



# Impact Of An Educational Intervention On Knowledge, Attitude, And Practice (KAP) Regarding Food Labelling Among University Students

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## Abstract:

Food Labeling is critical in educating consumers on the nutritional value, ingredients, and health claims of food products. The lack of knowledge, indifferent attitude, and improper practice of food labelling can contribute to unhealthy food choices, especially among young adults. This study was conducted to evaluate the baseline knowledge, attitude, and practice (KAP) of university students on food labelling, introduce an educational intervention, and test its effectiveness. A standardized questionnaire was applied to assess participants' pre-intervention KAP levels, and this was followed by an educational session in the form of a PowerPoint presentation. Post-intervention assessment was done via the same questionnaire. The results showed that there was an improvement in participants' knowledge, where the percentage of students showing good knowledge improved from 40% to 72%. Attitudinal changes were noted, with an increase in students with good attitudes toward food labelling from 10% to 44%. The findings are a strong demonstration that specific, educational interventions targeting consumer literacy will increase positive beliefs and stimulate thoughtful food selection. Ongoing encouragement through interactive instructional strategies could contribute to even further enhanced food label understanding and integration into everyday eating habits.

**Keywords:** Food labelling, nutrition awareness, dietary choices, students, consumer education

## 1. Introduction:

labelling is important in directing consumers towards making informed dietary decisions by making provision for important information regarding the nutritional content, ingredients, and health claims of foods. Due to the growing number of diet-related health issues, reading food labels has emerged as an essential skill, especially for young adults, such as university students. Yet research indicates that most people are not knowledgeable enough, have apathetic attitudes, and display poor practice towards food labelling, which could result in poor dietary practices (Riaz et al., 2022a), (Song et al., 2021). Research indicates that many individuals lack sufficient knowledge and exhibit indifferent attitudes toward food labelling, leading to suboptimal dietary habits. (Md Zaini et al., 2022), (Kaur1 & Singh2, n.d.). Knowledge, Attitude, and Practice (KAP) studies serve as valuable tools to assess consumers' awareness and behaviours related to food labelling. (Riaz et al., 2022b). In this study, university students' baseline knowledge, attitude, and practice (KAP) concerning food labelling were assessed using a structured questionnaire. Following this, an educational intervention in the form of a PowerPoint presentation was implemented to enhance their understanding. The effectiveness of the intervention was then evaluated by reassessing their KAP through the same questionnaire. The objectives of this study were to assess the baseline knowledge, attitude, and practice (KAP) of university students regarding food labelling, to implement an educational intervention using a PowerPoint presentation on food labelling. And to evaluate changes in students' KAP after the intervention to determine its effectiveness.

## 2. Research Methodology:

### 2.1 Study Design

This study follows a Knowledge, Attitude, and Practice (KAP) survey design with a pre-post intervention approach. It aims to assess university students' understanding of food labelling before and after an educational intervention.

### 2.2 Study Population and Sampling

The target population for this study comprised female university students. Participants were selected based on specific inclusion and exclusion criteria. To be eligible, individuals had to be enrolled in the university at the time of the study and willing to participate voluntarily. Students who were unwilling to provide informed consent or did not wish to participate in both pre- and post-assessments, as well as non-university students, were excluded. A minimum of 50 participants were recruited using a non-probability sampling method, specifically convenience and snowball sampling. Convenience sampling allowed for easy access to participants who met the eligibility criteria, while snowball sampling enabled the recruitment of additional participants through referrals from initial respondents, ensuring a broader reach within the university setting.

## 2.3 Study Tool

A structured questionnaire was developed to assess participants' knowledge, attitude, and practice regarding food labelling. The questionnaire comprised three sections: knowledge-based questions in multiple-choice and true/false formats to evaluate understanding, attitude-based questions using a 5-point Likert scale to assess perceptions, and practice-based questions with Yes/No responses to determine actual behaviour related to food labelling.

## 2.4 Scoring

Knowledge assessment was based on assigning 1 point for each correct answer and 0 for incorrect responses, with interpretation as follows: scores below 8 indicated poor knowledge, scores between 8 and 11 represented moderate knowledge, and scores above 11 were classified as good knowledge. Attitude assessment was measured using a Likert scale, where responses ranged from Strongly Disagree (1 point) to Strongly Agree (5 points). Attitude interpretation categorized scores below 6 as negative or indifferent, 6–8 as moderate or neutral, and above 8 as positive. Practice assessment involved Yes/No responses, where Yes was assigned 1 point and No was assigned 0 points. Interpretation of scores categorized participants with less than 5 points as having low practice, 5–7 points as moderate practice, and more than 7 points as excellent practice in food label reading.

## 2.5 Intervention

An educational intervention was conducted using a PowerPoint presentation to enhance participants' understanding of food labelling. The session covered the purpose of food labels, key components such as ingredients, nutrition facts, allergens, and serving size, as well as strategies for identifying misleading claims and hidden ingredients. Additionally, participants were guided on how to use food labels effectively to make healthier dietary choices.

## 2.6 Data Collection Procedure

1. Pre-intervention Phase: Participants were asked to fill out the KAP questionnaire before receiving any information.
2. Intervention Phase: A PowerPoint presentation was delivered to educate participants about food labelling.
3. Post-intervention Phase: The same KAP questionnaire was administered again after three days to assess changes in knowledge, attitude, and practice.

## 2.7 Data Analysis

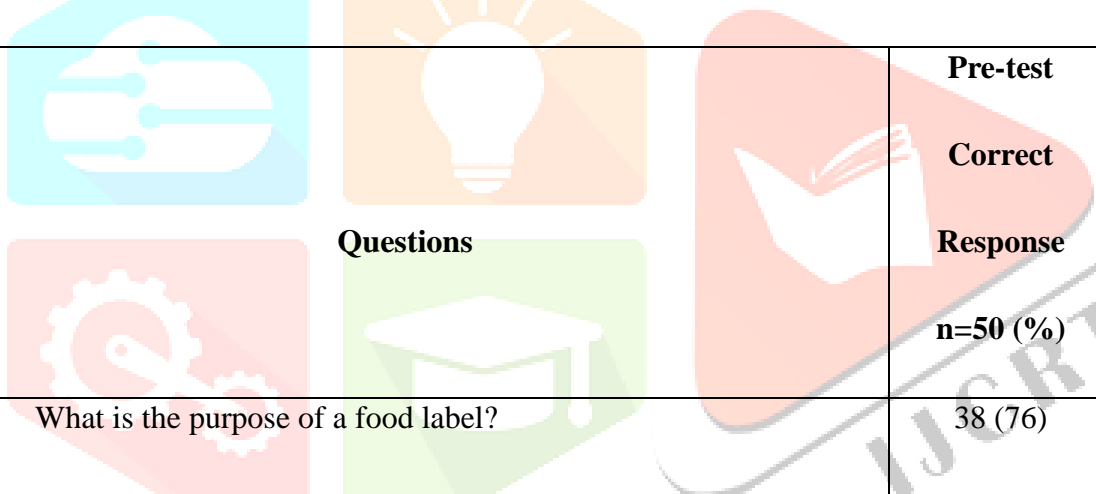
Knowledge, attitude, and practice were assessed based on raw scores obtained from the questionnaire. Knowledge was evaluated using factual accuracy, while attitude was measured through a Likert scale, and practice was assessed based on self-reported behaviours. The total scores were converted into percentages, with classifications as follows: good ( $\geq 75\%$ ), moderate (51–74%), and poor ( $\leq 50\%$ ) for knowledge, attitude, and practice levels.

## 2.8 Ethical Considerations

Informed consent was obtained from all participants prior to their involvement in the study. Participation was entirely voluntary, and the anonymity of all participants was ensured throughout the process to maintain confidentiality and protect their privacy.

## 3.Result and Discussion:

### 1. Knowledge Assessment of Respondents

 <b>Questions</b>	<b>Pre-test Correct Response n=50 (%)</b>	<b>Post-test Correct Response n=50 (%)</b>
1. What is the purpose of a food label?	38 (76)	49 (98)
2. Which of the following picture is wrong?  <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p><b>Nutrition Facts</b> Serving Size: 1 8-oz CONTAINER Amount Per Serving Calories 150 Total Fat 15g 30% Saturated Fat 1g 2% Trans Fat 0g 0% Cholesterol 10mg 20% Sodium 60mg 12% Potassium 200mg 40% Total Carbohydrate 10g 20% Protein 5g 10% Vitamin A 15% Calcium 20%</p> <p><b>Picture A</b></p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p><b>Nutrition Facts</b> Serving Size: 1 8-oz CONTAINER Amount Per Serving Calories 150 Total Fat 15g 30% Saturated Fat 1g 2% Trans Fat 0g 0% Cholesterol 10mg 20% Sodium 60mg 12% Potassium 200mg 40% Total Carbohydrate 10g 20% Protein 5g 10% Vitamin A 15% Calcium 20%</p> <p><b>Picture B</b></p> </div> </div>	45 (90)	41 (82)
3. What is included in the “ingredients list” of a food label?	38 (76)	39 (78)
4. What does “low-fat” mean on a food label?	27 (54)	36 (72)
5. What does the "allergen information" on a food label tell you?	40 (80)	46 (92)
6. What mentioned on food label help consumers make healthier	32 (64)	42 (84)

	choices?		
7.	What are the following is not on the food labels?	41 (82)	43 (86)
8.	What is the meaning of shelf life of food?	35 (70)	46 (92)
9.	What does "RDA" stand for on a food label?	40 (80)	47 (94)
10.	Which logo is not on the food label?	27 (54)	40 (80)
11.	What is the term 'serving size' on food labels shows?	32 (64)	45 (90)
12.	What does "trans-fat" on a label indicate?	22 (44)	40 (80)
13.	What is the difference between the 'best before' date and the 'expiration date' on food labels?"	30 (60)	43 (86)
14.	Which nutrient should be consumed in limited amounts as per food labels?	39 (78)	47 (94)
15.	Which of the following is a voluntary claim that may appear on a food label?	11 (22)	28 (56)

**Table1.1 Knowledge Assessment of Respondents**

Knowledge Level	Pre-Intervention n=50 (%)	Post-Intervention n=50 (%)
< 8 (Poor knowledge)	12 (24)	3 (6)
8 - 11 (Average Knowledge)	18 (36)	11 (22)
>11 (Excellent Knowledge)	20 (40)	36 (72)

Table 1.2 Knowledge Level of Respondents

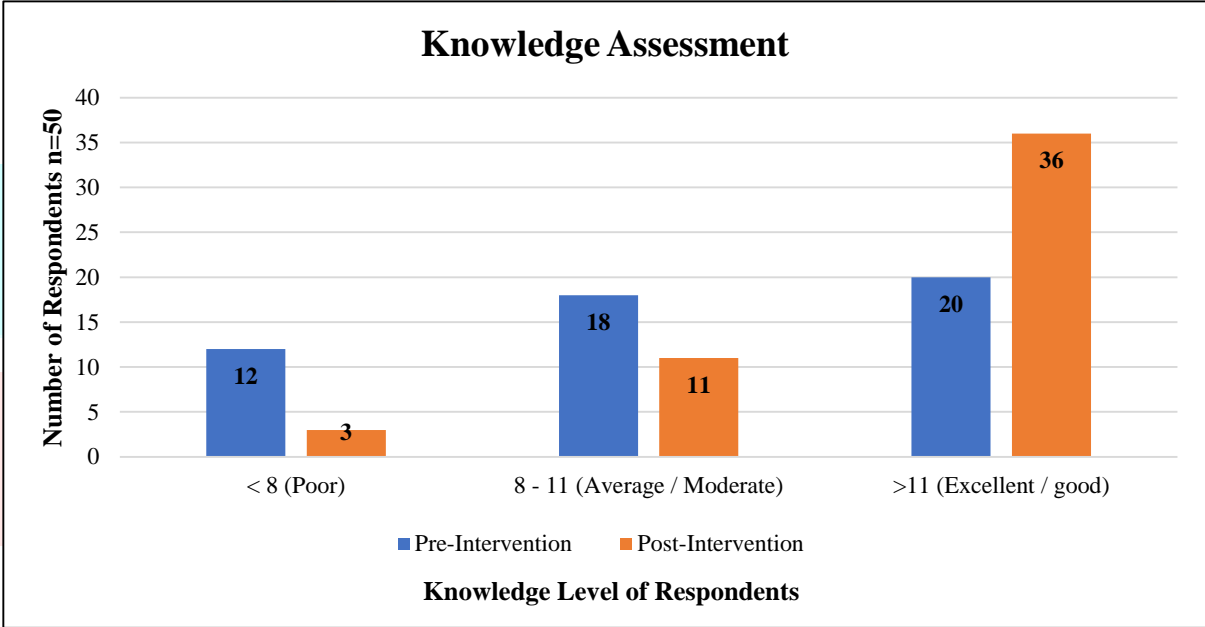


Figure1.1 Knowledge Level of Respondents

The assessment of participants' knowledge regarding food labelling as shown in Table 1.1 was conducted before and after the intervention. As can be seen in Table 1.2 and Figure 1.1 before the intervention, 12 (24%) participants had poor knowledge (<8 correct responses), while 18 (36%) had moderate knowledge (8-11 correct responses), and 20 (40%) demonstrated good knowledge (>11 correct responses).Following the intervention, there was a noticeable improvement in knowledge scores. The number of participants in the poor knowledge category dropped to 3 (6%), while those in the moderate category decreased to 11 (22%). Most notably, the proportion of participants with good knowledge increased significantly to 36 (72%), indicating the effectiveness of the educational session.

**Discussion:**The significant increase in knowledge scores post-intervention suggests that the educational session successfully enhanced students' understanding of food labelling. This aligns with previous research showing that structured nutrition education improves consumer literacy on food labels, leading to better

food choices (Miller & Cassady, 2015). The reduction in the poor knowledge category demonstrates that basic misconceptions about food labels were addressed effectively.

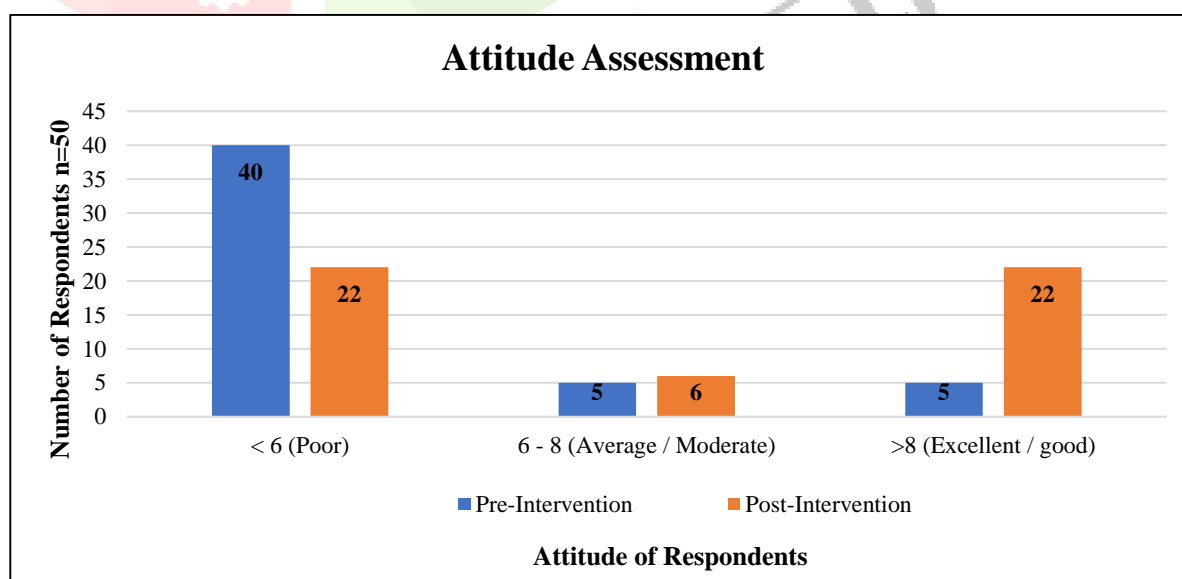
## 2. Attitude Assessment of Respondents

Questions	Frequency (%) (n=50)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Reading food labels is important for maintaining a healthy diet	Pre-Test	23 (46)	20 (40)	4 (8)	-	3 (6)
	Post-Test	36 (75)	13 (26)	-	-	1 (2)
Food labels provide accurate and trustworthy information	Pre-Test	10 (20)	30 (60)	6 (12)	2 (4)	2 (4)
	Post-Test	29 (58)	16 (32)	2 (4)	1 (2)	2 (4)
Food labels are essential for people with specific dietary needs (e.g., allergies, diabetes).	Pre-Test	18 (36)	21 (42)	8 (16)	1 (2)	2 (4)
	Post-Test	36 (72)	9 (18)	3 (6)	2 (4)	-
Food labels are clear and easy to understand.	Pre-Test	15 (30)	18 (36)	15 (30)	2 (4)	-
	Post-Test	30 (60)	13 (26)	4 (8)	2 (4)	1 (2)
Understanding serving sizes on labels helps control portion intake effectively	Pre-Test	15 (30)	22 (44)	11 (22)	2 (4)	-
	Post-Test	29 (58)	15 (30)	6 (12)	-	-
Food labels are more helpful than the marketing claims on food packaging.	Pre-Test	11 (22)	20 (40)	19 (38)	-	-
	Post-Test	31 (62)	12 (24)	5 (10)	2 (4)	-
Do you believe that "low fat" labelled products are always healthy?	Pre-Test	7 (14)	16 (32)	16 (32)	7 (14)	4 (8)
	Post-Test	20 (40)	9 (18)	17 (34)	2 (4)	2 (4)
Reading food labels is too time-consuming	Pre-Test	6 (12)	20 (40)	15 (30)	6 (12)	3 (6)
	Post-Test	23 (46)	12 (24)	9 (18)	4 (8)	2 (4)
Reading the ingredient list is	Pre-Test	12 (24)	20 (40)	11 (22)	5 (10)	2 (4)

more important than checking calorie counts on food labels?	Post-Test	32 (64)	13 (26)	3 (6)	2 (4)	-
The use of food labels should be mandatory for all food products.	Pre-Test	16 (32)	16 (32)	15 (30)	2 (4)	1 (2)
	Post-Test	31 (62)	13 (26)	5 (10)	1 (2)	-
Food labels should include symbols for quick understanding, like traffic lights for nutrients?	Pre-Test	14 (28)	23 (46)	10 (20)	2 (4)	1 (2)
	Post-Test	29 (58)	12 (24)	8 (16)	-	1 (2)

**Table 2.1 Attitude Assessment of Respondents**

Attitude Level	Pre-Intervention n=50 (%)	Post-Intervention n=50 (%)
< 6 (Negative Attitude)	40 (80)	22 (44)
6 - 8 (Average Attitude)	5 (10)	6 (12)
>8 (Positive Attitude)	5 (10)	22 (44)

**Table 2.2 Attitude Level of Respondents****Figure 2.1 Attitude Level of Respondents**

As can be seen in Table 2.2. and Figure 2.1 before the intervention, the majority of participants (40 (80%)) exhibited poor attitude (<6), indicating a lack of awareness or motivation to use food labels in decision-making. Only 5 (10%) participants had a moderate attitude (6-8), while another 5 (10%) had a good attitude (>8). Post-intervention, there was a noticeable shift in attitude. The proportion of students with a poor attitude decreased to 22 (44%), while those with a moderate attitude slightly increased to 6 (12%). Encouragingly, the number of participants with a good attitude rose significantly to 22 (44%).

**Discussion:** The improvement in attitude scores indicates that increased knowledge can positively influence perceptions regarding food labelling. This finding is similar to a study published in *Nutrients* evaluated the impact of educational programs on consumers' understanding and use of nutrition labels. The study found that participants who underwent educational interventions showed significant improvements in comprehending and utilizing nutrition labels, highlighting the potential of such programs to positively influence dietary behaviours (Moore et al., 2018). However, while there was a substantial shift from poor to good attitudes, a portion of students still remained neutral. This suggests that while knowledge plays a role, other factors, such as behavioural reinforcement and habitual tendencies, may influence attitudes towards food labelling. Future interventions could incorporate interactive activities, such as real-life label reading exercises, to further solidify these attitudinal changes.

### 3. Practice Assessment of Respondents

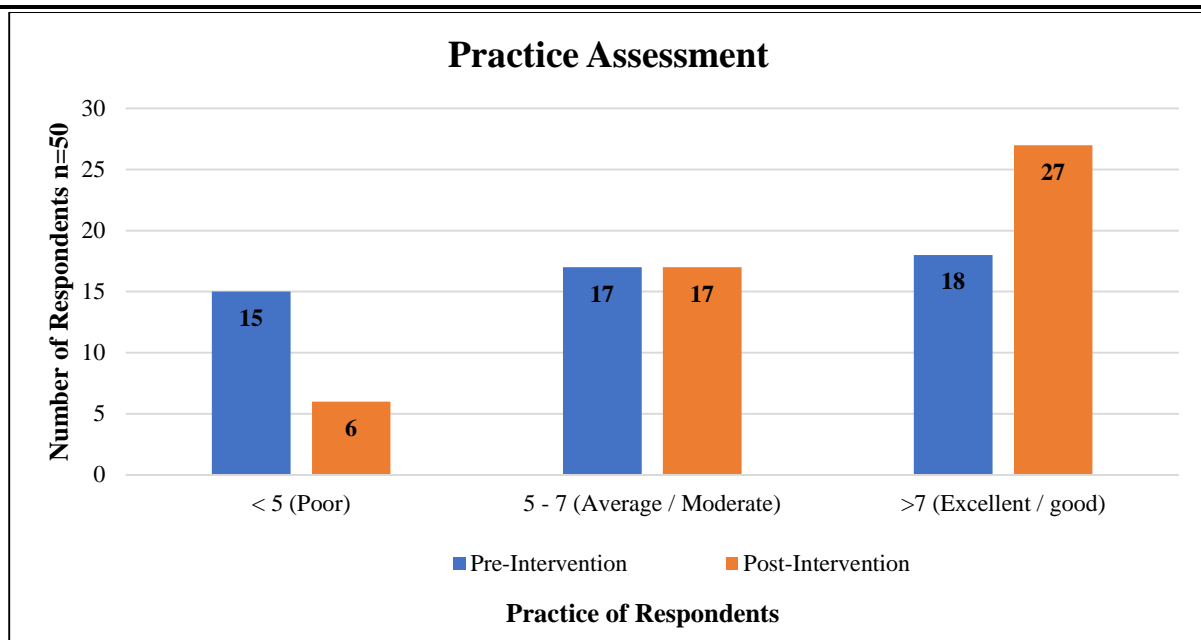
Questions	Frequency (%) (n=50)	Yes	No
1. Do you check the nutrition labels before purchasing packaged food?	Pre-Test	34 (68)	16 (32)
	Post-Test	39 (78)	11 (22)
2. Do you always check the expiry date on food packages before purchasing them?	Pre-Test	40 (80)	10 (20)
	Post-Test	45 (90)	5 (10)
3. Are you aware of "per serving" size on food labels?	Pre-Test	31 (62)	19 (38)
	Post-Test	40 (80)	10 (20)
4. Do you read the ingredient list to avoid specific additives or preservatives?	Pre-Test	29 (58)	21 (42)
	Post-Test	38 (76)	12 (24)
5. Do you check for claims like "low fat" or "sugar-free" on the label?	Pre-Test	33 (66)	17 (34)
	Post-Test	39 (78)	11 (22)

6. Have you practiced identifying hidden sugars and added sugar on food labels?	Pre-Test	22 (44)	28 (56)
	Post-Test	27 (54)	23 (46)
7. Do you check for the presence of trans fats in packaged snacks?	Pre-Test	26 (52)	24 (48)
	Post-Test	38 (76)	16 (32)
8. Do you check the protein content while reading food labels?	Pre-Test	34 (68)	16 (32)
	Post-Test	37 (74)	13 (26)
9. Have you practiced recognizing misleading claims like "all-natural" or "organic"?	Pre-Test	29 (58)	21 (42)
	Post-Test	32 (64)	18 (36)
10. Do you buy food that is not labelled?	Pre-Test	23 (46)	27 (54)
	Post-Test	11 (22)	39 (78)

Table 3.1 Practice Assessment of Respondents

Practice Level	Pre-Intervention n=50 (%)	Post-Intervention n=50 (%)
< 5 (Poor Practice)	15 (30)	6 (12)
5 - 7 (Average Practice)	17 (34)	17 (34)
>7 (Excellent Practice)	18 (36)	27 (54)

Table 3.2 Practice Level of Respondents



**Figure 3.1 Practice Level of Respondents**

In terms of food labelling practices, as can be seen in Table 3.2 and Figure 3.1 the pre-intervention assessment revealed that 15 (30%) participants had poor practices (<5 correct responses), while 17 (34%) demonstrated moderate practices (5-7 responses), and 18 (36%) had good practices (>7 responses). After the intervention, there was a clear improvement in food labelling practices. The number of participants with poor practices reduced to 6 (12%), while those in the moderate category remained the same at 17 (34%). However, the most significant improvement was in the good practice category, which increased to 27 (54%).

**Discussion:** The increase in participants practicing food label reading highlights the intervention's impact on behaviour change. The shift from poor to good practice suggests that when students are educated about food labels, they are more likely to actively use them while purchasing food. However, the moderate practice group remained unchanged, indicating that while knowledge improved, behavioural shifts might take longer to establish. Strategies such as continuous reinforcement through workshops or real-world shopping exercises could further enhance long-term food label usage. This is similar to a review article published in *Nutrients* which evaluated various educational programs aimed at enhancing consumers' comprehension and utilization of nutrition labels. The review concluded that educational interventions, including brief one-off sessions, positively impacted participants' understanding and use of nutrition labels across diverse populations. However, the review also noted that while knowledge and attitudes improved, translating these changes into sustained behavioural practices may require ongoing reinforcement and tailored strategies (Moore et al., 2018).

#### 4. Conclusion:

The study demonstrated a significant improvement in knowledge, attitude, and practice of food labelling among university students following an educational intervention. The increase in knowledge scores

directly influenced positive attitudinal shifts and better food label usage practices. However, while substantial progress was observed, continuous reinforcement may be needed to sustain and further enhance these changes in the long term. Future studies could explore additional methods, such as interactive workshops, mobile applications, or supermarket-based training, to strengthen food label literacy among young consumers.

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