

The Effect of Health Education on Knowledge and Attitudes about Diet for Obesity Prevention in Students at Saudi Arabia 2023

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Abstract

Background

Obesity and overweight are major public health problems that are considered a global pandemic due to disease and biological risk factors linked to non-communicable diseases. The World Health Organization (WHO) defines obesity and overweight as abnormal or excessive accumulation of fat and classifies it according to a body mass index (BMI) of higher than 25 and 30 kg/m², for overweight and obesity, respectively. Obesity is characterized as an abnormal or excessive buildup of fat that is harmful to health. Health education involves changing behaviors in a dynamic way, going beyond merely imparting knowledge or concepts from one person to another. Very important of health education was to ascertain how health education affected students at Saudi Arabia knowledge and attitudes regarding obesity prevention diets. In response to the growing burden of Obesity and overweight on the healthcare system and in pursuit of the health sector goals of Saudi Vision 2030, the Saudi Arabian Ministry of Health implemented an initiative known as health education, which helps patients with Obesity and overweight adopt a healthier lifestyle.

The study aimed: To evaluation the effected of health education on knowledge and attitudes about diet for obesity prevention in students at Saudi Arabia 2023.

Method: Cross-sectional survey was utilized students in Saudi Arabia 2022 during the November to December, 2023, a total of 300 student aged 12–18 years, available students. A structured self-reported questionnaire sheet was used to evaluation effected of health

education on knowledge and attitudes about diet for obesity prevention in students in Saudi Arabia 2023.

Result: show regarding the age most participants in more than 16 were (41.0%) gender of participated female were (58.0%) regarding Income level in study the most of participant's Below 5000 SR were (31.0%) health condition in study the most of participant's healthy were (56.0%) Sources of information about obesity most of participant's booklets and brochures were (45.0%) followed by educational films were (40.0%) while own personal experience were (32.0%) but mass media were (32.0%).

Conclusion: Effect of health education on knowledge and attitudes about obesity prevention diets for students at Saudi Arabia. It is recommended that students continue to adopt a healthy diet and increase physical activity that involves optimal body movement to prevent obesity.

Keywords: Evaluation affected, health, education, knowledge, attitudes, diet, obesity prevention, students, Saudi Arabia.

Introduction

Obesity and overweight are major public health problems that are considered a global pandemic (1) due to disease and biological risk factors linked to non-communicable diseases. The World Health Organization (WHO) defines obesity and overweight as abnormal or excessive accumulation of fat and classifies it according to a body mass index (BMI) of higher than 25 and 30 kg/m², for overweight and obesity, respectively (2). Obesity is a major cause of morbidity and mortality worldwide (3). Lack of awareness may be an underlying factor affecting attitudes and practices regarding the care management of obesity and overweight diseases (4) Health education about obesity leads to improvements in knowledge, attitudes, and skills, along with better control of the obesity disease. Such education is widely acknowledged to be an integral component of comprehensive obesity care (5)

Obesity is a state of imbalance between incoming energy and outgoing energy over a long period of time (6). The amount of energy consumption from digested food exceeds the energy used for metabolism and daily activities. This excess energy will be stored in the form of fat and adipose tissue so that it can result in weight gain, health quality. At this time there are still many nutritional problems that can affect the quality of health, one of which is the problem of being overweight/obese (7)

The prevalence of adult obesity has increased threefold globally in the last four decades (8), according to WHO. There is a growth in obesity rates around the world (>1 billion). In Europe, two thirds of the adult's population is obese (9), whereas, in Saudi Arabia, more than half the adults are considered obese, which is also the case in Arabian gulf countries (10). Obesity and overweight causes are complicated by environmental, genetic, behavioral, and socioeconomic factors. It is well-known that dietary intake and physical activity are risk factors linked with obesity and overweight (11)

In Saudi Arabia, obesity and overweight increased due to shifting lifestyles as a result of the growth of the economy, technology, food availability, variety, and changes in the population's living standards.(12) This led to changes in food choice, energy intake and energy expenditure. A high snack frequency (unhealthy crisps, sweets, and carbonated

beverages), skipping daily breakfast, and emotional eating are harmful dietary habits significantly associated with a higher BMI that were found in the Saudi population (13)

In addition, some Saudis are physically inactive because of the weather, culture, and lack of time and equipment (14). Sedentary lifestyles in the Saudi population as a result of sedentary jobs, long car trips, and watching screens (computer, mobile, television and games) for more than 8 hours per day contribute to the physical inactivity of Saudi adults (15).

During the transition from adolescence to adulthood, the acquisition of nutrition knowledge may still be related to schooling, where one acquires information from qualified sources without personal interpretation.(16) Simultaneously, the social environment, including social media, can be an important source of nutrition information and attitudes towards food and nutrition (17). The growing exposure to web information may contribute to increasing false beliefs. Nevertheless, an individual is also characterized by subjective knowledge (18).

The prevalence of Obesity is common in KSA, so there is a need to explore' awareness of Obesity in the primary care physicians in toward management of Obesity .So that policymakers can devise policies to educate the young generation (19)

The prevalence of Obesity in various regions has attracted significant attention of the medical experts, also thereby increasing disease the prevalence of diabetes and Obesity is expected to increase in the future due to changes in lifestyle and unhealthy diets of individuals in KSA (20)

According to a study of obesity and eating habits, it was found that there is a rapid socio-cultural change as a result of the growing economy of the Saudi Arabia . This has affected the eating patterns and thus it has been reported for the recent increases in overweight and obesity among Saudi population. (21) Another important factor in obesity is psychological stress such as life in adolescent period. (22) Adolescent period can play a significant role in encouraging healthy behavior in students. Unhealthy lifestyle is prevalent among school students and therefore there is a need to integrate health education programs for school students.(23)

Literature Review

Study by (Aljohani et al 2021) found that results of the analysis showed that education level was a protective factor against obesity because subjects with high school education and above had a 20% lower risk of being overweight than subjects with junior high school education and below. (24) Results in line with research (Alotaibi et al., 2022) which shows that college graduates have a lower risk of obesity than primary school graduates (RR=0.96). Someone with a higher level of education will be better at receiving, processing, interpreting, and using information, especially nutritional knowledge. Subjects with higher education will have higher nutritional knowledge because they have more experience and access to information so they can have better nutritional attitudes and practices, especially in terms of food consumption behavior and physical activity which are closely related to obesity.(25) Some studies have shown that a self-perceived level of competency is a stronger driver of behavior than objective knowledge. However, an individual with adequate knowledge of nutrition stands a better chance of differentiating nutrition facts from nutrition fads to obesity prevention (26) which can affect behaviors and attitudes towards food, nutrition and obesity

Many studies have reported that university students do not consume an adequate diet, which can lead to poor health and weight gain (24)

The results of one study in the US showed that knowledge in the treatment of Obesity was not enough and knowledge level of different medical groups such as general practitioners, specialists, internal medicine residents and medical students had significant differences with each other (27)

According to the World Health Organization (WHO), in 2016 obesity in children and adolescents aged 5-19 years was more than 340 million obese. From 1975 to 2016, the prevalence of overweight or obese children and adolescents aged 5-19 more than quadrupled, from 4% to 18% in a manne global (West Java Health Office, 2020). The increase was similar for boys and girls: in 2016 18% of girls and 19% of boys were overweight (28) .

On the other hand, students' nutrition knowledge varies from poor to satisfactory, previous studies have shown that insufficient knowledge about healthy nutrition causes many inappropriate eating behaviors and obesity (29), while high nutrition knowledge was significantly associated with healthy eating behaviors, for example, with the intake of fruits, cereals, dairy products, and pulses (22) However, studies to date that have addressed the relationship between nutrition knowledge and behaviors have primarily considered the consumption of selected food groups rather than overall diet indices. (23)

However, recent studies have supported the decreasing or stabilizing trends of adolescent obesity prevalence in some developed countries and European countries (20) Since the trends in obesity prevalence can change and differ from country to country and time to time, we need more information on the time trends of obesity among Saudi Arabia adolescents to establish public health policies and intervention strategies for timely obesity management. Many previous studies have reported the relationship between obesity and its risk factors (22)

Rationale:

According to one of the factors that causes obesity in students is eating patterns or excessive food intake originating from instant processed foods, soft drinks, snack foods such as fast food (burgers, pizza, hot dogs) available at food outlets. Obesity can occur in children with the habit of consuming unhealthy snacks with high calorie content without sufficient consumption of vegetables and fruit as a source of fiber. Based on data on the frequency of fast food consumption for 1 week in students, it is known that obese students (69.4%) consume fast food with a frequency of more than 2 times a week, while normal children have a frequency of 1-2 times a week at most. Fast food contains high calories so that excessive consumption will cause obesity problems, diet is a way or effort in regulating the amount and type of food with a specific purpose, such as maintaining health, nutritional status, preventing or helping to cure food diseases is a basic need for every human being, but to maintain the body to be healthier food must meet several conditions, namely. Help the maintenance of the body, can provide material for the growth of the body

The study aimed

To evaluation the effected of health education on knowledge and attitudes about diet for obesity prevention in students at Saudi Arabia 2023 .

Methodology

Study design:

Cross-sectional design in the present study with Stratified Random Sampling

Study area and population:

The population in this study were students of the were listed as students in age <14 to above 16 with a total population of 300 students in Saudi Arabia

Inclusion criteria

- Student's obesity.
- < 14 years and above than 16 years
- Both males and females.

Sample size:

Sample size was calculator by Raosoft Online sample size calculator It was 300 student's obesity, based on assumption that during the last 4 weeks, prevalence was considered as 50%, confidence level was 95%, margin of error was 5%. By adding 10% for defaulter and non-respondent, 300 students were invited to participate in the study.

Sampling technique

The sampling technique used Proportionate Stratified Random Sampling with a total of 300 respondents . Thus, nearly 30 working days were needed to collect the sample

Data collection tool

Self-administrated questionnaire was used for data collection. It was adopted from a previous Saudi study. Some modifications were done and the new format was validated by three consultants (family medicine, Endocrinology and community medicine). The final draft of the questionnaire consists of two sections:

- First section: Includes socio-demographic and personal characteristics of the participants.
- Second section: Includes associated factors with obesity (physical exercise, diet habit. Additionally, the body mass index (BMI) was calculated by an expert nurse.

Data collection used a knowledge questionnaire in the form of closed questions, and an attitude questionnaire using a Likert scale of statements

Data Collection technique .

- During the study period (during the November to December, 2023), the researcher was available at the involved conducted secondary school students
- The researcher distributed the questionnaire in the waiting area by themself to the selected student.
- The questionnaires were collected at the same time.

Data entry and analysis

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS version 24). Categorical variables were presented as frequency and percentage whereas continuous variables were presented as mean and standard deviation ($\pm$ SD).

Statistical significance was determined at $p < 0.05$ for all comparisons.

Pilot study/pretesting

A pilot study was conducted on 20 patients, representing approximately 10% of the sample size. It was done in another school student at Saudi Arabia rather than those involved in the

study to test the clarity of the questions and feasibility of the methodology. No modifications were made according to the pilot results.

Ethical considerations

Research committee approval ,Written permission from the joint program of family medicine in Saudi Arabia , written permission from concerned school authority in Saudi Arabia , Individual verbal consent from all participants before data collection Acknowledgments of all supervisors, advisors, helpers, facilitators and participants. All collected data were kept confidential.

Budget: Self-funded

Results

Table 1. Distribution of Socio-demographic characteristics of the studied participated
(Age, Gender, Marital status, Level of education)(n=300)

	N	%
Age		
<14	87	29
14-16	90	30
More than 16	123	41
Sex		
Male	126	42
Female	174	58
Income level		
Below 5000 SR	93	31
5000 – 10000 SR	72	24
10,000 – 20,000 SR	60	20
Above 20,000 SR	75	25
Health condition		
Healthy	168	56
Having diabetes	51	17
Having heart disease	27	9
Having hypertension	33	11
High cholesterol	21	7
Sources of information about obesity		
Booklets and brochures	135	45
Mass media	69	23
Own personal experience	96	32
Educational films	120	40

Table 1 show the total number of participants was 300 regarding the age most participants in more than16 were (41.0%) followed by 14-16 years were (30.0%) while < 14 were (29.0%), regarding gender of participated female were (58.0%) while male were (42.0%),

regarding Income level in study the most of participant's Below 5000 SR were (31.0%) while above 20,000 SR were (25.0%) but 5000-10000 SR were (24.0%) while 10000-20000 SR were (20.0%), regarding health condition in study the most of participant's healthy were (56.0%) followed by having diabetes were (17.0%) but having hypertension were (11.0%) while having heart disease were (9.0%), regarding Sources of information about obesity most of participant's booklets and brochures were (45.0%) followed by educational films were (40.0%) while own personal experience were (32.0%) but mass media were (32.0%) .

Table 2 Distribution of the habitual factors associated of Obesity the studied participated

	N	%
Do you have any complications from obesity?		
Yes	159	53
No	141	47
Smoking cigarette		
Smoker	39	13
Quit smoking	69	23
Non-smoker	192	64
BMI status		
Normal weight	186	62
Overweight	63	21
Obese	51	17

Table 2 show regarding the habitual factors associated of Obesity the studied regarding the you have any complications from obesity most of participants answer Yes (53.0%), follow by No were(47.0%) , regarding Smoking cigarette most of participant Non-smoker were(64.0%) follow by quit smoking were (23.19%) while smoker were (13.0%), regarding the BMI status most of participant normal weight were (62,0%) followed by overweight were (21.0%) but the obese were 17.0%)

Table 3 Distribution of the attitudes (Physical activities) associated about the obesity prevention in students participated

	N	%
Physical activities or exercises		
No	186	62
Yes	114	38
If yes What is type of physical activities or exercises		
Walking	126	42
Running	87	29
Both	87	29

Do you stop aerobic exercise for two consecutive days or more per week?		
Always	207	69
Sometimes	69	23
No	24	8
Risk factor		
Asthma	75	25
High blood pressure	102	34
High fat and cholesterol	66	22
Emphysema or COPD	30	10
Other lung diseases Type of lung disease	39	13
Heart diseases	45	15
Arthritis or other rheumatic diseases	96	32

Table 3 show the attitudes (Physical activities) associated about the obesity prevention in students regarding the physical activities or exercises more than half of the participants (62.0%) answer No practice Physical activities or exercise physical followed by Yes were (38.0%) , regarding If yes What is type of physical activities or exercises the majority of the participants walking were (42.0%) followed by running and both were (29.0%), regarding you stop aerobic exercise for two consecutive days or more per week the majority of the participants always were (69.0%) followed by sometimes were (23.0%) while No were (8.0%) , regarding Risk factor the majority of the participants high blood pressure were (34.0%) followed by arthritis or other rheumatic diseases were (32.0%) while asthma were (25.0%) but high fat and cholesterol were (22.0%) while heart diseases were (15.0%) but Other lung diseases Type of lung disease were (13.0%) .

Table 4 Distribution of health education on knowledge and attitudes about diet for obesity prevention in students participated

Variable					Chi-square	
	Favorable		Un favorable		X ²	P-value
	No	%	No	%		
pay attention to the caloric value of the foods I eat	129	43	171	57	0.448	0.503
My food choices are determined by concern for my health	87	29	213	71	52.083	<0.001*
Thinking about food is a particular concern for me	147	49	153	51	0.083	0.772
A belief in healthy eating increases my self-esteem	159	53	141	47	0.963	0.326
Healthy eating influences my lifestyle	216	72	84	28	57.203	<0.001*

Eating healthy foods can improve my appearance	198	66	102	34	30.083	<0.001*
Attitude towards food and nutrition	186	62	114	38	61.004	<0.001*

Table 4 distribution of health education on knowledge and attitudes about diet for obesity prevention in students participated show regarding pay attention to the caloric value of the foods I eat while no significant relation were (P-value =0.503) and X^2 (0.448) the majority of participant un favorable were (57.0%) followed by the favorable were (43.0%), regarding food choices are determined by concern for my health while a significant relation were (P-value =0.001) and X^2 (52.083) the majority of participant un favorable were (71.0%) followed by the favorable were (29.0%), regarding Thinking about food is a particular concern for me while no significant relation were (P-value =0.772) and X^2 (0.083) the majority of participant un favorable were (51.0%) followed by the favorable were (49.0%), regarding belief in healthy eating increases my self-esteem while no significant relation were (P-value =0.326) and X^2 (0.963) the majority of participant favorable were (53.0%) followed by the unfavorable were (47.0%), regarding healthy eating influences my lifestyle while a significant relation were (P-value =0.001) and X^2 (57.203) the majority of participant favorable were (72.0%) followed by the unfavorable were (28.0%), regarding eating healthy foods can improve my appearance while a significant relation were (P-value =0.001) and X^2 (30.083) the majority of participant favorable were (66.0%) followed by the unfavorable were (34.0%) , regarding attitude towards food and nutrition while a significant relation were (P-value =0.001) and X^2 (61.004) the majority of participant favorable were (62.0%) followed by the unfavorable were (38.0%)

Table 5 Distribution of health education on knowledge about diet for obesity prevention in students participated

	Knowledge	
	N	%
Weak	171	57
Average	99	33
High	30	10
Total	300	100
X^2	99.42	
P-value	<0.001*	

Table 5 regarding distribution of health education on knowledge about diet for obesity prevention in students the most of participant answer in weak knowledge were (57.0%) followed by average were (33.0%) while high were (10.05) while a significant relation were < P-value= 0.001 and X^2 99.42 while total were (100.0%) .

Figure 1 Distribution of health education on knowledge about diet for obesity prevention in students participated

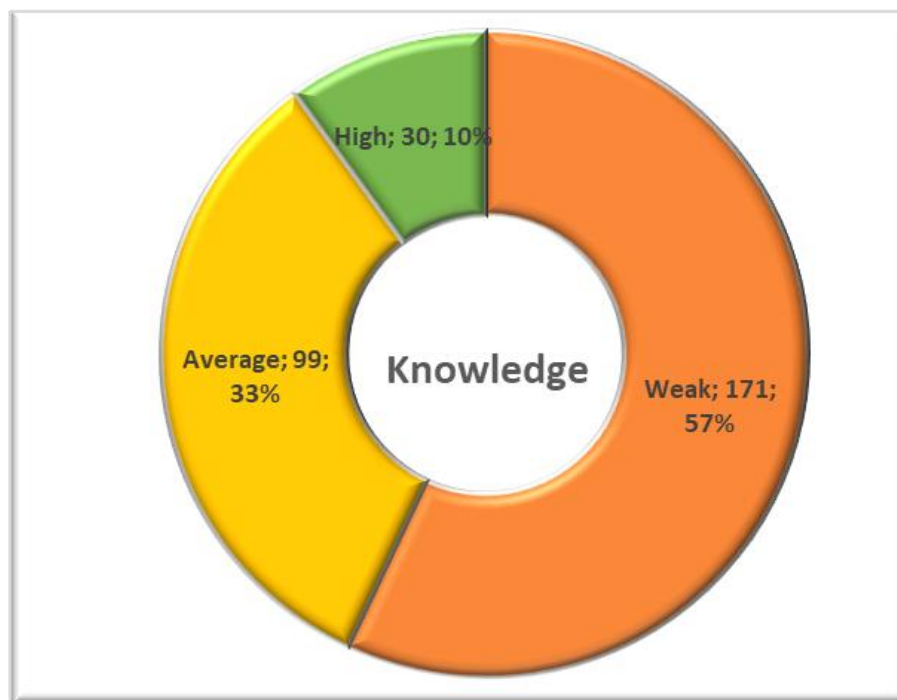
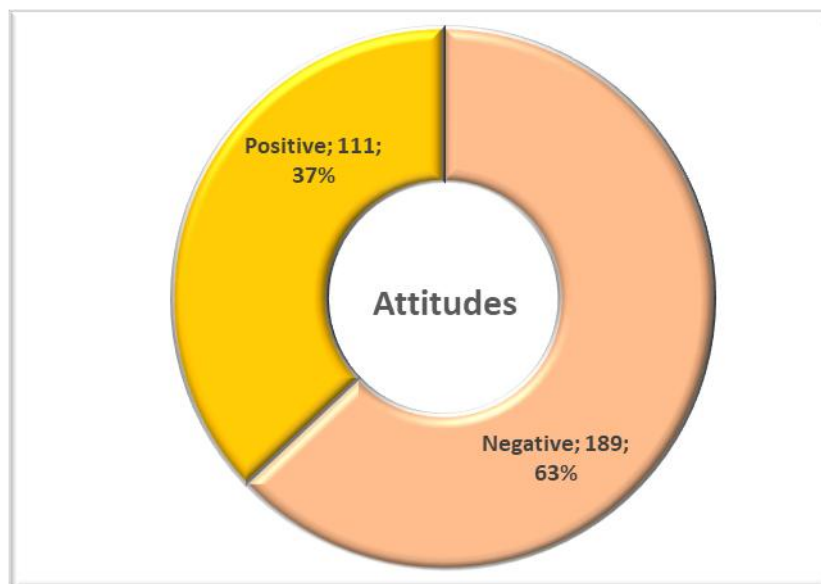


Table 6 Distribution of health education attitudes about diet for obesity prevention in students participated

	Attitudes	
	N	%
Negative	189	63
Positive	111	37
Total	300	100
X ²	19.763	
P-value	<0.001*	

Table 6 regarding distribution of health education attitudes about diet for obesity prevention in students the most of participant answer in negative attitudes were (63.0%) followed by positive were (37.0%) while total were (100.0%) while a significant relation were < P-value= 0.001 and X² 19.763

Figure 2 Distribution of health education on knowledge about diet for obesity prevention in students participated



Discussion

Knowledge can be influenced by a number of variables, but education is one that can increase one's understanding or knowledge. In general, someone with a higher level of education will have a broader knowledge base than someone with a lower level of education. Knowledge can also be acquired through learning. The second is mass media/information, which includes radio, television, newspapers, magazines, and books .

This study identified in the effected of health education on knowledge and attitudes about diet for obesity prevention in students at Saudi Arabia using nationally representative sample data. First, the prevalence of obesity among student doubled from in 2019, increasing significantly by on average annually. According to previous studies, the average obesity prevalence among Saudi Arabia has been increasing, similar study since 2019, showing a remarkable increase for boys (30). The findings of this study indicate that the prevalence of obesity among adolescents in Saudi Arabia differs from that in some other developed countries, where studies have shown stable or decreasing obesity rates (27) Studies analyzing the trends of obesity among Chinese adolescents between 2015 have shown a decline in obesity rates since 2011, unlike in Saudi Arabia.(31)

In our study show the total number of participants was 300 regarding the age most participants in more than16 were (41.0%) gender of participated female were (58.0%), income level in study the most of participant's Below 5000 SR were (31.0%), health condition in study the most of participant's healthy were (56.0%), sources of information about obesity most of participant's booklets and brochures were (45.0%) (See table 1)

Obesity and overweight are major public health problems among adolescents student, with significant health, demographic and socio-economic implications (28). Food environments have changed in past decades and obesity and overweight rates have increased dramatically in both developing and developed countries . It also investigated the factors associated with overweight/obesity. The study established that overweight and obesity prevalence is high and linked with sedentary behavior, poor eating habits and limited dietary diversity.(25)

Overweight and obesity prevalence was lower than what has been reported in the literature. Although this prevalence was similar to that in other studies (29), it was higher than the rate among pre-school student participating in a cross-sectional study conducted in twenty-six African countries. Several others have shown that urban student, because of favorable environmental and socio-economic conditions, generally manifest better nutritional status than their rural counterparts (30). A similar study among rural adolescent's school students will be necessary to confirm or refute this hypothesis in KSA. The another survey found higher prevalence rates of overweight and obesity in girls than in boys, which concurs with other reports from low- and middle-income countries, but the opposite held true in high-income countries where overweight and obesity rates were higher in boys than in girls(31)

The present study demonstrated that the level of physical activity in Saudi Arabia has increased, although it is still relatively low. According to the WHO, around 30% of the world's population and 30–70% of those living in countries in the eastern Mediterranean region do not meet the recommended minimum level of physical activity (2). According to the Saudi STEP wise survey, the prevalence of moderate and high levels of physical activity among Saudis aged 15–64 years was 32.3% (30).

In our study regarding distribution of the attitudes (Physical activities) associated about the obesity prevention in students show the physical activities or exercises more than half of the participants (62.0%), if yes What is type of physical activities or exercises the majority of the participants walking were (42.0%), you stop aerobic exercise for two consecutive days or more per week the majority of the participants always were (69.0%) (See table 3)

According to Kriswanto (2014) "Health Education is the process of helping a person, by acting individually or collectively, to make decisions based on knowledge about matters that affect their personal health and that of others to increase the ability of the community to maintain their health and not only bind themselves in increasing knowledge, attitudes and practices, but also improving or improving the environment (both physical and non-physical) in order to maintain and improve health with full awareness[33] ."

in our study regarding distribution of health education on knowledge about diet for obesity prevention in students the most of participant answer in weak knowledge were (57.0%) followed by average were (33.0%) while high were (10.05) while a significant relation were $< P\text{-value} = 0.001$ and $X^2 99.42$ while total were (100.0%) .(See table 5)

Tadesse et al (2017) reported defined attitude as an individual's closed reaction to a specific stimulus or item that already incorporates the relevant opinion and emotion variables. Personal experience, the impact of other individuals who are seen as important, cultural influences, mass media, educational institutions, religious organizations, and societal variables are all factors that affect views,(32) in our study regarding distribution of health education attitudes about diet for obesity prevention in students the most of participant answer in negative attitudes were (63.0%) followed by positive were (37.0%) while total were (100.0%) while a significant relation were $< P\text{-value} = 0.001$ and $X^2 19.763$ (See table 6)

Conclusion

Obesity is getting to be a more prevalent disease all over the world. It is estimated that there are nearly 350 million obese and overweight persons in the world. In the last 3 decades,

the prevalence of students obesity has risen to as high as in developed countries such as the Saudi Arabia understanding of health education and this research is expected to be one of the lessons so that students at Saudi Arabia apply more courses on counseling so that students can provide proper counseling and students can apply it when in the field, the is expected to be able to make programs related to health such with local health centers to continue providing health education about healthy eating patterns or prevention obesity in students regularly and evenly every year. Students who receive health education are expected to continue to adopt a healthy diet to prevent obesity, and for future researchers, the results of this study are expected to serve as basic data information for similar researchers and this research is expected to provide input for future researchers. in loading other studies and it is hoped that future researchers can develop research variables in addition to the existing variables.

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