acceptance, intention to use, and need for training regarding the use of AI in healthcare settings. In this study, these items were adapted to the field of nutrition. For example, the item "I trust the accuracy of calorie calculations in a diet written with AI" was developed in response to the statement "I believe that AI can increase diagnostic accuracy and treatment planning." Similarly, the statement "I am open to incorporating AI tools into my healthcare applications in the future" was transformed into more specialized items such as "I would use an application that uses AI for shopping" or "I would create my nutrition plan according to AI." In addition, the question "Do you think there could be serious privacy issues in the use of AI?" was reflected in this study with items measuring concerns about privacy and data security. In this context, the attitude scale developed aimed to measure the extent to which individuals find AI technologies reliable, applicable and adoptable in nutrition (10).

The questions were examined in terms of criteria such as clarity, scope, expression, accuracy, and repetition, and finalized based on expert opinions and necessary adjustments. Structural validity was primarily ensured through expert evaluation, while internal consistency was assessed using the Cronbach's alpha reliability coefficient, which was found to be 0.82 for knowledge questions and 0.88 for attitude questions. The fact that these values are above the widely accepted threshold of 0.70 emphasizes the reliability and consistency of the measurement for both knowledge and attitude dimensions (11).

Data Analysis

Statistical analyses were performed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics for categorical variables (e.g., gender, academic title) were presented as frequency (n) and percentage (%). The normality of numerical variables (e.g., knowledge and attitude scores) was assessed using the Kolmogorov-Smirnov test, and the results indicated that the data did not follow a normal distribution. Therefore, median and interquartile range (Q1–Q3) values were reported for these variables. To examine the relationship between categorical independent variables (e.g., gender, academic title) and knowledge or attitude levels, Pearson's Chi-Square test was used when the assumptions were satisfied. For comparisons of knowledge and attitude scores between two independent groups (e.g., male vs. female), the nonparametric Mann-Whitney U test was applied. When comparing more than two independent groups (e.g., BMI group, academic title), the Kruskal-Wallis test was employed. In all hypothesis tests, the probability of Type I error was taken as $\alpha=0.05$.

RESULTS

The participants consisted of 248 individuals, with 136 (55%) were female and 112 (45%) were male. The average age of academicians is 38.7±9.49 years. When the academic titles of academicians are evaluated, it was determined that 25.8% of them are research assistants, 27% are lecturers, 18.5% are assistant professors, 18.2% are associate professors and 10.5% are professors. In this study, BMI classification was made according to the World Health Organization (WHO) criteria: underweight (<18.5 kg/m²), normal weight (18.5–24.9 kg/m²), overweight (25.0–29.9 kg/m²), and obese (≥30.0 kg/m²) (12). The average body mass index (BMI) of academicians is 24.5±3.89 kg/m^2 (Table 1).

Table 1. General characteristics of academicians

	Academicians (n=248)	
	n	%
Gender		
Male	112	45.0
Female	136	55.0
Age		
Age (Years)($\bar{x}$ ± SD)	38.7±9.49	
25-34	99	39.9
35-44	90	36.3
45-54	38	15.3
55-64	17	6.9
65 and above	4	1.6
Academic Title		
Research Assistant	64	25.8
Lecturer	67	27.0
Assistant Professor	46	18.5
Associate Professor	45	18.2
Professor	26	10.5
Body Mass Index		
BMI (kg/m^2) ($\bar{x}$ ± SD)	24.5±3.89	
<18.50	8	3.2
18.5-24.9	132	53.2
25.0-29.9	84	33.9
≥ 30.00	24	9.7

n: number; SD: Standard Deviation; $\bar{x}$: Mean
BMI: Body Mass Index.

Of the academicians participating in the study, 71.9% reported that they had previously dieted for weight loss, 5.8% for weight gain, 18.7% for health reasons, and 3.6% for other reasons (food allergy, healthy lifestyle, gestational diabetes).

While 35.1% of male academicians reported receiving support from a dietitian, 46.0% from their own knowledge, and 42.9% from AI during the process in which they applied a diet for weight loss/weight gain, 64.9% of female academicians stated receiving support from a dietitian, 54.0% from their own knowledge, and 57.1% from AI. While 50.0% of male academicians who were on a diet for health reasons received support from websites and 50.0% from AI, 50.0% of female academicians reported receiving support from websites and 50.0% from AI (Table 2).

Table 2. Information on diet application status

	Using for weight loss or weight gain			Using for health reasons		
	Male n (%)	Female n (%)	Total n	Male n (%)	Female n (%)	Total n
Own knowledge	23 (46.0%)	27 (54.0%)	50	8 (47.1%)	9 (52.9%)	17
Websites	10 (43.5%)	13 (56.5%)	23	4 (50.0%)	4 (50.0%)	8
Social media	6 (42.9%)	8 (57.1%)	14	3 (100.0%)	0 (0.0%)	3
Television	1 (33.3%)	2 (66.7%)	3	0 (0.0%)	0 (0.0%)	0
Dietitian	33 (35.1%)	61 (64.9%)	94	1 (9.1%)	10 (90.9%)	11
Doctor	5 (35.7%)	9 (64.3%)	14	1 (14.3%)	6 (85.7%)	7
Artificial Intelligence	3 (42.9%)	4 (57.1%)	7	1 (50.0%)	1 (50.0%)	2
Other (Academic articles, family)	1 (100.0%)	0 (0.0%)	1	0 (0.0%)	1 (100.0%)	1

n: number. Percentages were calculated based on the number of respondents who answered each item, not on the total sample size.

Among the academicians participating in the study, 73.4% stated that they use AI applications in their daily lives.

Male academicians reported using AI applications in the following areas: 41.0% for voice/virtual assistants, 40.3% for healthcare services, and 23.8% for navigation services. Female academicians reported using AI applications for language translations (53.8%), healthcare services (59.7%), and healthy eating information (87.5%). When the use of AI applications for navigation and other purposes (academic studies, obtaining information, preparing presentations, editing texts) was examined by gender, a statistically significant difference was found ($p<0.05$) (Table 3).

Among the academicians, 41.7% of males and 58.3% of females reported using AI applications for the evaluation of their nutritional status. 40.0% of males and 60.0% of females reported using them for diet planning, 38.1% of males and 61.9% of females reported using them for diet-disease relationships and 42.9% of males and 57.1% of females reported using them for healthy eating information. 27.3% of males and 72.7% of females reported using them for anthropometric measurements. When the use of AI applications in the field of nutrition was examined by gender, no statistically significant difference was found ($p>0.05$) (Table 4).

Table 3. Purpose of using AI in daily life

	Gender		Total n	Chi^2	p
	Male n (%)	Female n (%)			
Voice / virtual assistants	34 (41.0%)	49 (59.0%)	83	0.89	0.346
Language translations	72 (46.2%)	84 (53.8%)	156	0.17	0.683
Recommendation systems	11 (44.0%)	14 (56.0%)	25	0.02	0.902
Navigation	5 (23.8%)	16 (76.2%)	21	4.22	**0.040***
Social security	0 (0.0%)	2 (100.0%)	2	1.66	0.198
Health services	27 (40.3%)	40 (59.7%)	67	0.88	0.349
E-commerce	2 (25.0%)	6 (75.0%)	8	1.36	0.244
Assistant robot	25 (50.0%)	25 (50.0%)	50	0.59	0.442
Healthy nutrition information	2 (12.5%)	14 (87.5%)	16	1.66	0.198
Other (academic studies, information acquisition, presentation preparation, text editing)	20 (64.5%)	11 (35.5%)	31	5.33	**0.021***

*n: number. Chi^2: Chi-Square Test. *$p<0.05$. Since more than one answer was given to a question. Percentages were calculated according to the number of participants who answered the question.*

Table 4. Status of using AI applications in the field of nutrition

	Gender		Total n	Chi²	p
	Male n (%)	Female n (%)			
Assessment of nutritional status	10 (41.7%)	14 (58.3%)	24	0.13	0.717
Diet planning	10 (40.0%)	15 (60.0%)	25	0.3	0.584
Diet–disease relationship	8 (38.1%)	13 (61.9%)	21	0.46	0.496
Healthy nutrition information	12 (42.9%)	16 (57.1%)	28	0.07	0.795
Anthropometric measurement	3 (27.3%)	8 (72.7%)	11	1.48	0.223

*n: number. Chi²: Chi-Square Test. *p<0.05. Since more than one answer was given to a question. Percentages were calculated according to the number of participants who answered the question.*

Upon examining the knowledge level scores, the overall median score for all academicians was found to be 11 (Q1-Q3: 7–35). When evaluating the mean knowledge scores, the mean score for male academicians was 13.7±7.60, and for female academicians, it was 13.1±6.59. No significant difference was found between genders (p>0.05). The median knowledge level scores by academic title were 12 (Q1-Q3: 7–28) for professors, 9 (Q1-Q3: 7–30) for associate professors, 10.5 (Q1-Q3: 7–35) for assistant professors, 11 (Q1-Q3: 7–35) for research assistants, and 11 (Q1-Q3: 7–35) for lecturers. No statistically significant difference was found between academic titles (p>0.05). Regarding the attitude level scores, the overall median score for all academicians was observed to be 44 (Q1-Q3: 13–65). When comparing the mean scores, male academicians scored 40.6±10.35, while female academicians scored 44.6±9.33. The attitude scores of female academicians were found to be statistically significantly higher than those of males (p<0.05). The median attitude level scores by academic title were 43 (Q1-Q3: 13–58) for professors, 45 (Q1-Q3: 25–65) for associate professors, 40 (Q1-Q3: 13–61) for assistant professors, 44.5 (Q1-Q3: 13–65) for research assistants, and 43 (Q1-Q3: 13–62) for lecturers. No significant difference was found between these groups (p>0.05). (Table 5).

Table 5. Knowledge and attitude score values of academicians according to gender and academic title

	n	$\bar{x}$	SD	Median	Lower (Q1)	Upper (Q3)	p	Z/ χ^2
Knowledge Level Score	248	13.4	7.06	11	7	35		
Gender								
Male	112	13.7	7.60	11	7	35	0.865	-0.171
Female	136	13.1	6.59	11	7	35		
Academic Title								
Professor	26	14.5	6.81	12	7	28		
Associate Professor	45	12.3	6.73	9	7	30	0.319	4.701
Assistant Professor	46	12.8	7.42	10.5	7	35		
Research Assistant	64	13.2	6.71	11	7	35		
Lecturer	67	14.2	7.46	11	7	35		
Attitude Level Score	248	42.8	9.99	44	13	65		
Gender								
Male	112	40.6	10.35	41	13	61	**0.020***	-3.155
Female	136	44.6	9.33	45	13	65		
Academic Title								
Professor	26	40.2	11.67	43	13	58		
Associate Professor	45	44.1	8.50	45	25	65		
Assistant Professor	46	40.7	11.62	40	13	61	0.382	4.179
Research Assistant	64	44.6	9.46	44.5	13	65		
Lecturer	67	42.6	9.27	43	13	62		

DISCUSSION

A total of 248 academics participated in our study, of whom 55% were female and 45% were male, with a mean age of 38.7±9.49 years. Among the participants, 73.4% reported using AI applications in their daily lives. The proportion of participants using AI applications to assess nutritional status was 41.7% among males and 58.3% among females. The mean knowledge score for male academics was 13.7±7.60, while it was 13.1±6.59 for female academics. The mean attitude score was 40.6±10.35

for males and 44.6±9.33 for females. A statistically significant difference was observed between genders in terms of attitude scores ($p<0.05$), whereas no significant difference was found in knowledge levels ($p>0.05$).

AI applications in the field of nutrition include the assessment of diet-disease relationships, mobile health management, acoustic-based wearable devices, and image-based dietary assessment methods (13-18). Nevertheless, our findings indicate that academics possess limited knowledge regarding these technologies. For instance, only 11.7% of participants reported having sufficient knowledge about acoustic-based wearable devices, whereas 40.7% indicated having no knowledge about AI-based devices used by clinicians for home-based patient monitoring. As highlighted in the literature (19,20,22), this underscores the need for nutrition specialists and other public health professionals to play a more active role in the development, implementation, and dissemination of such technologies.

Despite low levels of knowledge, our findings demonstrate that academics exhibit positive attitudes toward AI applications in nutrition. This partially aligns with previous research conducted among healthcare professionals and patients. For example, one study reported that 53.2% of patients held positive perceptions regarding AI use in healthcare (23). Similarly, in our study, 19% of academics expressed a positive attitude toward their physicians' use of AI-supported devices in health screenings.

The literature reports the development of machine learning algorithms to accurately predict individuals' postprandial glycemic responses, eating habits, anthropometric measurements, physical activity, and gut microbiota (3,4,17). In our study, 45.2% of academics expressed a "neutral" attitude toward wearable smart belt devices used to monitor bowel movements and sounds. Previous research has highlighted that ethical concerns, algorithmic errors, and clinical usability issues contribute to cautious attitudes toward AI (24-27). The relatively high proportion of "neutral" responses in our study may reflect similar concerns among academics. Furthermore, studies among healthcare professionals have indicated that while AI is perceived as supportive of professional activities, concerns related to data security, ethical issues, and potential job loss may limit its acceptance (23,24). Anxiety regarding AI potentially replacing professional roles, often stemming from limited knowledge, can negatively impact perceived trustworthiness (24). In a study evaluating ChatGPT as a virtual dietitian, the absence of a verified nutrition database led to the conclusion that it should be regarded as a complementary tool rather than a standalone substitute in nutrition practice (25). Similarly, difficulties experienced by clinicians in interpreting AI-generated outputs may further constrain the perceived reliability of these technologies (26,27).

The literature also suggests that older individuals and those with lower educational levels tend to adopt a more cautious approach toward AI (23). Given that our sample consisted of academics, hypothesis testing for age-related differences was not conducted, as age-related variability may be limited. Notably, no significant differences were observed based on academic rank, which is consistent with the parallel progression typically observed between age and academic rank.

The selection of academics as the study population represents an important aspect of this research. Academics play a central role in knowledge generation and dissemination, in training future professionals, and in early interactions with innovative technologies, making them a critical group for understanding perspectives on the integration of AI into nutrition. Despite the expanding scope of AI applications, studies examining academics' knowledge and attitudes toward these technologies remain scarce, highlighting a notable gap in the literature. Therefore, this study contributes valuable insights by systematically evaluating academics' knowledge and attitudes toward the integration of AI in nutrition.

This study has several limitations. The relatively small sample size may limit the generalizability of the findings. The Kaiser-Meyer-Olkin (KMO) measure and factor analyses were not conducted, preventing a more detailed evaluation of the construct validity of the measurement tools. Additionally, some variables (e.g., tools used during dietary assessment) were reported only using descriptive statistics (frequencies and percentages), and hypothesis testing was not performed. While appropriate for the descriptive nature of the study, this approach limits the ability to examine relationships between variables in greater depth. Furthermore, in the Chi-square analyses, some cells had expected frequencies below five, which may have reduced the statistical power of the tests. Future research should consider larger sample sizes and report Exact tests where appropriate.

CONCLUSION

AI applications, which have made a name for themselves in every field, have recently also shown themselves in the field of nutrition. For this reason, all health professionals, especially dietitians, should be provided with the necessary training and information about the developments in these fields. In addition, it is thought that the integration of AI into health services can reduce the workload of health workers by helping with some tasks.

The knowledge and attitude levels towards new technologies used have generally been examined for health workers. However, the extent to which users accept various applications and devices developed with AI algorithms should also be investigated.

Academicians constituted the sample of this study because they represent an important stakeholder group that both produces and disseminates information on the use of AI-based health technologies in education and daily life, their integration with scientific research and their practical reflections. When the results of this study were examined, it was determined that academics with a high level of education did not have sufficient knowledge about AI applications used in the field of nutrition, but their attitudes towards these applications were positive. However, in order to obtain more comprehensive and valid data on the subject, it is necessary to conduct larger studies where a standard scale is created and knowledge and attitude status are evaluated.

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REFERENCES

1. McCarthy J, Minsky M, Rochester N, Shannon CEA. Proposal for the dartmouth summer research project on artificial intelligence, August 31, 1955. AI Mag. 2006;27(4):12-12. Available at: http://raysolomonoff.com/dartmouth/boxa/dart564props.pdf. Accessed on May 6, 2024.

2. Joshi S, Bisht B, Kumar V, Singh N, Jameel Pasha SB, Singh N, et al. Artificial intelligence assisted food science and nutrition perspective for smart nutrition research and healthcare. SMAB. 2024; 4(1):86-101.

3. Miyazawa T, Hiratsuka Y, Toda M, Hatakeyama N, Ozawa H, Abe C, et al. Artificial intelligence in food science and nutrition: A narrative review. Nutr Rev. 2022; 80(12): 2288-2300.

4. Sak J, Suchodolska M. Artificial intelligence in nutrients science research: a review. J Nut. 2021; 13(2):322.

5. Bronzwaer S, Kass G, Robinson TJ, Tarazona J, Verhagen H, Verloo D, et al. Food safety regulatory research needs 2030. EFSA J. 2019; 17(7): e170622.

6. Ülker İ, Çamli A. Beslenme ve diyetetik uygulamalarında yapay zeka. Bes Diy Derg. 2023; 51(2): 76-84.

7. Haynes SN, Richard DCS, Kubany ES. Content validity in psychological assessment: A functional approach to concepts and methods. Psychol Assess. 1995; 7(3), 238–247.

8. Davis, Fred D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly. 1989;13(3): 319-340.

9. Joshi A, Kale S, Chandel S, Pal DK. Likert Scale: Explored and explained. Br J Appl Sci Technol. 2015; 7(4), 396–403.

10. Serbaya SH, Khan AA, Surbaya SH, Alzahrani SM. Knowledge, attitude and practice toward artificial intelligence among healthcare workers in private polyclinics in jeddah, Saudi Arabia. Advances in Medical Education and Practice. 2024;15: 269-280.

11. Boateng, GO, Neilands TB, Frongillo EA, Melgar-Quinonez HR. Best practices for developing and validating scales for health, social, and behavioral research: a primer. Frontiers in public health. 2018; 6:149.

12. World Health Organization. Obesity: Preventing and managing the global epidemic. (WHO Technical Report Series, No. 894). 2020. https://apps.who.int/iris/handle/10665/42330. Accessed September 18, 2024.

13. Hamadeh S. Are artificial intelligence and co-active life coaching the future designers of nutrition and fitness matters. J Auton Intell. 2023; 6(2): 1-11.

14. Moreira LS, Chagas BC, Pacheco CSV, Santos HM, de Menezes LHS, Nascimento MM, et al. Development of procedure for sample preparation of cashew nuts using mixture design and evaluation of nutrient profiles by Kohonen neural network. Food Chem. 2019; 273:136–143.

15. Shima H, Masuda S, Date Y, Shino A, Tsuboi Y, Kajikawa M, et al. Exploring the impact of food on the gut ecosystem based on the combination of machine learning and network visualization. J Nutr. 2017; 9:1307.

16. Guo, J. Smartphone-powered electrochemical dongle for point-of-care monitoring of blood β-ketone. Anal Chem. 2017; 89(17):8609−8613.

17. Doherty A, Wall A, Khaldi N, Kussman M. Artificial intelligence in functional food ingredient discovery and characterisation: a focus on bioactive plant and food peptides. Front Genet. 2021; 12:768979.

18. Alshurafa N, Kalantarian H, Pourhomayoun M, Liu JJ, Sarin S, Shahbazi B, et al. Recognition of nutrition intake using time-frequency decomposition in a wearable necklace using a piezoelectric sensor. IEEE Sens. 2015; 15(7): 3909-3916.

19. Amft O, Troster G. On-body sensing solutions for automatic dietary monitoring. IEEE Pervasive Comput. 2009; 8(2):62-70.

20. Sempionatto JR, Montiel VRV, Vargas E, Teymourian H, Wang J. Wearable and mobile sensors for personalized nutrition. ACS sensors. 2021; 6(5):1745-1760.

21. Vu T, Lin F, Alshurafa N, Xu W. Wearable food intake monitoring technologies: A comprehensive review. J Comput. 2017; 6(1):4.

22. Eldridge AL, Piernas C, Illner AK, Gibney MJ, Gurinović MA, de Vries JHM, et al. Evaluation of new technology-based tools for dietary intake assessment-an ILSI Europe dietary ıntake and exposure task force evaluation. J Nutr. 2018; 11(1).

23. Fritsch SJ, Blankenheim A, Wahl A, Hetfeld P, Maassen O, Deffge S, et al. Attitudes and perception of artificial intelligence in healthcare: A cross-sectional survey among patients. Digit health. 2022; 8:1-16.

24. Castagno S, Khalifa M. Perceptions of artificial intelligence among healthcare staff: a qualitative survey study. Front Artif Intell. 2020; 3: 578983.

25. Manuel B. Garcia Chatgpt as a virtual dietitian: exploring its potential as a tool for improving nutrition knowledge. Appl Syst Innov. 2023; 6:96.

26. Vellido A. Societal issues concerning the application of artificial intelligence in medicine. Kidney Dis. 2019; 5(1):11-7.

27. Yu P, Song H, Gao J, Li B, Liu Y, Wang Y. Vitamin D (1,25-(OH)2D3) regulates the gene expression through competing endogenous RNAs networks in high glucose-treated endothelial progenitor cells. J. Steroid Biochem. Mol. Biol. 2019; 193: 105425.