

Assessment Of Knowledge, Attitude & Practices Related To Nutrigenomics And Their Association With Dietary Patterns Among Young Adults (18-25 Years)

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Abstract

Nutrigenomics is a new research discipline that studies the interaction of nutrients and genes in an effort to develop personalized nutrition and to prevent chronic diseases. The present study was conducted to assess the knowledge, attitudes and dietary practices related to nutrigenomics among young adults aged 18-25 years and to find out their association with selected socio-demographic characteristics. A descriptive cross-sectional analytical study was conducted among 235 undergraduate and post graduate students using a structured online questionnaire. Data were analyzed in IBM SPSS Statistics Version 26.0 using descriptive statistics and Pearson's Chi-square test. The results showed that participants had moderate to good knowledge and positive attitude toward nutrigenomics, while dietary practices were generally fair. Knowledge was significantly associated with dietary practices. Attitude was significantly associated with healthy eating behaviour and physical activity. Attitude was significantly associated with knowledge of nutrigenomics. The study concludes that increased awareness of nutrigenomics and nutrition education can promote young adults to make healthier choices with their diet and to have better long-term health outcomes.

Key Words: Nutrigenomics; Knowledge, Attitude, and Practices (KAP); Personalized Nutrition.

Introduction

Nutrition plays an important role in maintaining health, growth and physiological functions. Individuals may respond differently to the same foods or dietary patterns due to differences in genetic makeup, lifestyle and environmental factors. The study of the interaction between nutrition and genes has led to the development of nutrigenomics, which examines how nutrients influence gene expression and how genetic variations can affect responses to food and nutrients.

Nutrigenomics has contributed to the concept of personalized nutrition, in which dietary recommendations may consider individual genetic characteristics along with lifestyle and health factors. Genetic variations can influence nutrient metabolism and dietary responses,

demonstrating why a uniform dietary approach may not have the same effect on every individual.

Young adulthood is an important period for developing independent dietary and lifestyle habits. Individuals aged 18–25 years are increasingly exposed to health information through digital media and may encounter information related to genetic testing, personalized nutrition and nutrigenomics. Understanding their knowledge, attitudes and dietary practices is therefore important for identifying educational needs.

Although nutrigenomics is receiving increasing scientific attention, awareness and understanding among the general population remain limited. Existing research has frequently focused on healthcare professionals, nutrition students and other health-related groups, while comparatively less information is available regarding young adults and their dietary practices.

Therefore, the present study was undertaken to assess knowledge, attitudes and dietary practices related to nutrigenomics among young adults aged 18–25 years and to examine their association with selected socio-demographic characteristics and dietary behaviours.

Objectives of the Study

- To assess the knowledge related to nutrigenomics among young adults using a structured questionnaire.
- To evaluate the attitudes of young adults towards nutrigenomics and personalized nutrition.
- To assess dietary practices related to nutrigenomics among young adults.
- To determine the association between knowledge, attitude and practices related to nutrigenomics and selected socio-demographic characteristics among young adults.

Methodology of the Study

Study Design

The present study adopted a descriptive cross-sectional analytical research design to assess knowledge, attitudes and dietary practices related to nutrigenomics among young adults. Data were collected at a single point in time using a structured self-administered online questionnaire.

Study Population

The study population comprised undergraduate and postgraduate students aged 18–25 years from various educational institutions.

Sample Size and Sampling Technique

A total of 235 participants who fulfilled the eligibility criteria were included in the study. A non-probability convenience sampling technique was adopted.

Inclusion Criteria

Participants aged 18–25 years, male or female, who were able to understand and respond to the questionnaire and provided informed consent were included.

Exclusion Criteria

Individuals below 18 years or above 25 years, participants with diagnosed severe chronic illnesses requiring therapeutic diets, and incomplete or improperly filled questionnaires were excluded.

Research Instrument

Data were collected using a structured questionnaire developed based on previous literature related to nutrigenomics, knowledge, attitude, dietary practices and personalized nutrition. The questionnaire included sections on socio-demographic characteristics, knowledge, attitude, dietary practices and barriers to maintaining a healthy diet.

The knowledge section consisted of 10 questions, attitude was assessed using 8 statements on a five-point Likert scale, and dietary practices were assessed using 12 questions with responses of never, sometimes and always.

Data Collection Procedure

The questionnaire was prepared using Google Forms and distributed through online platforms including WhatsApp, email and student groups. Participants were informed about the purpose of the study, confidentiality and voluntary participation before providing informed consent. Responses were collected electronically and exported to Microsoft Excel for coding and analysis.

Ethical Considerations

Informed consent was obtained from all participants. Confidentiality and anonymity were maintained, and the collected information was used solely for academic research purposes. Participants had the right to withdraw from the study at any stage without consequences.

Statistical Analysis

Data were coded and analyzed using IBM SPSS Statistics Version 26.0. Descriptive statistics including frequency, percentage, mean and standard deviation were used. Pearson's Chi-square test was used to determine associations between categorical variables, while One-Way ANOVA was used to compare mean KAP scores across socio-demographic groups. A p-value of < 0.05 was considered statistically significant.

Results

Among the 235 participants, 45.5% (n=107) had good knowledge of nutrigenomics, 37.0% (n=87) had moderate knowledge and 17.5% (n=41) had poor knowledge. The mean knowledge score was 6.46 ± 2.13 . A significant association was observed between knowledge level and dietary practices ($\chi^2 = 36.81$, $p < 0.001$).

Regarding attitude, 60.8% of participants demonstrated a positive attitude towards nutrigenomics, 31.5% had a neutral attitude and 7.7% had a negative attitude. The mean attitude score was 31.84 ± 4.76 . A significant association was observed between attitude and maintaining a healthy diet ($\chi^2 = 12.84$, $p = 0.012$).

Dietary practices were fair among 51.5%, good among 38.3% and poor among 10.2% of participants. The mean dietary practice score was 27.41 ± 4.18 . Participants with better knowledge were more likely to demonstrate healthier dietary practices.

Objective 1: To assess the level of knowledge regarding nutrigenomics among young adults aged 18–25 years.

Analysis 1: Overall Knowledge Score

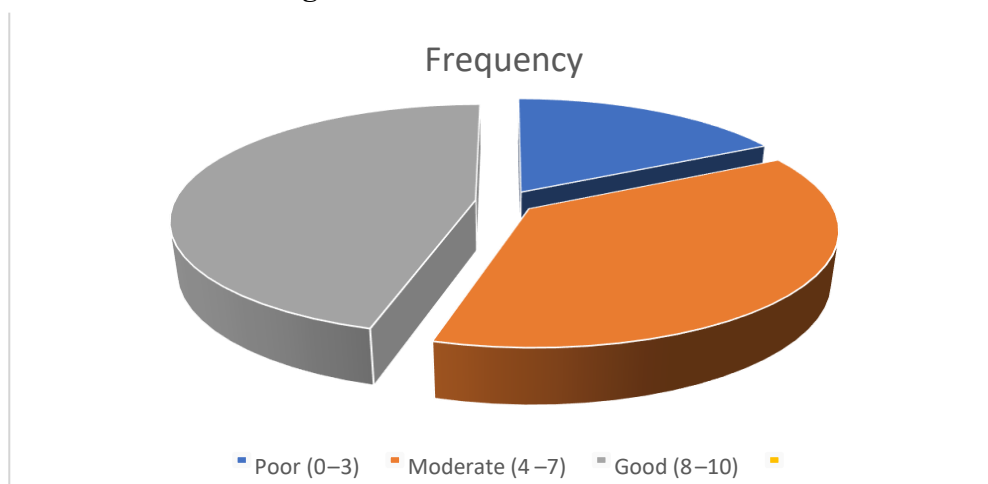


Figure-4: Knowledge score of Participants

Interpretation: Majority (45.5%) participants counting to 107 respondents have a good idea about nutrigenomics, whereas nearly 87 respondents (37%) had moderate idea of the topic. A very low population (n=41) had poor knowledge and awareness of topic.

Analysis 2: Descriptive Statistics of Knowledge Score

Table-1: Knowledge score of Participants

Variable	Mean	SD	Minimum	Maximum
Knowledge Score	6.46	2.13	1	10

Interpretation: The mean knowledge score of participants was 6.46 ± 2.13 , indicating an overall moderate level of knowledge regarding nutrigenomics.

Analysis 3: Association Between Knowledge Level and Dietary Practices

Table-2: Association Between Knowledge Level and Dietary

Knowledge Level	Always	Sometimes	Never	Total
Poor	3	10	3	16
Moderate	36	49	18	103
Good	41	68	7	116
Total	80	127	28	235

Pearson Chi-square (χ^2) = 10.52 Degrees of Freedom (df) = 4

p-value = 0.032

Interpretation: A Pearson Chi-square test was done to find out the association between the participants' knowledge level on nutrigenomics and practice of consciously maintaining a nutritious diet. The results showed that there was a statistically significant association ($\chi^2 =$

10.52, $df = 4$, $p = 0.032$). Participants with good knowledge were more likely to always eat a healthy diet than those with moderate or poor knowledge. Conversely, participants with poor knowledge more often reported to sometimes or never maintain a healthy diet. Results show that greater knowledge of nutrigenomics is associated with healthier dietary behaviours among young adults.

Objective 1: Results: Overall, the knowledge assessment showed that 45.5% ($n = 107$) of the participants had good knowledge of nutrigenomics, 37.0% ($n = 87$) had moderate knowledge and 17.5% ($n = 41$) had poor knowledge. The mean knowledge score was 6.46 ± 2.13 (range: 1–10), indicating moderate overall knowledge. Pearson's Chi-square test revealed a significant association between level of knowledge and healthy dietary practices ($\chi^2 = 10.52$, $df = 4$, $p = 0.032$) which indicates that participants with better knowledge were more likely to adopt healthy dietary habits.

Discussion: The results showed that the knowledge of nutrigenomics among young adults was moderate to good and about half of the respondents had good knowledge. The strong association of knowledge and dietary practices shows that increased knowledge is associated with healthier food choices. These results are in line with the study by Dare Damilola Ademiluyi et al. (2024) and Yie Enn Ng et al. (2025) where higher knowledge of nutrigenomics has a positive effect on acceptance of personalized nutrition and healthy dietary behaviours.

Objective-2: To evaluate the attitudes of young adults towards nutrigenomics and personalized nutrition.

Analysis 1: Overall Attitude Score

Table-3: Attitude of Respondents towards nutrigenomics

Attitude Level	Frequency	Percentage (%)
Negative	18	7.7
Neutral	74	31.5
Positive	143	60.8
Total	235	100.0

Interpretation: Most of the participants (60.8%) had a positive attitude towards nutrigenomics and personalized nutrition, 31.5% had a neutral attitude, and only 7.7% had a negative attitude.

Analysis 1.1: Attitude towards personalised nutrition over general diet

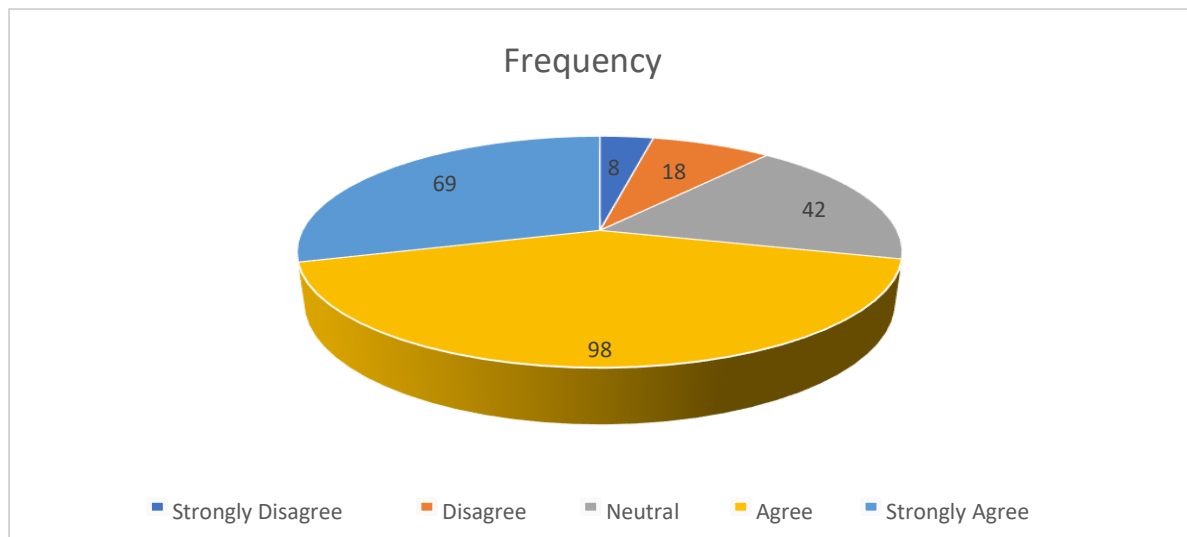


Figure-5: Attitude towards personalised nutrition over general diet

Interpretation: Most of the participants (71.1%) agreed or strongly agreed (98+69 respondents) with the statement that personalized nutrition is better than general diet advice. This shows the positive attitude towards individualized dietary recommendations based on genetic information.

Analysis 2: Descriptive Statistics of Attitude Score

Table-4: Descriptive statistics of attitude of respondents towards nutrigenomics

Variable	Mean	SD	Minimum	Maximum
Attitude Score	31.84	4.76	16	40

Interpretation: The mean attitude score was 31.84 ± 4.76 . This indicates that on average, participants had a positive attitude towards nutrigenomics and personalized nutrition.

Analysis 3: Association Between Attitude Level and Healthy Diet Maintenance

Table-5: Association Between Attitude Level and Healthy Diet Maintenance

Attitude Level	Always	Sometimes	Never	Total
Negative	4	9	5	18
Neutral	19	44	11	74
Positive	57	74	12	143
Total	80	127	28	235

Pearson Chi-square (χ^2) = 12.84

Degrees of Freedom (df) = 4

p-value = 0.012

Interpretation: Pearson Chi-square test was used to assess the association between attitude towards nutrigenomics and practice of maintaining a healthy diet. There was a statistically significant association ($\chi^2 = 12.84$, $df = 4$, $p = 0.012$). **Interpretation:** Pearson Chi-square test was used to assess the association between attitude towards nutrigenomics and practice of maintaining a healthy diet. There was a statistically significant association ($\chi^2 = 12.84$, $df = 4$, $p = 0.012$). Those with positive attitudes were more likely to report that they always had a

healthy diet than those with neutral or negative attitudes. This finding implies that positive attitudes towards nutrigenomics correlate with healthier eating behavior in young adults.

Objective-2: Results: A majority of participants, 60.8%, had a positive attitude towards nutrigenomics. Meanwhile, 31.5% were neutral, and 7.7% held a negative view. Additionally, 71.1% agreed that personalized nutrition is better than general dietary advice. The average attitude score was 31.84 ± 4.76 , with a range from 16 to 40, showing an overall positive attitude. There was a significant link between attitude level and maintaining a healthy diet ($\chi^2 = 12.84$, $df = 4$, $p = 0.012$).

Objective-3: To assess dietary practices related to nutrigenomics among young adults.

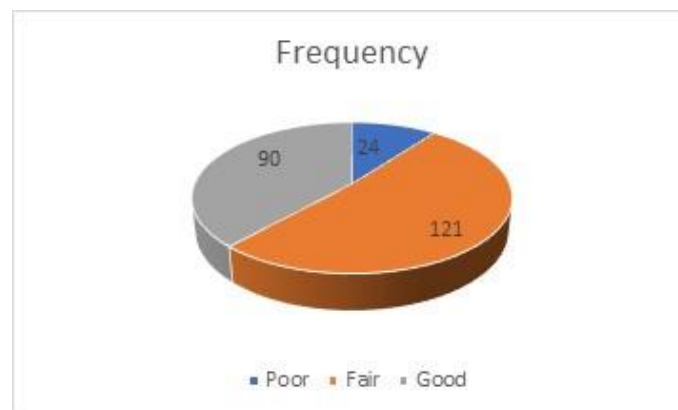


Figure-6: Diet Practice score

Analysis 1: Good Dietary Practice Score

Table-6: Score related to Diet Practices

Practice Level	Frequency	Percentage (%)
Poor	24	10.2
Fair	121	51.5
Good	90	38.3
Total	235	100.0

Interpretation: Most of the participants (51.5%) had fair dietary practices, 38.3% had good dietary practices and 10.2% had poor dietary practices regarding nutrigenomics.

Analysis 2: Descriptive Statistics

Table-7: Descriptive Analysis of Diet Practices

Variable	Mean	SD	Minimum	Maximum
Practice Score	27.41	4.18	15	36

Interpretation: The mean practice score was 27.41 ± 4.18 , indicating that participants generally exhibited fair dietary practices related to nutrigenomics.

Analysis 3: Association Between Practice Level and Knowledge Level

Table-8: Association Between Practice Level and Knowledge Level

Knowledge Level	Poor Practice	Fair Practice	Good Practice	Total
Poor	9	6	1	16

Moderate	13	61	29	103
Good	2	54	60	116
Total	24	121	90	235

Interpretation: A Pearson Chi-square test revealed a highly significant association between knowledge level and dietary practice level ($\chi^2 = 36.81$, $df = 4$, $p < 0.001$). Participants with good knowledge were more likely to demonstrate good dietary practices, whereas those with poor knowledge were more likely to exhibit poor dietary practices. These findings indicate that higher nutrigenomics knowledge is associated with healthier dietary behaviours among young adults.

Objective-3: Results: More than half of the participants (51.5%) demonstrated fair dietary practices, 38.3% had good practices, and 10.2% had poor dietary practices. The mean practice score was 27.41 ± 4.18 (range: 15–36), indicating generally fair dietary behaviour. Pearson's Chi-square test revealed a highly significant association between knowledge level and dietary practice ($\chi^2 = 36.81$, $df = 4$, $p < 0.001$).

Discussions: Although participants showed decent dietary habits, those with greater knowledge of nutrigenomics were much more likely to have healthier eating behaviors. This finding indicates that knowledge plays a key role in dietary practices. Similar results were reported by Brenda Kemunto Mogeni and Luke Ondijo Ouma (2022) and Farhana Wohid et al. (2024), who found that nutrition knowledge positively affects healthy eating habits.

Objective-4: To determine the association between knowledge, attitude, and practices (KAP) related to nutrigenomics and selected socio-demographic characteristics among young adults.

Analysis 1: Association Between Knowledge Level and Socio-demographic Characteristics

Table-9: Association Between Knowledge Level and Socio –demographic characteristics

BMI Category	Poor	Moderate	Good	Total
Underweight	6	28	22	56
Normal	7	54	71	132
Overweight	2	16	18	36
Obese	1	5	5	11
Total	16	103	116	235

$$\chi^2 = 5.87$$

$$df = 6$$

$$p = 0.437$$

Interpretation: No statistically significant association was observed between BMI category and knowledge level regarding nutrigenomics ($\chi^2 = 5.87$, $p = 0.437$)

Analysis 2: Association Between Attitude Level and Socio-demographic Characteristics

Table-10: Association Between Attitude Level and Socio-demographic characteristics

Physical Activity	Negative	Neutral	Positive	Total
Sedentary	10	32	36	78
Moderate	6	34	69	109

Active	2	8	38	48
Total	18	74	143	235

$$\chi^2 = 13.92$$

$$df = 4$$

$$p = 0.008$$

Interpretation: A statistically significant association was observed between physical activity level and attitude towards nutrigenomics ($\chi^2 = 13.92$, $p = 0.008$). Participants with higher physical activity levels were more likely to exhibit a positive attitude.

Analysis 3: Association Between Practice Level and Socio-demographic Characteristics

Table-11: Association Between Practice Level and Socio -demographic characteristics

BMI Category	Poor	Fair	Good	Total
Underweight	8	31	17	56
Normal	10	67	55	132
Overweight	4	18	14	36
Obese	2	5	4	11
Total	24	121	90	235

$$\chi^2 = 4.26$$

$$df = 6$$

$$p = 0.641$$

Interpretation: No statistically significant association was found between BMI category and dietary practice level related to nutrigenomics ($\chi^2 = 4.26$, $p = 0.641$).

Objective-4: Results: No significant association was observed between BMI category and knowledge level ($\chi^2 = 5.87$, $p = 0.437$) or between BMI category and dietary practice level ($\chi^2 = 4.26$, $p = 0.641$). However, a significant association was found between physical activity level and attitude towards nutrigenomics ($\chi^2 = 13.92$, $df = 4$, $p = 0.008$), with physically active participants showing more positive attitudes.

Discussions: The findings indicate that BMI was not associated with nutrigenomics-related knowledge or dietary practices, whereas physical activity positively influenced attitudes towards personalized nutrition. This suggests that healthy lifestyle behaviours may promote greater acceptance of nutrigenomics. These findings are consistent with studies highlighting that lifestyle factors, particularly physical activity and health consciousness, are associated with positive nutrition-related attitudes rather than body weight alone.

Conclusion

The present study found that young adults had moderate-to-good knowledge of nutrigenomics, generally positive attitudes towards personalized nutrition and predominantly fair dietary practices. Significant associations were observed between nutrigenomics knowledge and dietary practices and between attitude and healthy dietary behaviour. The findings emphasize the importance of nutrition education on gene–diet interactions and personalized nutrition among young adults. Increased awareness may help bridge the gap

between nutrition knowledge and healthy dietary behaviour and support informed food choices.

Recommendations

Nutrition education programmes should incorporate basic concepts of nutrigenomics and personalized nutrition. Colleges and universities may conduct awareness programmes on gene–diet interactions, healthy dietary practices and personalized nutrition. Further research involving larger and more diverse populations is recommended to strengthen the evidence and improve generalizability.

References

1. Ademiluyi DD, Olayiwola IO, Ojo-adalumo AR, Oyewunmi BT. Awareness and Perception of Students Towards Nutrigenomics for Personalized Nutrition. *Egyptian Journal of Nutrition*. 2024 Sep 1;39(3):94-106.
2. Berberi E, Lloha I, Shishmani E, Hallaci A. Perception of nutrigenomics & nutrigenetics among Albanian young adults. *Univ J Public Health*. 2023;11(4):510-525. doi:10.13189/UJPH.2023.110417.
3. Wilkins JG. Knowledge and perception of college students toward genetic testing for personalized nutrition care [master's thesis]. Kent (OH): Kent State University; 2017.
4. Moitra P, Nemani J, Madre S, Madan J. Development and psychometric evaluation of nutrigenomics and personalized nutrition-related knowledge, attitude, and behavior questionnaire in dietetic students and professionals. *Sci Rep*. 2024;14(1):30762. doi:10.1038/s41598-024- 82080-9.
5. Ng YE, Tan ST, Tan SS, Hariyono H, Tsai MC, Tan CX. Mediating role of attitudes toward nutrigenomics in the relationship between genetics knowledge and perceptions toward nutrigenomics among health science students. *Glob Knowl Mem Commun*. 2025. doi:10.1108/GKMC-04-2024-0222.
6. Do Rosario NAD, Gokhale D, Gore M. Exploring the future of nutrigenomics: dietitians' perceptions on integration in Indian practice. *Genes Nutr*. 2025;20(1):7. doi:10.1186/s12263-024- 00760-7.
7. Nielsen DE, El-Sohemy A. A randomized trial of genetic information for personalized nutrition. *Genes Nutr*. 2012;7(4):559-566. doi:10.1007/s12263-012-0290-x.
8. Elhassan MR, Gamal HE, Mohammed GS. Nutrition knowledge, attitude and practices among students of Ahfad University for Women. *Int J Sci Res*. 2013;4(1):25-34.
9. Mogeni BK, Ouma LO. Dietary patterns, behaviours, and their associated factors among university students in coastal Kenya. *Cogent Food Agric*. 2022;8(1):2132873. doi:10.1080/23311932.2022.2132873.
10. Mankar A, Kawalkar U, Quazi Syed Z, Gaidhane A. Nutrition literacy: a key factor in public health improvement in India. *Front Nutr*. 2025;12:1643629. doi:10.3389/fnut.2025.1643629.
11. Sajjad, M., Bhatti, A., Hill, B. et al. Using the theory of planned behavior to predict factors influencing fast-food consumption among college students. *BMC Public Health* 23, 987 (2023). <https://doi.org/10.1186/s12889-023-15923-1>
12. Kabakuş Aykut M, Bilici S. The relationship between the risk of eating disorder and meal patterns in university students. *Eat Weight Disord*. 2022;27(2):579-587. doi:10.1007/s40519- 021-01179-4. .
13. Wohid F, Eme FW, Fahim IH, Mim M, Sultana T, Ferdaus F. Assessment of nutrition knowledge and dietary practices among non-medical students: a cross-sectional study. *Asia Pac J Surg Adv*. 2024;1(2):80-86. doi:10.70818/apjsa.2024.v01i02.08.

14. Marcum, J.A. Nutrigenetics/Nutrigenomics, Personalized Nutrition, and Precision Healthcare. *Curr Nutr Rep* 9, 338–345 (2020). <https://doi.org/10.1007/s13668-020-00327-z>
15. Khan A. Personalized nutrition: the role of genetic testing in dietary recommendations. *Int J Agric Biol Food Sci.* 2020;4(4).
16. Vyas P, Singh D, Singh N, Kumar V, Dhaliwal HS. Nutrigenomics: advances, opportunities and challenges in understanding the nutrient-gene interactions. *Curr Nutr Food Sci.* 2018;14(2):104-115. doi:10.2174/1573401313666170614094410
17. Khajuria A, Yadav SS, Somanadhapai S, Thapa R, Singh MJ, Bansal P, et al. Influence of dietary habits and lifestyle practices on the health and well-being of university students: a survey investigation. *J Lifestyle Med.* 2025;15(2):66-79. doi:10.15280/jlm.2025.15.2.66.
18. Yolcuoğlu İZ, Kızıltan G. Effect of nutrition education on diet quality, sustainable nutrition and eating behaviors among university students. *J Am Nutr Assoc.* 2022;41(7):713-719. doi:10.1080/07315724.2021.1955420. .
19. Louey J, He J, Partridge SR, Allman-Farinelli M. Facilitators and barriers to healthful eating among adolescents in high-income countries: a mixed-methods systematic review. *Obes Rev.* 2024;25(11):e13813. doi:10.1111/obr.13813
20. Abrahams M, Frewer LJ, Bryant EJ, Stewart-Knox B. Perceptions and experiences of early adopting registered dietitians in integrating nutrigenomics into practice. *Br Food J.* 2018;120(4):763-776. doi:10.1108/BFJ-08-2017-0464.
21. Do Rosario NAD, Gokhale D, Gore M. Exploring the future of nutrigenomics: dietitians' perceptions on integration in Indian practice. *Genes Nutr.* 2025;20(1):7. doi:10.1186/s12263-024-00760-7.
22. Mathers JC. Nutrigenomics in the modern era. *Proceedings of the Nutrition Society.* 2017;76(3):265–75. doi:10.1017/S002966511600080X
23. Mead MN. Nutrigenomics: the genome–food interface. *Environ Health Perspect.* 2007;115(12):A582-A589. doi:10.1289/ehp.115-a582.
24. Aljasir S, Livingstone KM, Celis-Morales C, Lara J. Nutrigenomics and personalised nutrition in weight management: current evidence, opportunities and challenges. *Clin Nutr ESPEN.* 2024;64:296-306. doi:10.1016/j.clnesp.2024.10.149.
25. Neeha, V.S., Kinth, P. Nutrigenomics research: a review. *J Food Sci Technol* 50, 415–428 (2013). <https://doi.org/10.1007/s13197-012-0775-z>.
26. <https://www.bing.com/ck/a?!&p=a34c39955fc2e1aa0efa5c9ab30191eb41234a4dbe9699bc164355d714e013d9JmltdHM9MTc4MzY0MTYwMA&ptn=3&ver=2&hsh=4&fclid=1d54df6e-9b01-6dc2-07c4-cf559af66cb5&u=a1aHR0cHM6Ly93d3cuamV0aXIub3JnL3BhcGVycy9KRVRJUjIOMTAwNDIucGRm>
27. <https://www.bing.com/ck/a?!&p=586651513a9a2ea3b28a0cb95f55f8295761b82b37998637ed2e289598735586JmltdHM9MTc4MzY0MTYwMA&ptn=3&ver=2&hsh=4&fclid=1d54df6e-9b01-6dc2-07c4-cf559af66cb5&u=a1aHR0cHM6Ly93d3cuc2NpZW5jZWRpemVjdC5jb20vdG9waWNzL2FnemljdWx0dXJhbC1hbmQtYmlvbG9naWNhbnRlc3QudXRyaWdlbm9taWNz>
28. <https://www.bing.com/ck/a?!&p=a547656bd981895aee8172b197f9bdeb5407948d50742a5a4d277053844a92c1JmltdHM9MTc4MzY0MTYwMA&ptn=3&ver=2&hsh=4&fclid=1d54df6e-9b01-6dc2-07c4-cf559af66cb5&u=a1aHR0cHM6Ly93d3cubnV0cmllOW9uZWQub3JnL3doYXQtaXMtbmV0cmllNW5vbWlicy8>

29. <https://www.bing.com/ck/a?!&&p=281ae7aa7cb5b02925101a5e659cf9e3e8e8612b676370aad7beaa0f7efd67baJmltdHM9MTc4MzY0MTYwMA&ptn=3&ver=2&hsh=4&fclid=1d54df6e-9b01-6dc2-07c4-cf559af66cb5&u=a1aHR0cHM6Ly9saW5rLnNwcmluZ2VyLmNvbS9zdWJqZWNoZy9udXRyaWdlbm9taWNz>
30. <https://www.bing.com/ck/a?!&&p=e2c20cfaf206d7f4da41d5228cc774ccf2f888d8706f2dd719794422662a6987JmltdHM9MTc4MzY0MTYwMA&ptn=3&ver=2&hsh=4&fclid=1d54df6e-9b01-6dc2-07c4-cf559af66cb5&u=a1aHR0cDovL251dHJpZ2Vub21lZGlib3JnLw>