

Assessment of Knowledge, attitudes and practices regarding food additives and the impact of an awareness intervention among college students

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Abstract: College students generally demonstrate limited knowledge regarding food additives, with many being unaware of their types, functions, and potential health risks, despite frequent consumption of processed foods. Although attitudes toward food safety are often positive, these are not consistently reflected in purchasing behaviors, as taste and brand preference frequently outweigh careful label reading. The present study aimed to assess the knowledge, attitudes, and practices (KAP) regarding food additives among college students and to evaluate the impact of a structured awareness session. A total of 460 students aged 17–26 years from PSG College of Arts and Science, Coimbatore, were selected using purposive sampling. Data were collected using a self-administered, semi-structured questionnaire comprising sections on sociodemographic characteristics and KAP related to food additives. Statistical analysis was performed using Pearson's correlation, Independent Samples t-test, and Paired t-test with SPSS Statistics version 27.0. The results revealed that female students and postgraduates had significantly higher knowledge, more positive attitudes, and better practices compared to males and undergraduates ($p < 0.01$). Positive but weak correlations were observed between knowledge, attitudes, and practices. An awareness session conducted among a sub-sample ($n = 50$) resulted in a significant increase in KAP scores in the experimental group ($p < 0.01$), while no improvement was observed in the control group. Despite moderate awareness, inconsistencies in practices and gaps in detailed knowledge were identified among students. The study concludes that a structured awareness session is effective in enhancing knowledge and promoting positive behavioral changes regarding food additives. Continuous and targeted educational interventions are recommended to improve students' understanding and encourage healthier dietary practices.

Keywords: Food additives, Knowledge, Attitude and Practice (KAP), awareness, and intervention.

INTRODUCTION

Food additives include all substances not exempted by Section 201(s) of the Act, the intended use of which results, or may reasonably be expected to result, directly or indirectly, in their becoming a component of food or otherwise affecting its characteristics (Code of Federal Regulations, 2025). Food safety is closely associated with consumers' knowledge and behaviors regarding food additives. Consumers often prefer organic and traditional food products that are free from chemical preservatives and additives, as they are increasingly aware of the potential health risks associated with such substances (Kulshreshtha et al., 2019). In this context, it is essential to provide accurate information to prevent reliance on processed foods driven by misinformation. Therefore, understanding consumer perceptions and behaviors related to food additives is crucial for improving food safety (Binorkar & Bhoyar, 2025).

According to Koop et al. (2022), food additives are classified based on their technological functions in food products. These include food acids, gelling agents, glazing agents, humectants, leavening agents, preservatives, propellants, sequestrants, stabilisers, thickeners, sweeteners, colourants and colour retention agents, bleaching and bulking agents, antioxidants, anticaking and antifoaming agents, emulsifiers and emulsifying salts, firming agents, flavour enhancers, flour treatment agents, foaming agents, and others. Each category serves specific purposes such as enhancing flavour, preserving freshness, improving texture, and maintaining appearance, thereby contributing significantly to food safety, shelf life, and consumer acceptability.

In India, food manufacturers are required to comply with the provisions of the Food Safety and Standards Act (FSSA), 2006, along with standards established by the Bureau of Indian Standards (BIS) for various food products such as powdered, evaporated, and condensed milk. The FSSA serves as a unified regulatory framework governing food safety and trade within and outside the country, with the Food Safety and Standards Authority of India (FSSAI) designated as the apex body responsible for regulating and monitoring food safety (Yang, 2019).

Certain food additives, such as sulfites, nitrites, and nitrates, have been reported to trigger allergic reactions including hives, itching, and, in severe cases, anaphylaxis. Frequent intake of sulfites has also been associated with exacerbation of asthma symptoms. These additives are commonly used in processed meat products to enhance shelf life. Moreover, regular consumption of emulsifiers, which are widely present in ultra-processed foods, has been linked to an increased risk of chronic inflammatory conditions such as Crohn’s disease, diabetes, ulcerative colitis, obesity, and metabolic syndrome. Emulsifiers may also contribute to gut dysbiosis by affecting the epithelial barrier function (Urrutia-Pereira et al., 2025).

Previous research indicates a significant association between educational status and knowledge levels regarding food additives, with individuals having higher education demonstrating greater awareness compared to those with lower educational attainment. However, attitudes toward food additives often reflect misconceptions and uncertainty, highlighting the need for effective food safety awareness programs to support informed decision-making (Koyratty et al., 2012). Therefore, the present study aimed to assess the sociodemographic profile and baseline knowledge, attitude, and practices (KAP) regarding food additives among college students, and to examine the interrelationship between these components. Additionally, an awareness session was conducted to improve students understanding and promote healthier food-related behaviors.

METHODOLOGY

The study was conducted at PSG College of Arts and Science, located in Coimbatore. Sample size was calculated using the formula $n = Z^2 \times p \times (1 - p) / d^2$, where n = required sample size, Z = standard normal variate (1.96 at 95% confidence level), p = expected proportion (assumed as 0.5 for maximum sample size), $q = 1 - p$, and d = allowable error (0.05). Based on this, the calculated sample size was approximately 384, which was increased to 460 to improve reliability. Hence, a total of 460 college students from various departments were selected using purposive sampling. This sampling technique was adopted as it enabled the selection of participants who met specific inclusion criteria relevant to the study objectives, particularly individuals likely to have exposure to processed foods and varying levels of awareness regarding food additives. Additionally, purposive sampling facilitated efficient data collection within the available time and institutional setting, ensuring inclusion of students from diverse academic backgrounds. However, it is acknowledged that this method may limit the generalizability of the findings due to potential sampling bias. The study included male and female students aged 17–26 years from different academic streams, including arts, life sciences, social sciences, and commerce. Data were collected over three months using a self-administered, semi-structured questionnaire comprising four sections: sociodemographic details, and knowledge, attitude, and practices (KAP) regarding food additives, with a maximum score of 100.

Following data collection, an awareness session was conducted, and its impact on knowledge, attitude, and practices (KAP) was evaluated after a period of two months. A PowerPoint-based educational tool covering the concept, uses, health risks, and safe consumption practices of food additives was delivered through a one-hour interactive session. From the total sample, 50 participants were selected and divided into control and experimental groups, with 25 students in the experimental group receiving the intervention. Activities such as identification of food additives from packaged foods were conducted to enhance understanding. The control group did not receive the intervention, allowing for comparison to determine the impact of the awareness session. The same KAP questionnaire was administered again to both groups after the intervention period to assess changes in knowledge, attitude, and practices. After evaluating the effectiveness of the intervention, the educational material was shared with all study participants.

Data were analyzed to assess students’ familiarity with food additives, sources of awareness, and frequency of processed food consumption. Associations between knowledge, attitude, and practice (KAP) were examined using Pearson’s correlation, while the influence of sociodemographic factors was analyzed using the Independent Sample t-test. Statistical analysis was performed using IBM SPSS Statistics. The effectiveness of the awareness session was evaluated by comparing pre- and post-test KAP scores using the Paired t-test. Feedback from participants was also analyzed to identify areas for improvement in food safety awareness.

RESULTS AND DISCUSSION

1. Background information

Table 1
Background information

S.no	Background Information	Criteria	Number of subjects (n=456)			
			Male (n=194)		Female (n=262)	
			No	%	No	%
1.	Age	17-21	179	92	200	76
		22-26	15	8	62	24

		Total	194	100	262	100
2.	Familiarity with Food additives	Yes	133	69	239	91
		No	61	31	23	9
3.	Source of awareness about food additives	Product Labels	61	31	103	39
		News	39	20	87	33
		Social Media	122	63	206	79
		Health Professionals	40	21	72	27
		Others	3	1	9	3
4.	Frequency of processed food consumption	Daily	36	19	22	9
		A few times a week	90	46	124	47
		Occasionally	59	30	113	43
		Never	9	5	3	1

The background characteristics of the study participants indicate a predominantly younger population, with the majority of students in the 17–21 years age group, particularly among males (92%) compared to females (76%). A relatively higher proportion of females (24%) belonged to the 22–26 years category, suggesting slightly greater representation of older students among females. This age distribution reflects a typical undergraduate-dominated sample, which may influence awareness and behavioral patterns related to food additives.

Familiarity with food additives was notably high, especially among female students (91%) compared to males (69%), indicating better awareness among females. Regarding sources of information, social media emerged as the most common source for both males (63%) and females (79%), followed by product labels and news. Awareness through health professionals was comparatively low, highlighting a gap in formal health communication. In terms of dietary practices, most students reported consuming processed foods a few times a week (46% males; 47% females) or occasionally (30% males; 43% females), while daily consumption was higher among males (19%) than females (9%). These findings suggest that despite reasonable awareness, processed food consumption remains prevalent, emphasizing the need for targeted awareness session to promote healthier food choices.

2. Knowledge regarding food additives among the participants

Table 2
Knowledge regarding food additives

S.no	Knowledge regarding food additives	Criteria	Number of subjects (n=456)			
			Male (n=194)		Female (n=262)	
			No.	%	No.	%
1.	Definition of food additives	Yes	77	40	236	90
		No	117	60	26	10
2.	Coloring agents	Yes	60	31	212	81
		No	134	69	50	19
3.	Emulsifiers	Yes	53	27	213	81
		No	141	73	49	19
4.	Preservatives	Yes	58	30	211	81
		No	136	70	51	19
5.	Leavening agents	Yes	55	28	205	78

		No	139	72	57	22
6.	Glazing agents	Yes	52	27	205	78
		No	142	73	57	22
7.	Flavouring agents	Yes	53	27	217	83
		No	141	73	45	17
8.	Anti-caking agents	Yes	45	23	185	71
		No	149	77	77	29
9.	Buffering agents	Yes	56	29	194	74
		No	138	71	68	26
10.	Stabilisers	Yes	55	28	191	73
		No	139	72	71	27

The findings reveal a marked gender difference in knowledge regarding food additives, with female students consistently demonstrating higher awareness across all categories compared to males. A substantial proportion of females correctly identified the definition of food additives (90%), whereas only 40% of males were aware, indicating a significant knowledge gap. Similar trends were observed for specific types of additives such as coloring agents, emulsifiers, preservatives, flavouring agents, and leavening agents, where awareness among females ranged from 78% to 83%, while males showed considerably lower awareness (23%–31%). This disparity may be attributed to differences in health consciousness, exposure to nutrition-related information, or academic background.

Knowledge of less commonly discussed additives such as anti-caking agents, buffering agents, stabilisers, and glazing agents was comparatively lower in both groups, but still notably higher among females. For instance, only 23% of males were aware of anti-caking agents compared to 71% of females. Overall, the results suggest that although general awareness of food additives exists, in-depth knowledge—particularly among male students—is limited. These findings highlight the need for targeted awareness session to improve comprehensive understanding of food additives, especially focusing on lesser-known categories and male student populations.

3. Attitude regarding food additives among the participants

Table 3
 Attitude regarding food additives

S.no	Attitude regarding food additives	Criteria	Number of subjects (n=456)			
			Male (n=194)		Female (n=262)	
			No	%	No	%
1.	Importance of food additives	Strongly agree	22	11	6	2
		Agree	53	27	77	30
		No idea	51	26	49	19
		Disagree	44	23	103	39
		Strongly disagree	24	13	27	10
2.	Safety of processed food	Strongly agree	22	11	4	1

		Agree	55	28	45	17
		No idea	54	29	31	12
		Disagree	45	23	133	51
		Strongly disagree	18	9	49	19
3.	Use of MSG	Strongly agree	30	16	11	4
		Agree	28	14	41	16
		No idea	82	42	64	24
		Disagree	31	16	84	32
		Strongly disagree	23	12	62	24
4.	Use of food acids	Strongly agree	21	11	9	3
		Agree	53	27	98	38
		No idea	85	44	108	41
		Disagree	27	14	38	15
		Strongly disagree	8	4	9	3
5.	Use of food colorants	Strongly agree	45	23	24	9
		Agree	64	33	122	46
		No idea	40	21	49	19
		Disagree	30	15	62	24
		Strongly disagree	15	8	5	2
6.	Importance of anticaking agents	Strongly agree	38	19	16	6
		Agree	55	28	109	42
		No idea	73	38	114	43
		Disagree	15	8	20	8
		Strongly disagree	13	7	3	1
7.	Function of humectants	Strongly agree	31	16	18	7
		Agree	55	28	95	36
		No idea	57	30	119	46
		Disagree	41	21	24	9
		Strongly disagree	10	5	6	2
8.	Safety of natural colors	Strongly agree	37	19	39	15
		Agree	51	26	100	38
		No idea	60	31	40	15
		Disagree	28	15	63	24

		Strongly disagree	18	9	20	8
9.	Importance of leavening agents	Strongly agree	30	16	29	11
		Agree	28	14	110	42
		No idea	82	42	86	33
		Disagree	31	16	35	13
		Strongly disagree	23	12	2	1
10.	Excessive use of sweetening agents	Strongly agree	21	11	89	34
		Agree	53	27	112	43
		No idea	85	44	39	15
		Disagree	27	14	13	5
		Strongly disagree	8	4	9	3

The attitude assessment reveals mixed perceptions among students regarding food additives, with notable gender differences. Female students generally exhibited more cautious and health-oriented attitudes compared to males. A considerable proportion of females disagreed with the safety of processed foods (51% disagree; 19% strongly disagree), whereas males showed relatively more neutral or uncertain responses, with 29% indicating “no idea.” Similarly, a higher percentage of females expressed concern about the use of additives such as MSG and excessive sweetening agents, with strong agreement (34%) and agreement (43%) that overuse of sweeteners may be harmful. In contrast, male students demonstrated greater uncertainty across several parameters, particularly regarding MSG (42% no idea) and food acids (44% no idea), indicating gaps in attitudinal clarity.

Across several functional additives such as anticaking agents, humectants, and leavening agents, both groups displayed a high proportion of neutral responses, especially among males, suggesting limited awareness influencing their attitudes. However, females showed relatively more positive attitudes towards the functional role of certain additives like food colorants (46% agree) and leavening agents (42% agree), while still maintaining caution regarding safety aspects. The perception of natural colors being safer was moderately accepted in both groups but with some level of disagreement, indicating partial understanding. Overall, the findings suggest that although some students recognize the risks associated with excessive additive use, there remains considerable ambiguity and lack of strong opinion, particularly among male students. This underscores the need for focused awareness session to build informed and balanced attitudes toward food additives.

4. Practice regarding food additives among the participants

Table 4
Practice regarding food additives

S.no	Practice regarding food additives	Criteria	Number of subjects (n=456)			
			Male (n=194)		Female (n=262)	
			No	%	No	%
1.	Attention to food labels	Always	43	22	43	16
		Often	34	18	49	19
		Sometimes	76	39	119	45
		Rarely	21	11	41	16

		Never	20	10	10	4
2.	Limiting processed food containing additives	Always	28	14	33	12
		Often	44	23	68	26
		Sometimes	82	42	92	35
		Rarely	33	17	62	24
		Never	7	4	7	3
3.	Purchase of packaged food with additive free claims	Always	21	11	37	14
		Often	57	29	62	24
		Sometimes	67	35	90	34
		Rarely	32	16	55	21
		Never	17	9	18	7
4.	Updated about recent findings regarding food additives	Always	31	16	31	12
		Often	37	19	49	19
		Sometimes	77	40	94	36
		Rarely	41	21	62	23
		Never	8	4	26	10
5.	Checks for the presence of artificial sweeteners	Always	29	15	31	12
		Often	39	20	60	23
		Sometimes	57	29	101	38
		Rarely	40	21	47	18
		Never	29	15	23	9
6..	Purchase of food products which produce strong flavor	Always	24	12	18	7
		Often	38	20	37	14
		Sometimes	70	36	97	37
		Rarely	36	19	80	31
		Never	26	13	30	11
7.	Conscious effort to buy fresh food	Always	51	26	59	23
		Often	54	28	98	37
		Sometimes	51	26	78	30
		Rarely	24	13	21	8

		Never	14	7	6	2
8.	Avoidance of brightly colored processed food	Always	46	24	66	25
		Often	27	14	80	31
		Sometimes	57	29	79	30
		Rarely	42	22	27	10
		Never	22	11	10	4
9.	Avoidance of processed meats	Always	59	30	91	35
		Often	35	18	66	25
		Sometimes	47	24	70	27
		Rarely	38	20	23	9
		Never	15	8	12	4
10.	Conscious effort to buy organic food without additives	Always	32	17	46	18
		Often	50	26	93	35
		Sometimes	65	33	92	35
		Rarely	27	14	27	10
		Never	20	10	4	2

The practice-related findings indicate moderate but inconsistent adoption of healthy behaviors regarding food additives among college students. A considerable proportion of both males (39%) and females (45%) reported only “sometimes” paying attention to food labels, with a smaller percentage consistently doing so (22% males; 16% females). This suggests that although students may have some awareness, it is not regularly translated into practice. Similarly, limiting the intake of processed foods containing additives was not consistently followed, with the majority reporting “sometimes” (42% males; 35% females), indicating irregular dietary control.

Practices related to informed purchasing and staying updated on food additives also showed variability. While some students reported often or always purchasing additive-free products, a substantial proportion still fell into the “sometimes” or “rarely” categories. Awareness-seeking behavior, such as staying updated on recent findings, was also limited, with most students responding “sometimes.” Checking for artificial sweeteners followed a similar trend, with inconsistent practices observed across both genders. Overall, these findings highlight a gap between knowledge and actual behavior, emphasizing the need for targeted interventions to promote consistent and health-conscious practices regarding food additives.

5. Mean KAP scores according to demographic factors of the study subjects

Table 5
Mean KAP scores according to demographic factors of the study subjects

Demographic Factors	Category	Knowledge (Mean ± SD)	Attitude (Mean ± SD)	Practice (Mean ± SD)	P-value (Knowledge)	P-value (Attitude)	P-value (Practice)
Gender	Male (n=194)	12.91 ± 3.31	21.94 ± 4.03	22.36 ± 5.35	p < 0.001*	p < 0.001*	p = 0.011**
	Female (n=262)	17.90 ± 2.79	23.57 ± 3.53	23.70 ± 5.79			
Educational Qualification	Graduate (n=266)	14.20 ± 3.85	22.32 ± 3.97	22.20 ± 5.28	p < 0.001*	p < 0.001*	p < 0.001*
	Postgraduate (n=190)	17.97 ± 2.74	23.67 ± 3.49	24.43 ± 5.89			

Note: *Significant at 1% level (p < 0.01); **Significant at 5% level (p < 0.05). Independent sample t-test was used.

The comparison of mean KAP scores across demographic factors reveals statistically significant differences, indicating the influence of gender and educational qualification on students understanding and behavior regarding food additives. Female students demonstrated significantly higher knowledge scores (17.90 ± 2.79) compared to males (12.91 ± 3.31) at the 1% level of significance, suggesting better awareness and comprehension among females. Similarly, postgraduate students showed higher knowledge levels (17.97 ± 2.74) than graduates (14.20 ± 3.85), reflecting the role of advanced education in improving subject-specific understanding. These findings align with the earlier observation that females and more educated individuals tend to have greater exposure to nutrition-related information.

A similar trend was observed in attitude scores, where females (23.57 ± 3.53) and postgraduates (23.67 ± 3.49) exhibited significantly more positive attitudes compared to males (21.94 ± 4.03) and graduates (22.32 ± 3.97), respectively ($p < 0.01$). This indicates that higher knowledge levels may contribute to more favorable and health-conscious attitudes toward food additives. In terms of practice, although the differences were comparatively smaller, females (23.70 ± 5.79) and postgraduates (24.43 ± 5.89) again scored higher than their counterparts, with statistical significance observed at both 1% and 5% levels. Therefore, the results suggest a consistent pattern where higher knowledge is associated with better attitudes and practices, emphasizing the importance of education and targeted interventions, particularly among male and undergraduate students, to bridge existing gaps in KAP related to food additives.

Esfahani et al. (2021) recorded that the participants' knowledge, attitudes, and practices average scores were calculated as 30.6 ± 1.3 , 32 ± 0.9 , and 15 ± 1.5 for food additives, respectively. They also concluded that the participants knowledge, attitude, and practices were at a poor level. So, people should receive the necessary education and training in terms of food additives as well as food labels in order to prevent misinterpretations regarding food additives.

6. Relationship between Knowledge, Attitude and Practice among the participants

Table 6
Correlation between knowledge, attitude and practice regarding food additives

Particulars	r value	p value	Interpretation
Knowledge and Attitude	0.250	$p < 0.001^*$	Weak positive correlation
Knowledge and Practice	0.192	$p < 0.001^*$	Weak positive correlation
Attitude and Practice	0.171	$p < 0.001^*$	Weak positive correlation

Note: *Significant at 1% level ($p < 0.01$). Pearson correlation coefficient was used.

The present study demonstrated a statistically significant positive correlation between knowledge, attitude, and practice regarding food additives among college students; however, the strength of these associations was weak. Knowledge showed a positive relationship with attitude ($r = 0.250$, $p < 0.001$) and practice ($r = 0.192$, $p < 0.001$), while attitude was also positively correlated with practice ($r = 0.171$, $p < 0.001$). These findings suggest that although increased knowledge is associated with more favorable attitudes and better practices, the translation of knowledge into actual behavior remains limited. The weak correlations indicate the presence of a knowledge–practice gap, where awareness alone may not be sufficient to bring about meaningful behavioral change.

Similar observations have been reported in previous studies, where individuals exhibited adequate knowledge but failed to consistently adopt healthier practices due to factors such as taste preferences, convenience, and accessibility of processed foods. This highlights the need for targeted and sustained awareness interventions, focusing not only on improving knowledge but also on influencing attitudes and reinforcing positive behavioral changes. Therefore, comprehensive educational strategies combined with practical approaches are essential to bridge the gap between knowledge and practice and to promote safer food choices among young adults.

Gokce et al. (2018) in their study reported that medical students had significantly higher knowledge levels (92.2%) about the definition of food additives compared to those of engineering students (80.4%) ($p < 0.05$). More males (52.8%) than females (49.3%) and more medical students (51.6%) than engineering students (50.7%) stated a significantly higher rate of daily consumption of processed foods containing additives ($p < 0.05$). The median scores of knowledge regarding food additives were not significantly different between gender and faculty ($p > 0.05$). The present study demonstrated that the rate of the participants who knew the definition of food additives as well as those who perceived food additives to be unsafe were high. Although the knowledge levels on FAs of the students were high in general, it was observed that the frequency of food consumed daily was high. This suggests that further research and effective interventions are required to ensure that knowledge turns into behaviour. Another study by Etwaroo et al. (2023) in their study stated that there was a significant difference in knowledge between respondents who made use of additives

and those who did not use additives ($\chi^2 = 3.02, p = 0.004$), however, no difference was observed for the attitude subscale (p -value = 0.641).

7. Impact of awareness session among selected subjects

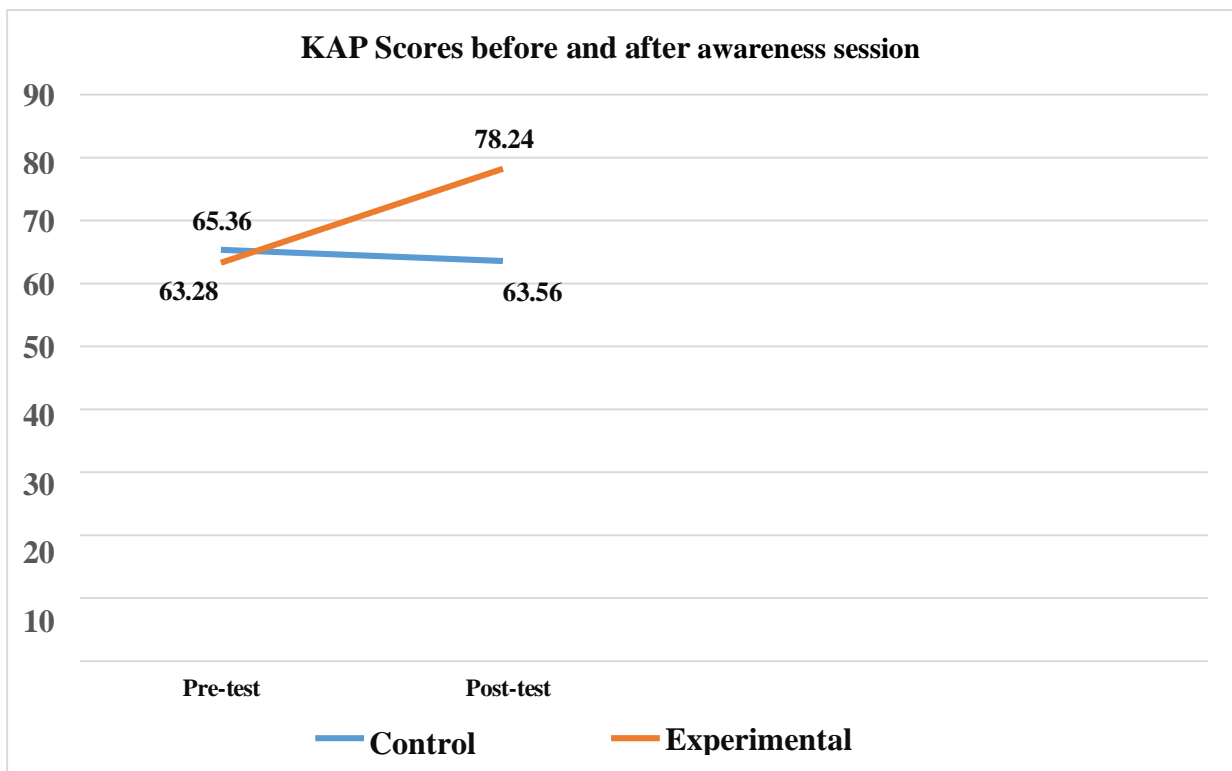
Table 7
 Impact of awareness session on knowledge, attitude and practice on food additives

Intervention groups	Mean KAP scores		Paired t test
	Pre-Intervention	Post-Intervention	
Control group (N=25)	65.36±6.52	63.56±6.91	2.488**
Experimental group (N=25)	63.28±6.07	78.24±5.69	-10.627*

Note: *Significant at 1%, **Significant at 5%, Paired t test analysis was used.

Figure 1. KAP Scores before and after awareness session

The findings demonstrate a clear impact of the awareness session on the KAP scores of the participants. In the experimental group, the mean KAP score increased substantially from 63.28 ± 6.07 (pre-intervention) to 78.24 ± 5.69



(post-intervention), with a highly significant difference at the 1% level ($p < 0.01$). This indicates that the awareness session was effective in improving students' knowledge, shaping positive attitudes, and promoting better practices regarding food additives. The large t-value further reflects the strength of the intervention in bringing about measurable change within a short duration.

In contrast, the control group showed a slight decrease in mean KAP scores from 65.36 ± 6.52 to 63.56 ± 6.91, which was statistically significant at the 5% level ($p < 0.05$). This reduction may be attributed to variability in responses, lack of reinforcement, or external influences during the study period. The absence of any structured educational input in the control group highlights the importance of targeted interventions in sustaining and improving KAP levels. Overall, the results strongly support the effectiveness of awareness session as a tool for enhancing awareness and encouraging healthier behaviors related to food additives among college students.

CONCLUSION

The present study concludes that while a moderate level of awareness regarding food additives exists among college students, significant gaps remain, particularly in detailed knowledge and consistent healthy practices. Female students and postgraduates demonstrated significantly higher knowledge, more positive attitudes, and better practices compared to males and undergraduates, highlighting the influence of gender and educational level on KAP. Although positive correlations were observed between knowledge, attitude, and practice, the relatively weak strength of these associations indicates that knowledge alone is not sufficient to ensure behavioral change.

The awareness session proved to be highly effective, as evidenced by the significant improvement in KAP scores among the experimental group, while the control group showed no such enhancement. This underscores the importance of structured and targeted educational programmes in bridging existing gaps and promoting informed decision-making. Overall, the study emphasizes the need for continuous, well-designed education and awareness session initiatives to enhance awareness, foster positive attitudes, and encourage healthier practices regarding food additives among college students.

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