



Exploring Seasonal Nutrition- Knowledge, Attitudes, and Practices Regarding Winter Diets among Female

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Abstract- Seasonal changes significantly impact dietary habits, nutritional needs, and health behaviours. In winter, specific dietary adjustments are essential to enhance immunity, energy levels, and overall well-being. This study examined knowledge, attitudes, and practices (KAP) regarding winter nutrition among 50 University female students using a structured cross-sectional survey. The results revealed varying levels of awareness about nutrient-rich winter foods, particularly those high in vitamin C, iron, and healthy fats, and highlighted a considerable gap between knowledge and actual dietary practices. Although most participants recognized the benefits of seasonal eating, their choices were influenced by cultural habits, convenience, and lack of planning. Post-intervention data showed improved knowledge and attitudes, yet dietary behaviours remained largely unchanged. These findings underscore the need for continuous health education to bridge the gap between awareness and action, ultimately promoting healthier winter eating habits that support well-being and academic performance.

Keywords: Seasonal Nutrition, Winter diets, University students, Dietary habits, Nutrition Education

INTRODUCTION

Seasonal changes, especially in winter, impact individuals' nutritional needs and eating habits. Colder temperatures often lead to a preference for warming, energy-dense foods that help maintain body temperature, support immune function, and sustain energy levels. Traditional winter diets, rich in vitamins, minerals, antioxidants, and thermogenic spices, are culturally significant and nutritionally beneficial. These dietary patterns offer health advantages during colder months when the body's requirements shift (Waswa et al., 2021; Kucukerdonmez & Rakicioglu, 2018).

Among university students, especially young women, winter food choices are influenced by cultural traditions, nutritional awareness, and personal health perceptions. Many students living away from home may stray from traditional or balanced diets, leading to poor eating habits and increased risk of seasonal health issues. Understanding their knowledge, attitudes, and practices (KAP) regarding winter nutrition is crucial for promoting healthy eating and designing effective health education initiatives.

Despite the recognition of seasonal diets' importance, research on the winter dietary habits of young adults, particularly female college students, is limited. Awareness programs are commonly used to encourage healthy eating, but evidence regarding their long-

term effects on behaviour change is scarce. Empirical data on this subject are essential for developing targeted nutritional interventions.

This study aims to assess university girls' knowledge of winter-specific dietary habits, evaluate their attitudes toward seasonal and traditional nutrition in winter, and investigate how knowledge and attitudes influence their dietary practices.

MATERIALS AND METHODS

A cross-sectional intervention study was conducted to assess the impact of a nutrition education session on the dietary knowledge, attitudes, and practices (KAP) of 50 female undergraduate students at Vanita Vishram Women's University during winter. Participants were selected through purposive sampling based on their willingness and availability for both the pre- and post-intervention phases. Data were collected using a structured, closed-ended KAP questionnaire, with each domain scored from 0 to 10 and categorized as low, moderate, or high for knowledge and practice, and negative, slightly positive, or highly positive for attitude. The study comprised three phases: an initial KAP assessment before the intervention, an educational session on the significance of winter nutrition, and a subsequent reassessment using the same questionnaire. Changes in KAP were analysed using descriptive statistics. Ethical approval was obtained, informed consent was secured, and participant confidentiality and voluntary participation were maintained throughout the study.

RESULTS AND DISCUSSION

1. AGE DISTRIBUTION:

TABLE - 1

AGE DISTRIBUTION OF RESPONDENTS

Age (Years)	Frequency (%)
18–20	38 (76)
21–25	10 (20)
26–30	2 (4)

Table 1 shows that most respondents (76%) were aged 18–20, followed by 20% aged 21–25, and only 4% aged 26–30. This indicates that the participant group is predominantly younger, which is important for understanding variations in knowledge, attitudes, and practices related to winter nutrition.

2. KNOWLEDGE ASSESSMENT

TABLE- 2

KNOWLEDGE ASSESSMENT OF THE RESPONDENTS

Question	Pre-Test n (%)	Post-Test n (%)
1. Which of these foods is considered best for boosting immunity in winter?	9 (18)	20 (40)
2. Which spice is known for its warming properties in winter?	3 (6)	12 (24)
3. Which vitamin is crucial for preventing colds in winter?	7 (14)	12 (24)
4. Which type of oil is best for cooking in winter for better digestion?	3 (6)	11 (22)
5. Which dry fruit is known for providing warmth during winter?	16 (32)	17 (34)

6	Which nutrient is essential for maintaining energy levels in winter?	1 (2)	4 (8)
7	Which is a natural source of probiotics that supports gut health in winter?	10 (20)	25 (50)
8	Which of these grains is best for energy and warmth in winter?	11 (22)	12 (26)
9	Which of these seeds is known for keeping the body warm in winter?	6 (12)	12 (24)
10	Which cooking method is best for retaining nutrients in winter vegetables?	3 (6)	14 (28)
11	Which of these is a natural sweetener that provides warmth in winter?	11 (22)	26 (52)

Table 2 shows a notable improvement in university girls' knowledge of winter nutrition after an educational intervention. The correct identification of immunity-boosting foods rose from 18% to 40%. Awareness of warming spices increased from 6% to 24%, and understanding of vitamin intake for cold prevention improved from 14% to 24%. Knowledge of digestion-friendly oils advanced from 6% to 22%, recognition of natural probiotics for gut health grew from 20% to 50%, and awareness of warming natural sweeteners rose from 22% to 52%.

Overall, the percentage of participants with good knowledge increased from 2% to 22%, while those with poor knowledge decreased from 82% to 62%, indicating a significant gain in awareness. These findings are consistent with recent research from Nepal, where a 12-week nutrition education program significantly enhanced adolescents' nutritional knowledge and attitudes (Aryal et al. 2021). Similarly, a study in Tehran found that a nutrition education intervention led to increased knowledge and reduced consumption of high-fat foods among women (Borjloo et al 2021).

3. ATTITUDE ASSESSMENT

TABLE-3
ATTITUDE ASSESSMENT OF THE RESPONDENTS

Questions	Response n (%)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Drinking hot water is a good way to stay warm during winter	Pre	1 (2)	4 (8)	12 (24)	17 (34)	16 (32)
	Post	2 (4)	7 (14)	10 (20)	19 (38)	12 (24)
2. Drinking cold beverages during the winter can weaken your immune system	Pre	1 (2)	4 (8)	12 (24)	17 (34)	16 (32)
	Post	6 (12)	13 (26)	12 (24)	9 (18)	10 (20)
3. High-fat foods are necessary to stay warm during winter.	Pre	12 (24)	14 (28)	11 (22)	6 (12)	7 (14)
	Post	0	10	14 (28)	7 (14)	19 (38)
4. Regular exercise is more important in winter to stay healthy than in other seasons.	Pre	2 (4)	12 (24)	14 (28)	4 (8)	18 (36)
	Post	19 (38)	9 (18)	11 (22)	1 (2)	10 (20)
5. Eating hot and spicy foods can help combat cold weather	Pre	1 (2)	8	10	14 (28)	17 (34)
	Post	8 (16)	10 (20)	11 (22)	7 (14)	14 (28)
6. Consuming sweets is a good way to stay warm in winter.	Pre	5 (10)	11 (22)	17 (34)	4 (8)	13 (26)
	Post	13 (26)	18 (36)	8 (16)	7 (14)	3 (6)
7. Consuming seasonal fruits is essential for good health in winter.	Pre	2	7	14	10	17
	Post	2	13	9	17	8

8. Nuts and seeds are important for maintaining energy levels in winter.	Pre	2	7	9	14	18
	Post	8	16	13	5	8
9. Traditional winter foods are better than fast food during the season	Pre	2	9	8	11	20
	Post	10	11	8	15	6
10. Consuming fermented foods in winter is beneficial for gut health.	Pre	1	8	9	11	21
	Post	11	10	12	9	8

Table 3 illustrates a significant improvement in university girls' attitudes toward winter dietary practices following the educational intervention. The percentage of strong agreement with healthy habits, such as consuming high-fat foods, exercising, and eating traditional or fermented foods, rose from 6% to 18%, with the most notable shift occurring in attitudes toward winter exercise. Additionally, misconceptions, including the belief that cold drinks are harmless and that sweets do not provide warmth, decreased from 8% to 13%.

Overall, positive attitudes increased from 10% to 26%, while negative attitudes fell from 90% to 74%. These findings align with recent research, including a 2023 study in Ghana, which demonstrated improved nutrition attitudes among medical students following tailored education (Amoore et al., 2023), and a Mumbai-based study utilizing the Health Belief Model, which resulted in a 7.3% increase in attitude scores among adolescents (Moitra et al., 2021).

PRACTICE ASSESSMENT

TABLE-4
PRACTICE ASSESSMENT OF THE RESPONDENTS

Questions	Yes	No
1. Do you prefer consuming hot milk with spices like cardamom or saffron in winter?	27 (54)	23 (46)
2. Do you consume green leafy vegetables regularly during winter?	39 (78)	11 (22)
3. Do you consume ghee or butter more frequently in winter?	39 (78)	11 (22)
4. Do you consume jaggery as a replacement for sugar in winter?	26 (52)	24 (48)
5. Do you prefer eating hot soups and stews during winter?	26 (52)	24 (48)
6. Do you eat seasonal fruits like oranges and guavas in winter?	24 (48)	26 (52)
7. Do you use spices like ginger and turmeric in your meals during winter?	39 (78)	11 (22)
8. Do you reduce your water intake in winter due to the cold?	33 (66)	17 (34)
9. Do you include root vegetables like carrots and sweet potatoes in winter meals?	39 (78)	11 (22)
10. Do you increase your intake of protein-rich foods during winter?	23 (46)	27 (54)

Table 4 indicates that most university girls already practiced healthy winter dietary habits, showing minimal change post-intervention. For instance, 78% consistently consumed green leafy vegetables, ghee or butter, spices such as ginger and turmeric, and root vegetables both before and after the intervention. Additionally, 66% reported a reduction in water intake during winter, and 52–54% regularly consumed hot milk with spices, jaggery, soups, seasonal fruits, and protein-rich foods, with no significant variation noted after the intervention.

Overall, the levels of dietary practice remained unchanged: 14% high, 48% moderate, and 38% low both before and after the intervention. This suggests that while knowledge improved, it did not lead to behavioural change—a conclusion supported by recent studies, including a 2025 report indicating that digital nutrition interventions increased awareness but had limited effects on the sustainability of dietary practices (Melo et al 2025).

STATISTICAL ANALYSIS

TABLE- 5
STATISTICAL ANALYSIS OF VARIABLES PRE AND POST INTERVENTION:

Variable	Pair T test	P value
Knowledge	-2.919	0.05
Attitude	-3.773	0.000
Practice	-2.436	0.019

Table 5 shows that the intervention significantly improved attitude ($p = 0.000$) and practice ($p = 0.019$), while knowledge had a borderline significant increase ($p = 0.05$). Although awareness improved, actual dietary behaviour changed only slightly, indicating a gap between knowledge and practice. This suggests that short-term interventions may enhance awareness but are insufficient for lasting behavioural change. Long-term, interactive strategies are needed to sustain improved dietary habits among university girls during winter.

CONCLUSION

The study demonstrated that the intervention significantly enhanced knowledge, reducing the percentage of participants with poor knowledge from 82% to 62% and increasing those with good knowledge from 2% to 22%. However, it had no effect on dietary practices, which remained unchanged across all categories. This indicates that knowledge alone is not sufficient to drive behaviour change. Future interventions should incorporate interactive, practical elements and long-term follow-up to effectively address the knowledge–practice gap.

REFERENCES

- Amoore, B. Y., Gaa, P. K., Amalba, A., & Mogre, V. (2023). Nutrition education intervention improves medical students' dietary habits and their competency and self-efficacy in providing nutrition care: A pre, post and follow-up quasi-experimental study. *Frontiers in Nutrition*, 10. <https://doi.org/10.3389/fnut.2023.1063316>
- Aryal, B. K., Mahotra, A., Pachya, A. T., & Pahari, D. P. (2021). Effect of an Educational Intervention on Dietary Diversity Practices among Public School Students. *Journal of Nepal Health Research Council*, 19(2), 239–245. <https://doi.org/10.33314/jnhrc.v19i2.2255>.
- Borjloo, F. Z., Dehdari, T., Abolghasemi, J., Amiri, F., & Vasheghani-Farahani, A. (2021). The effect of a nutrition education intervention on knowledge, attitude, and intake of foods high in fats in women. *Journal of Education and Health Promotion*, 10(1), 216. https://doi.org/10.4103/jehp.jehp_1045_20
- Castillo, Y. A., & Larson, A. (2020). Attitudes towards people with disabilities: a systematic Review of intervention effectiveness. *COUNS-EDU: The International Journal of Counseling and Education*, 5(2), 40–57. <https://doi.org/10.23916/0020200526120>.
- Kucukerdonmez, O., & Rakicioglu, N. (2018). The effect of seasonal variations on food consumption, dietary habits, anthropometric measurements and serum vitamin levels of university students. *Progress in Nutrition*, 20(2), 165–175. <https://doi.org/10.23751/pn.v20i2.5399>
- Moitra, P., Madan, J., & Verma, P. (2021). Impact of a behaviourally focused nutrition education intervention on attitudes and practices related to eating habits and activity levels in Indian adolescents. *Public Health Nutrition*, 24(9), 2715–2726. <https://doi.org/10.1017/s1368980021000203>
- Melo, G. L. R., Santo, R. E., Clavel, E. M., Prous, M. B., Koehler, K., Vidal-Alaball, J., Van Der Waerden, J., Gobiņa, I., López-Gil, J. F., Lima, R., & Agostinis-Sobrinho, C. (2025). Digital dietary interventions for healthy adolescents: A systematic review of behavior change techniques, engagement strategies, and adherence. *Clinical Nutrition*, 45, 176–192. <https://doi.org/10.1016/j.clnu.2025.01.012>
- Waswa, L. M., Jordan, I., Krawinkel, M. B., & Keding, G. B. (2021). Seasonal Variations in Dietary Diversity and Nutrient Intakes of Women and Their Children (6–23 Months) in Western Kenya. *Frontiers in Nutrition*, 8. <https://doi.org/10.3389/fnut.2021.636872>