

STUDY ON THE IMPACT OF NUTRITION KNOWLEDGE, ATTITUDE AND PRACTICE ON FOOD LABELING AMONG SPORTS PLAYERS AND NON SPORTS PLAYERS

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ABSTRACT

Food labeling is a topical issue and an important tool influencing consumer food choices. It could be an efficient tool to prevent consumer vulnerability to diet-related illnesses such as cancer, high blood pressure, hypertension and obesity, etc. This study seeks to examine the impact of Knowledge, Attitude and practice on food labeling among sports players and non-sports players in India. A descriptive cross-sectional study was conducted to assess the Knowledge, Attitude and Practices (KAP) in four cities of Tamil Nadu- Chennai, Madurai, Ramanathapuram, Dindigul. Data were gathered using an online KAP Pretest questionnaire from hundred respondents which included 50 sports players and 50 non-sports players. An educational session was conducted for all the respondents and the impact of the intervention was analyzed through a posttest questionnaire. Descriptive statistics were used to analyze the knowledge,

attitudes, and behaviors of the respondents regarding food labels and Independent t- test was used to examine the significant relationship between pre and post test results among sports and non-sports players and the result

Keywords: Food labeling, Knowledge, labeling education, sports players, Attitude, Practice

INTRODUCTION

Food labeling is one of the ways pre-packaged food companies interact with their customers. The globally accepted definition of a food label, is any tag, mark, pictorial, or other descriptive text, written or printed, attached to a pre-packaged food container.[1] A consumer's decision to purchase a packaged food product is affected by many aspects i.e. taste, quality, convenience and ease of use[2]. In order to prevent the excessive intake of processed foods and to make healthier food choices, it is important that consumers be motivated to read nutrition labels present in processed foods. Similarly, Unhealthy dietary habits in sports persons not only affect their performance in the competition but also provide a negative impact on their overall health. Level of nutrition knowledge, dietary habits and food intake of sports players are important in determining player's performance in sports competitions. Therefore, nutrition labels provide important information regarding the nutrient content of food; they can guide consumers in the selection of food [3] and also serve as an informational tool that facilitates healthy consumption of food.

Apart from providing healthy eating choices, Food and Nutrition labeling serve several purposes for consumers as well as manufacturers such as, It enables informed dietary choices which helps in preventing and managing health conditions, It allows comparisons among a variety of foods available in the market and encourages producers in healthy product development and reformulation. Food labels also give the sense of trust and confidence in health, hygiene and safety in consuming the food products. On the whole the food and nutrition labeling policies have a dual purpose; to protect consumers and to ensure fair marketing.

In India, there is Food Safety and Standards (Packaging and Labeling) Regulations (2011) which is executed by FSSAI (Food Safety and Standard Authority of India) which comes under the Ministry of Health and Family Welfare. This act provides guidelines to the Indian food manufacturers to follow the standard rules for packaging and labeling of their packaged food products produced for commercial purposes[4] According to the recent regulation, information on the following nutrients has to be displayed : per serving or 100 g/ml of food: energy (kcal); carbohydrate (g); total sugars (g); added sugar (g); total fat (g) including saturated fat (g); trans-fat (g); and cholesterol (mg). Indian consumers can now get more nutrition information about prepackaged food products due to expanded food labeling mandated by the Government of India[5]

Up to now, most of the studies have been focusing on the understanding of consumer behavior towards the use of nutrition labels. However, there are very few studies in India that have looked into consumer knowledge, perceptions and practices pertaining to the use of food labels for making healthy food choices. Considering the significant role of consumers' awareness and knowledge about food labels in making healthy food choices and as there are no prior studies done to determine the knowledge, attitude and practice of food labels among the

athletes and non-athletes in India, the aim of this study was to determine the knowledge, attitude and the practice of using food labels among the athletes and non-athletes and to compare the KAP association between the two target groups.

OBJECTIVES

- To access the knowledge, attitude and practice of food labeling among the respondents.
- To analyze the frequency of noticing and reading the food labels on processed food products among the respondents.
- To statistically interpret the knowledge, attitude, practice data collected from the respondents

METHODOLOGY

1. Selection of area and participants

The present study is a descriptive cross-sectional survey conducted from December 2021 to May 2022 to analyze the knowledge, attitude and practice of food and nutrition labeling among the both male and female sports players(50) and non-sports players(50) between the age group of 18-30 years from four cities of tamil Nadu- Dindigul, Chennai, Madurai and Ramanathapuram using purposive sampling.

2. Data Collection

Pre and post-test data were collected using an online self-administered KAP questionnaire which included socio-demographic information, Knowledge, attitude and practice on food label use. Throughout the questionnaire, a 4-point Likert scale is used.

3. Educational Intervention

An education session was conducted for the respondents to enhance awareness regarding the importance of food labels as a webinar in the Zoom meeting app. Two lectures were planned with each lasting for a period of 45 minutes. Educational materials used include PowerPoint presentations on “How to read a food label effectively”. A period of three weeks was given to the respondents to put into action what they have learned in the educational session on food labeling during the time of their food product purchase and a post-test questionnaire was given to evaluate.

4. Statistical analysis

SPSS Version 28 was used to analyze the data. Data were presented as descriptive statistics in the form of frequency and percentage. An Independent t-test was used to assess the comparison between the knowledge, attitudes, and practices of sports players and non-sports players and the results were significant (p value <0.05).

RESULT AND DISCUSSION

(a) Socio demographic profile

Out of the total respondents, 50 respondents were Male and 50 respondents were female. Maximum of 69% of the respondents were from 18-23 years of age and the remaining 31% were from 24-30 years of age. 51% of the respondents were graduates, 28% of the respondents were post graduates, 14% were higher secondary and 7% had a diploma. Of the total respondents, a maximum of 55% were students, followed by 24% employed and 10%, 11% self employed and unemployed respectively. Similarly, Out of the 100 respondents, relatively 43.8% of the respondents belonged to a family of monthly income <Rs. 6174 whereas 21.9%, 17.2% of the respondents belong to families of monthly income Rs. 6,175 - Rs.18,496 , Rs. 18,497 - Rs. 30,830 and >Rs. 30,831 respectively.

The collected data on general information of the respondents is given in Table 1.

Socio-demographic profile	Sports players n=50 (%)	Non-sports players n=50 (%)
Gender		
Male	26	22
female	24	28
Age		
18-23 years	33	36
24-30 years	14	17
Educational qualification		
Secondary/ Higher secondary	8	6
Graduate	28	13
Post graduate	8	20
Diploma	5	2
Occupation		
Self-employed	6	4
Employed	13	11
Student	33	22
Unemployed	3	8

Income per month		
<Rs. 6174	14	14
Rs. 6,175 - Rs.18,496	6	8
Rs. 18,497 - Rs. 30,830	5	6
>Rs. 30,831	4	7

Table 1- Data on the socio-demographic profile of the respondents

Among the total of 50 sports players 67.3% were district players, 20.4% were state players and 12.2 % were National players. There were no International players in this study. The different sports that the athletes played were given in Fig 1.

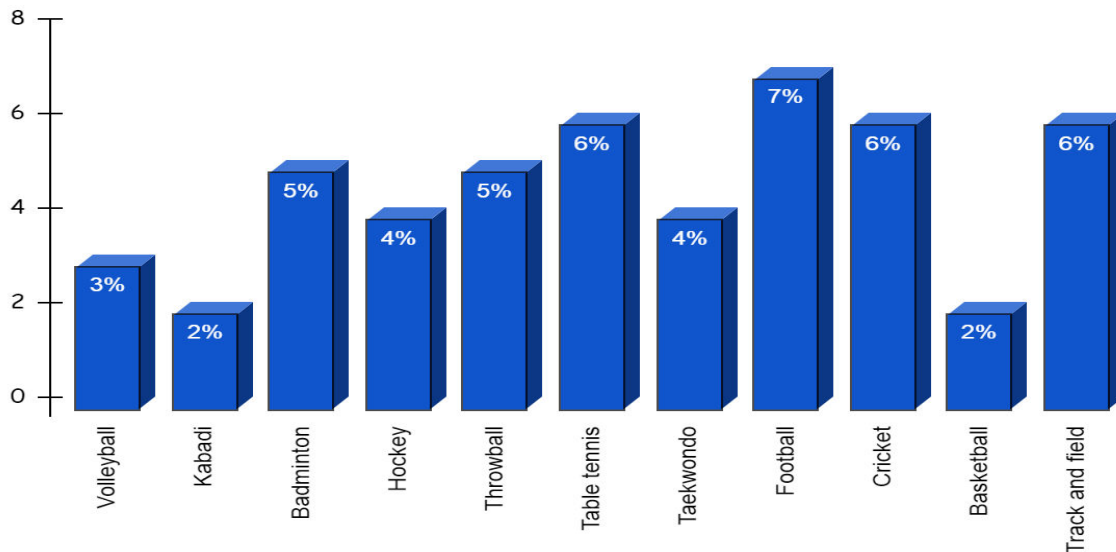


Fig 1 - Classification of sports players based on their sports

Out of the total respondents 36% of the respondents were between the heights of 150-160cm, 45% were between 161-170cm and 19% were between 171-180cm. With regard to the respondents' weight 25% of the respondents were between 71-80kgs, whereas 12%, 18%, 22%, 23% were between 40-50kgs, 51-60kgs, 61-70kgs and 81-90kgs respectively. With the collected height and weight measurements the Body mass index (BMI) was calculated .

(N=100)

Category	BMI range	Frequency	Percentage (%)
Underweight	<18.5	1	1%

Normal	18.5-22.9	49	49%
Overweight	23-24.9	45	45%
Obese	>25	5	5%

Table 2 - BMI classification of the respondents according to Asia- Pacific classification

(b) Food labeling Knowledge of the respondents

Knowledge on Food labeling in processed food was analyzed for both sports players and non-sports players and presented in Table 3.

Of the total sports players 44% knew about food labels and 40% considered looking at the food labels while purchasing. But only 35% choose food products according to the nutritional information present.38% of the athletes think that food labels are mandatory for all food products. Regarding the food product certifications 42% of the players knew about the food product certifications and 45% consider nutrition labeled foods safe for consumption.36% of the players knew about FSSAI. Among the Non-Sports players, 38% knew about food labels and 40% considered looking at the food labels while purchasing. But only 34% choose food products according to the nutritional information present.38% of the non-players think that food labels are mandatory for all food products. Regarding the food product certifications 41% of the non-players knew about the food product certifications and 40% consider nutrition labeled foods safe for consumption which is lower than sports players.40% of the non-players knew about FSSAI.

Similarly, post test results showed that of the total sports players, an entire 50% of sports players knew about food labels, and considered looking at the food labels while purchasing. All the players choose food products according to the nutritional information present and think that food labels are mandatory for all food products. Regarding the food product certifications all the players knew about the food product certifications and 49% considered nutrition labeled foods safe for consumption. After the educational intervention49% of the players knew the importance of FSSAI in a food label. Among the Non-Sports players, 50% knew about food labels and 48% considered looking at the food labels while purchasing. All the non-player chooses food products according to the nutritional information present. But only 49% of the non-players think that food labels are mandatory for all food products. Regarding the food product certifications 49% of the non-players knew about the food product certifications and considered nutrition labeled foods safe for consumption.48% of the non-players knew about FSSAI. Thus, educational intervention has played a vital role in improving the knowledge of the respondents.

STATEMENT	Pre-test		Post-test	
	YES (%)	NO (%)	YES (%)	NO (%)

Do you know about food labels in a packaged food product?				
Sports player	44	6	50	0
Non-sports player	38	12	50	0
Do you consider looking at food labels while food product purchase?				
Sports player	40	10	50	0
Non-sports player	40	10	48	2
Do you choose food products according to nutritional information present in the food label?				
Sports player	35	15	50	0
Non-sports player	34	16	50	0
Do you think food labels are mandatory for all food products?				
Sports player	38	12	50	0
Non-sports player	38	12	49	1
Are you aware about the food product certifications in the food products?				
Sports player	42	8	50	0
Non-sports player	41	9	49	1
Is nutrition labeled foods safe for consumption?				
Sports player	45	5	49	1
Non-sports player	40	10	49	1
Do you know what FSSAI is?				
Sports player	36	14	49	1
Non-sports player	40	10	48	2

Table 3- Respondents knowledge on food labels

With regard to the knowledge on food labeling logos, 44% of both players and non-players knew about the FSSAI logo. Maximum of 47% of the players and 34% of the non-players knew the ISI certification mark on the food products. Minimum of 35% of the players and 30% of the non-players knew about the Agmark standard. All the 50% of the players identified the vegetarian logo and 46% of the non-players knew the vegetarian logo. 38% and 36% of the players and non-players identified the non-vegetarian logo as the respondents were not aware about the new non-vegetarian logo formulated by the FSSAI. Post-test, both players and non-players knew about the FSSAI logo. Maximum of 98 % (49 players and 49 non-players) knew the ISI certification mark on the food products. 50% of the players and 49% of the non-players knew about the Agmark standard. All the 50% of the non-players identified the vegetarian logo against 49% players. Most of the respondents identified the new non-vegetarian logo as the respondents were now aware about the new non-vegetarian logo formulated by the FSSAI. (Fig 2a and 2b)

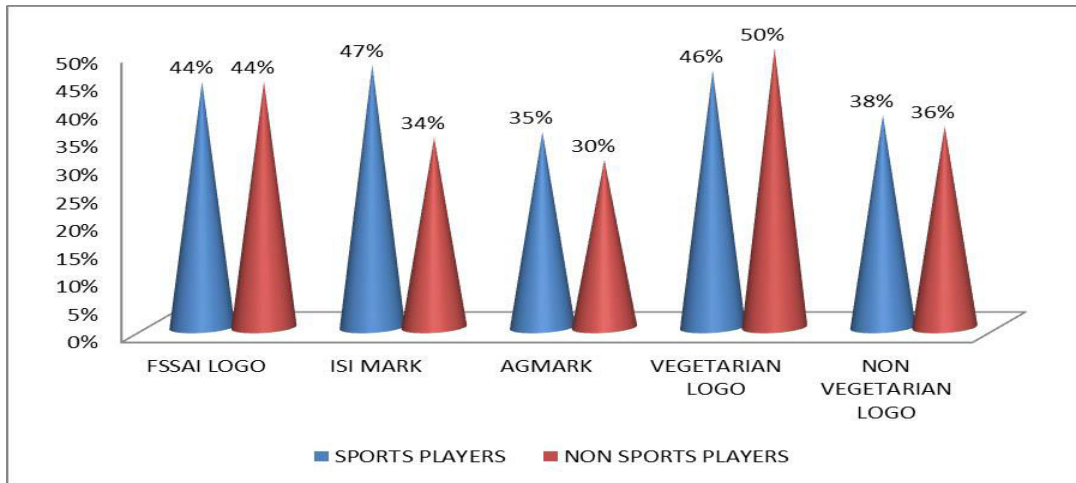


Fig 2(a) - Respondents' knowledge on food label logos (pretest)

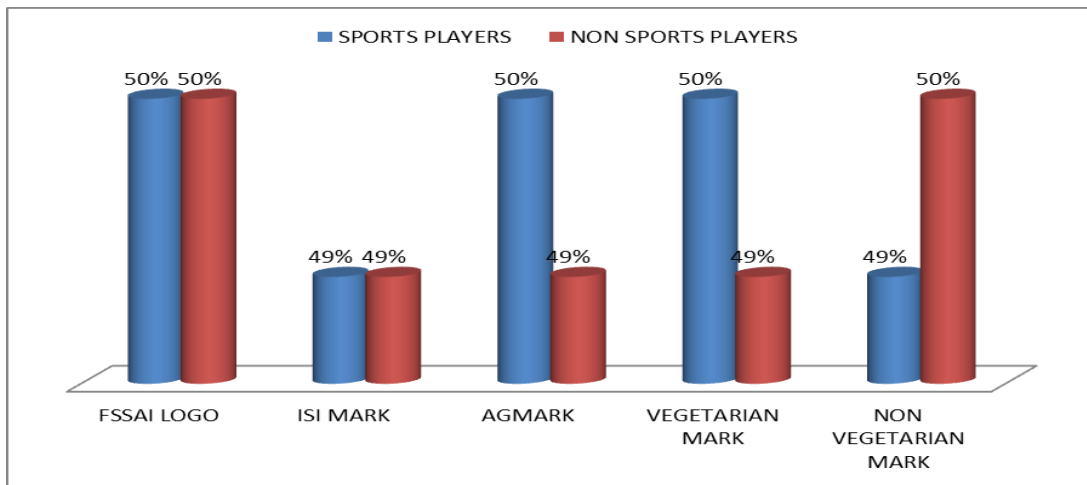


Fig 2 (b) - Respondent's knowledge on food label logos (post-test)

(c) Food labeling Attitude of the respondents

Seven statements have been used to measure the attitude towards food and nutrition information on food labels on four point Likert scale (1=disagree, 2=Neutral, 3= agree, 4=strongly agree).Results of the pre-test shows that majority of the players and non-players strongly agree that nutritional information on the food labels are useful and feel confident on how to use food labels in choosing a healthy diet. Most of the non-players (27%) compare the product information labels on deciding the brands against 18% of the players. Both players and non-players find it difficult to understand the nutrient information in the label.23% of the players and 27% of the non-players believed that reading food labels makes it easier to choose nutritious foods. Maximum number of respondents agreed that they try to avoid food products containing additives.26% of the players and 24% of the non-players agreed that they trusted the informations given on the food and nutrition label.

It is to be noticed that the datas of the post test showed that a maximum of 43% of the players and 40% of the non-players strongly agreed that nutritional information is useful. Equal number of both the respondents (47%) feels confident on using a food label in choosing a healthy diet. All the non-players strongly agreed that they compared food product information before buying the food product. All the respondents strongly agreed that they trusted the food labels. Thus, post test results showed that the attitude towards food and nutrition labeling among respondents have improved drastically.

(N=100) Pre -test Post test

STATEMENT	SPORTS PLAYERS (%)	NON SPORTS PLAYERS (%)	SPORTS PLAYERS (%)	NON SPORTS PLAYERS (%)
Nutritional information on Food labels are useful to me.				
Strongly agree	21	22	43	40
Agree	21	25	7	10
Neutral	8	3	0	0
Disagree	0	0	0	0
I feel confident that I know how to use food labels to choose a healthy diet.				
Strongly agree	15	16	47	47
Agree	26	24	3	3
Neutral				

Disagree	9	8	0	0
	0	2	0	0
I compare product information labels to decide which brand to buy.				
Strongly agree				
Agree	18	11	45	50
Neutral	18	27	5	0
Disagree	14	10	0	0
	0	2	0	0
The nutritional information on food labels is hard to Understand.				
Strongly agree				
Agree	11	12	0	0
Neutral	17	21	0	0
Disagree	7	13	8	12
	15	5	42	38
Reading food labels makes it easier to choose nutritious foods				
Strongly agree				
Agree	17	17	50	50
Neutral	23	27	0	0
Disagree	9	3	0	0
	1	3	0	0
I try to avoid food products				

containing additives.				
Strongly agree	11	11	49	47
Agree	22	23	1	3
Neutral	11	11	0	0
Disagree	6	5	0	0
The information given in the food label & nutrition label is trusted				
Strongly agree	9	15	50	50
Agree	26	24	0	0
Neutral	10	6	0	0
Disagree	5	5	0	0

Table 4- Respondents attitude on Food and nutrition labeling

(d) Food labeling Practice of the respondents

The practice of looking at the food label of a packaged food product by the respondents is given in Figure 3.

It was observed from the given datas that a maximum of 42% of the players and 36% of the non-players looked at the food label during the time of purchasing the food product. A minimum of 1% of the players and 3% of the non-players looked at the food labels before using the food product. None of the players looked at the food labels after using the product whereas 3% of the non-players looked at the food labels after using the product. Second maximum response of the respondents was 7% of the players and 8% of the non-players looked at the food labels after purchasing the food product.

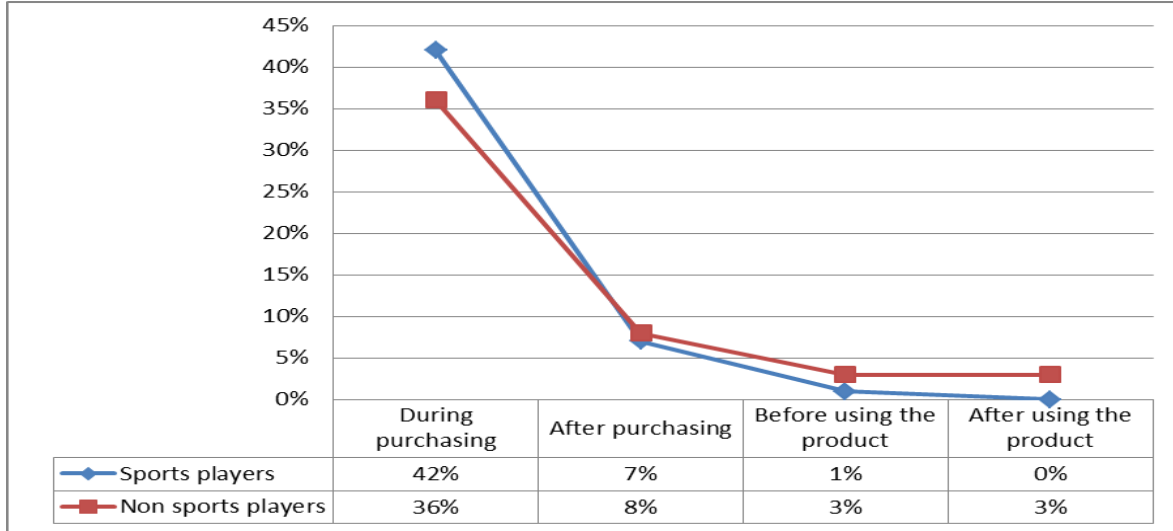


Fig 3- Respondents practices of looking at the food labels

Out of the 50 sports players, 37% of the players reported that the information on the food labels influence their dietary habits against 33% of the non-sports players. 8% and 7% of the players and non-players reported that the food label information sometimes influenced their dietary habits. Majority of the players (30%) either avoided / included certain nutrients always in their diet after reading the food label on the packaged foods.

(N=100)

Pre-test

Post test

STATEMENT	SPORTS PLAYERS (%)	NON-SPORTS PLAYERS (%)	SPORTS PLAYERS (%)	NON-SPORTS PLAYERS (%)
Does information on food labels influence your dietary pattern/ eating habits?				
Always	37	33	45	47
Sometimes	8	7	5	3
Rarely	5	7	0	0
Never	0	3	0	0
Do you avoid/ include certain nutrients in your diet after				

reading food labels on packaged food?				
Always	30	28	48	48
Sometimes	15	17	2	2
Rarely	3	2	0	0
Never	2	3	0	0

Table 5- Respondents practice of using food labels on dietary habits

Independent Sample t-Test:

According to the Independent t-test results, there was a significant difference between the pre (p=0.043) and post (p=0.0001) knowledge of sports players and non-sports players. There was a significant difference between pre (p=0.024) and post (p=0.001) attitudes of sports players and non-sports players. Lastly, there was a significant difference between pre (p=0.001) and post (p=0.005) practices of sports players and non-sports players. (Table 6).

Variables	N	Mean	S.D	t- value	P value
1. Knowledge					
Pre- knowledge sports players	50	40	3.87298	2.011	0.043
Pre-knowledge of non-sports players	50	38.71	2.36038		
Post knowledge of sports players	50	49.71	0.48795	5.278	0.0001
Post knowledge of non-sports players	50	49	0.81649		
2. Attitude					
Pre-attitude sports players	50	8.22	1.28367	2.296	0.024
Pre-attitude of non-sports players	50	7.42	2.26972		
Post attitude of sports players	50	16.00	0.00000	2.047	0.001
Post attitude of non-sports players	50	16.01	0.00000		

3. Practice					
Pre-practice of sports players	50	9.01	1.79613	4.036	0.001
Pre-practice of non-sports players	50	7.40	2.26972		
Post- practice of sports players	50	10.09	1.52053	2.876	0.005
Post-practice of non-sports players	50	9.38	0.95989		

Table 6 - Comparison between players and non-sports players through Independent Sample t-test

CONCLUSION

In a nutshell it can be said that the lack of knowledge on food labeling was the main reason for inappropriate dietary habits and poor choice of packaged food products in the respondents. The frequency of reading the food labels by the sports players was more when compared with that of the non-sports players. They were able to interpret the food labels to a certain extent and thus were able to choose the food product according to their needs. The results from this study indicate that the respondents were more concerned about the expiry date of the product and the brand of the product. Most of the respondents in this study preferred food labeling even though they might not understand the complete information provided on it. Few respondents of this study replied that they do not rely on the food labels before purchasing the food products. Furthermore from this study it was noted that certain respondents were confused by the information that was provided on the food labels. This might be because of the use of more complicated terms in the food label that make the consumers unable to follow the information provided on it.

The vital part of this study is that educating people on how to read food labels helped them to choose the packaged food product keeping in mind the nutrients that it provides. There was a drastic improvement in the knowledge, attitude and practice of food labeling among sports players and non-sports players after providing them with an educational intervention. Thus educating people on food labels will actually help them and their family in choosing the right packaged food products. Finally, the knowledge, attitude and practice of food labeling had significant associations pre and post-test among sports players and non-sports players.

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