

A comparative study of Knowledge, Attitude, Practice of nutrition and non-nutrition student towards a balanced diet in Hail University

Dr. Rafia Bano* ; Dr. Eyad AlShammari* ; Syeda Bushra Fatima* ;
Norah Ayed Al-Shammari

Department Of Clinical Nutrition College Of Applied Medical Scineses University Of Hail Hail, Saudi Arabia

Abstract:

Background: This study was designed to help researchers understand the nutrition knowledge, attitude and practices of college's students of the Hail University.

An individual's diet and physical activity habits are influenced by their knowledge of and attitudes towards these behaviors. Investigation of these variables in a population provides an insight into the factors that may be mediators of motivation to change behavior.

Objectives: To study and compare the KAP (knowledge, attitude and practice) among nutrition and non-nutrition students studying at the university of hail, towards a balanced diet

Setting and Participants: One hundred young adult females, 50 each from nutrition as well as the non-nutrition background in the age group 18 - 24 years, studying in the University of Hail.

Statistical analysis: Percentages, Means, Chi-square test and ANOVA using the SPSS 17.0 Software.

Results and discussion: The ANOVA results shows that there were significant differences in the nutrition knowledge, Attitude and practice scores, breakfast eating habits and the concept of a balanced diet among the nutrition and non-nutrition students. Total breakfast skipping was more common among the non-nutrition students.

Conclusion and recommendations: From the above study it could be concluded that students should pay more attention to nutrition. Since university student will form the main body of families and professionals in every region and every society and they will represent the future parents. The time they spend at college is a golden period for learning and can promote nutrition knowledge, the attitude and practices of students. Therefore, an improvement in the learning environment related to nutrition, need to be emphasized on college campuses.

Key Words: Knowledge, Attitudes and Practices; Balanced diet, Physical activity, Nutrition,

I. Objectives

- 1- To study the KAP (knowledge, attitude and practice) among nutrition and non- nutrition students studying at the university of hail, towards a balanced diet.
- 2- To Compare the KAP Scores of both the study groups.

II. Introduction

The role of nutrition in health promotion, disease prevention and treatment of chronic diseases is well recognized (Hu et al., 1997; Schaller and James, 2005). Nutrition plays a critical role in numerous pathophysiological conditions, including such prevalent diseases as diabetes, cancer, and cardiovascular diseases (Mc Ginnis and Foege 1993; Ventura et al., 1997) (1)

There have been considerable changes in human lifestyle all over the world. Especially in recent years, the lifestyle has rapidly been industrialized. This has caused changes in diet, types of food, and cooking styles (2). Nowadays processed foods are rapidly replacing organic food. Another change is the rapid increase in the number of restaurants and in the people's tendency to eat fast food. (3, 4)

Many studies have shown that not keeping a healthy diet and not having sufficient nutrition knowledge lead to issues such as health problems, overweight and obesity (5). Obesity itself leads to cardiovascular disease, high blood pressure, an increase in blood cholesterol and diabetes.

The main goal of nutrition plans is to obtain the appropriate and necessary nutrition to remain healthy, to be physically prepared and to lead a healthy life. For this reason to promote the health level of a society, the attitudes of its people must be taken into account.

Given that one of the main goals of universities is to broaden the knowledge of the people in a society, the enhancement of the nutrition attitudes, knowledge and practices of its students is of high importance, as this will subsequently lead to a more food conscious society and more healthy people.(2)

Knowledge, Attitude, Practice”, KAP Model (6) Definitions:

Knowledge

Knowledge is the capacity to acquire, retain and use information; a mixture of comprehension, experience, discernment and skill.

Attitude

Attitude refers to inclinations to react in a certain way to certain situation; to see and interpret events according to certain predispositions; or to organize opinions into coherent and interrelated structure.

Practice

By Practice we mean the application of rules and knowledge that leads to action. Good practice is an art that is linked to the progress of knowledge and technology and is executed in an ethical manner.

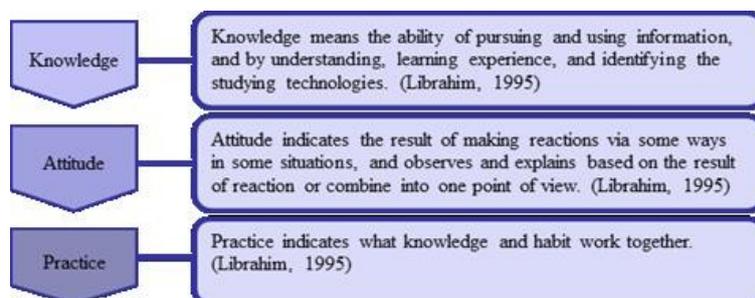


Fig. 1 The influence diagram of knowledge, attitude and practice (6)

Some studies have shown that most students are not familiar with the healthy foods needed for their body in different conditions (7, 8). Another researcher reported that students do not have the necessary information and training regarding weight control, nutrition needs and diets (7). On the other hand, Gates showed that students with normal weight have a more healthy diet and better points in terms of nutrition knowledge and attitudes compared the others (8).

According to one study (Chen, 2012) exposure to 3-day nutrition workshop, shows significant improvements in the teachers' knowledge and attitude. (9)

Despite the well-known benefits of physical activity, most adults and many children lead a relatively sedentary lifestyle and are not active enough to achieve these health benefits. It has been proved that physical activity helps build and maintain healthy bones, muscles, and joints as well as controlling weight and reducing fat. (10, 11)

Result of past study revealed that Medical students had a better understanding on the relationships between anemia, hypertension, obesity, food variety than that of normal students ($P < 0.05$), and students who ate breakfast every day among medical students accounted for 70.5%, and among normal students accounted for 49.5%. (12)

Another similar study concluded that it is necessary to develop and implement effective nutrition education of college students, strengthen nutrition education through multiple channels, enhance the nutritional knowledge of students, focus on nutrition intervention measures and urge students to form a good dietary practice. (13)

Results of another study concluded that scoring of nutrition knowledge was lower in non-medical student (14)

Unfortunately, in Hail region there are no adequate studies about student nutrition, and sufficient information is not available. Therefore, knowing the students' knowledge, attitude and nutrition practices helps us find ways to enhance the nutrition of this community, which will consequently lead to a healthier society, as this group will form the main body of families and professionals.

III. Methodology

The population selected for this research consisted of total 100 students, 50 each from nutrition and non-nutrition background. Samples for the study were randomly selected from regular classroom studying at university of hail. The study was carried out using a pretested and modified questionnaire. After the translation to Arabic from the standard questionnaire it was distributed among the participants to get the necessary information.

Table 1 – Distribution of Questionnaire

Distributed		Returned back		Accepted	
number	%	number	%	number	%
125	100	119	95.2%	100	80%

The questionnaire consisted of four parts. (Appendix-1)

The first part: Consisted of personal information about the students and their anthropometric measurements.

The second part: consisted of 3 minor parts related to nutrition knowledge measure of:

- a) Knowledge food groups.
- b) Nutrition knowledge and related diseases.
- c) Knowledge of food labels.

Third part: posed Questions about the students' attitudes and practices toward balanced diet.

The fourth part: consisted of questions related to the physical activity.

Standing height was measured using a stadiometre and the reading was noted up to the nearest cm. Weight was measured up to the accuracy of 500 gm. by a standard personal weighing machine. BMI was calculated using Quetelet Index (wt. /ht²).

Statistical analysis

Statistical analyses were performed using the Statistical Package for Social Sciences (version 17.0, SPSS,) software.

Means, standard deviation and percent were calculated for the scores from the nutrition knowledge, attitude and food practices sections.

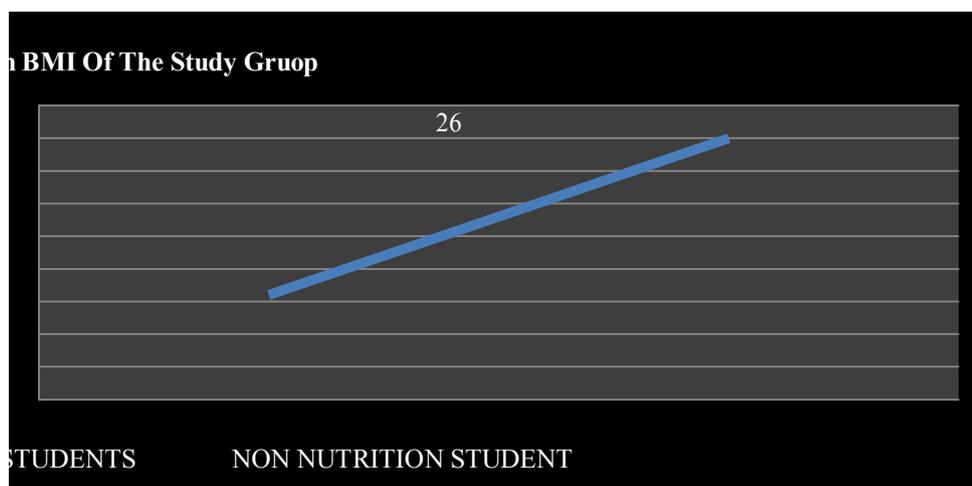
Chi square correlation was used to assess the correlation between nutrition knowledge, the attitude and practices of College students. Analysis of variations (ANOVA) was used to evaluate nutrition knowledge and the attitude between nutrition and non-nutrition students. Statistical results were considered to be significant at $p \leq 0.05$.

IV. Results

The mean values and standard deviation for age and anthropometric data of the participants are shown in Tables 2. The results of ANOVA show that the mean BMI of non-nutrition students was significantly much higher (BMI = 26) than the nutrition students (BMI = 23.6) ($P < 0.05$) in figure 3 but the differences in the mean height and weights of both group was found to be non-significant at ($P > 0.05$)

Table-2 Anthropometric Characteristics of the study group

SAMPLE	MEAN HEIGHT cm	MEAN WEIGHT kg	MEAN BMI
NUTRITION STUDENTS	158.98±13.32	58.83±9.88	23.6±5.43
NON-NUTRITION STUDENTS	157.74±12.56	64.28±10.21	26±4.76
TOTAL	158.36±13.21	61.56±10.86	24.7±5.34
ANOVA	F = 0.265 (NS)	F = 0.080 (NS)	F = 0.031(S)

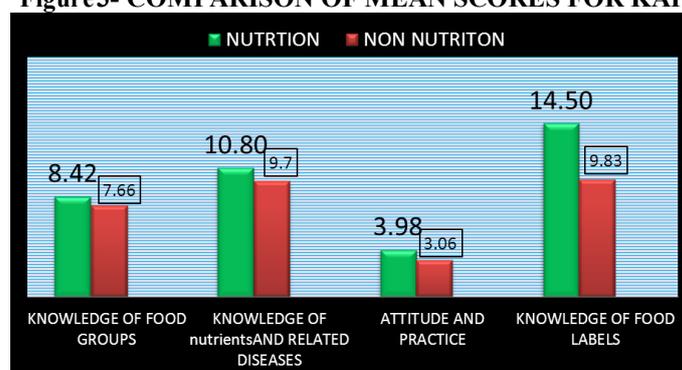


Results of the present study from (Table 3, figure3) showed that there was a statistically significant difference found in the scores of the nutrition and non-nutrition students for knowledge of food groups (P=0.025); Knowledge of nutrients (P = 0.000), Knowledge of food labels (P = 0.003) and Attitude and practice score (P= 0.000).

Table 3- Comparison of mean scores for KAP

MEAN SCORES	NUTRITION STUDENTS	NONNUTRITION STUDENTS	ANOVA
KNOWLEDGE OF FOOD GROUPS	8.42±3.59	7.66± 2.58	.025 (s)
KNOWLEDGE OF NUTRIENTS AND RELATED DISEASES	10.8± 2.88	9.70±2.56	0.000 (s)
ATTITUDE AND PRACTICE	3.98±1.24	3.06±1.97	0.003 (s)
KNOWLEDGE OF FOOD LABELS	14.5 ±3.07	9.82± 2.99	0.000 (s)

Figure3- COMPARISON OF MEAN SCORES FOR KAP



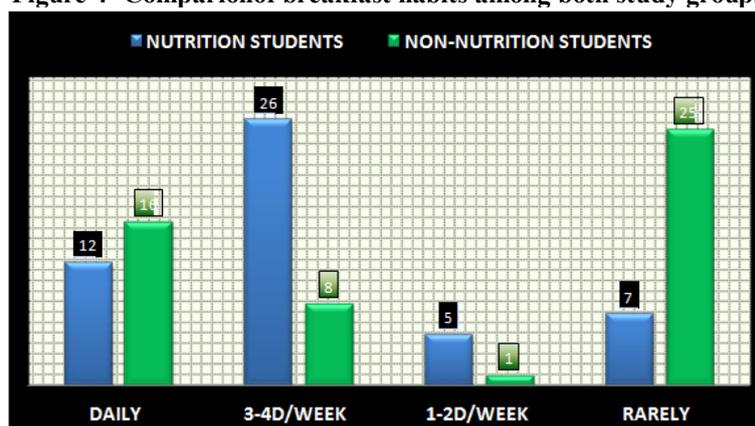
On analyzing the breakfast eating habits of nutrition as well as the non-nutrition students it was found that the difference was statistically significant (P < 0.05). Only 24% of the non-nutrition girls took breakfast daily or 3-4times/week as compared to 38% of nutrition students. Skipping of breakfast was more common among the non-nutrition girls 25% as against only 7% of their nutrition counterparts. , table 4, figure 4

Table 4- Comparison of breakfast habits among both study groups HAVING BREAKFAST REGULARLY

SAMPLE	HAVING BREAKFAST REGULARLY			
	DAILY	3-4D/WEEK	1-2D/WEEK	RARELY
NUTRITION STUDENTS	12	26	5	7
NON-NUTRITION STUDENTS	16	8	1	25
TOTAL	28	34	6	32

2
22.89 at df 3 P<0.005 (S)

Figure 4- Comparionof breakfast habits among both study groups



Chi square test showed a significant difference between eating habits and nutrition background of the students. ($P < 0.05$, Table 5). Only 9 % of the total participants took fruits, yellow, green and red vegetables in their diets. On the other hand a considerably large number of girls (54%) ate fried foods in their diets either daily or 3-4 times /week. 33% of the girls eat vegetables rarely, whereas 25% of the girls rarely took fruits in their daily diets.

Table 5 -Comparison of eating habits among nutrition and non- nutrition students

Level	Nutrition	Non	Total	P value nutrition						
How often do you eat red, yellow and green veg.s	Daily	8	1	9	2	$\chi^2 = 9.38$ at df 3	16	14	30	P = 0.025 (S)
	1-2 times/week	13	28	41	15					
How often do you eat fruits	Daily	5	4	9	2	$\chi^2 = 9.07$ at df 3	6	19	25	P = 0.028 (S)
	1-2 times/week	18	13	31	14					
How often do you eat fried foods	Daily	5	10	15	2	$\chi^2 = 8.34$ at df 3	9	18	27	P = 0.039 (S)
	3-4 times/week	21	18	39	19					
	1-2 times/week	19	5	24	13					

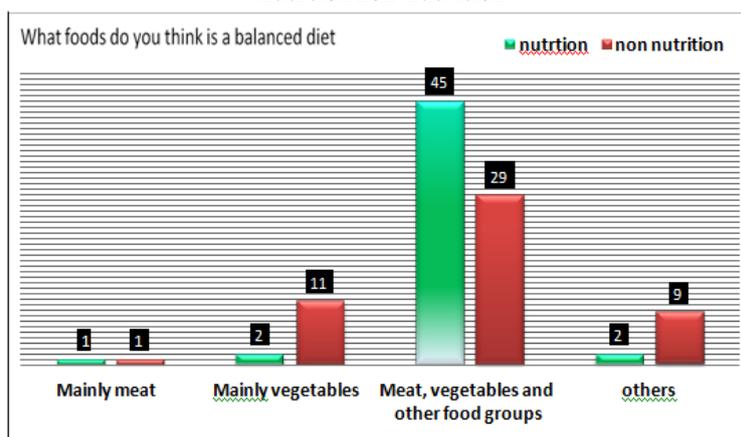
Results from (table 6, figure-5) shows that the nutrition students have a significantly better understanding of the concept of a balanced diet ($\chi^2 = 14.14$, $P < 0.005$). 45 % of the nutrition students knew the fact that a balanced diet consists of foods from all the food groups including fruits, vegetables, meat and other varieties, as against only 29% of non- nutrition students.

From Table 6, figure5, 2% of the participants feel that eating meat only is a good diet, while 13% feel that only vegetables and fruits consumption is a balanced diet.

Table 6- Correlation between nutrition and non-nutrition students about the concept of balanced diet

Level	Nutrition	Non nutrition	Total students	students
What foods do you think is a balanced diet	Mainly meat	1	1	2
	Mainly vegetables	2	11	13
	Meat, vegetables and other food groups	45	29	74
	others	2	9	11

Figure5- correlation between nutrition and non-nutrition students about the concept of balanced diet



Mainly vegetables Meat, vegetables and other food groups

Table 7, concluded that there was no significant difference found in the exercise pattern of the both study groups ($P > 0.05$). Although walking and jogging was found to be more prevalent kind of exercise among the young adults of the present study (54%) followed by aerobics (10%). Team games, cycling and swimming were the least performed types of sport activities.

Table 7- Types and patterns of sport and exercise performance among the students %

Types of sporting exercise	Nutrition	Non-nutrition	Total
Swimming	0	2	2
Team games	1	2	3
Aerobics	3	7	10
Cycling	1	0	1
Walking and jogging	27	27	54
χ^2	=4.807 at df 5 $P > 0.05$ (NS)		

V. Discussion

Although breakfast is considered as the main meal of the day, only 28% of the students in the present study took breakfast daily this is not consistent with the findings of Wong et al. (2011), and Azizi et al (2011) who reported that 81% and 40% of the participants respectively agree with the necessity of eating breakfast (15,16). This shows that the participants in this research pay little attention to breakfast, compared to those of Wong et al. Although the current recommendation is to emphasize on having breakfast. The usefulness of breakfast consumption is well recognized by nutritionists. The omission of breakfast relates to dietary patterns which are unfavorable for health (17). A study on American adolescent girls found a similar finding, more than third the adolescent female populations do not eat breakfast (18). Other study found that 19% of the girls used to skip breakfast (19).

Results of the other similar studies on KAP revealed that more than half of the study participants (57.8%) did not practice physical exercises and (76.9%) who considered themselves in average body weight and 33.3% tried to lose weight.(12) The results also showed that 68.5% of studied sample who had in average body image had positive attitude towards balanced diet and 65.5% who tried to lose weight had positive attitude towards balanced diet. Regarding physical exercise the results revealed that there is a statistically significant association between practice exercise and balanced diet $p < 0.003$. The students who tried to lose weight had statistically significantly associations with practice physical exercise ($p < 0.003$). It was clear that 66.6% of the study female adolescent students had positive attitude towards balanced diet while 47.8% of them had positive attitude towards physical exercise (12).

Results of another study by (Laura, 2011) concluded that Knowledge scores were highest on questions concerning food habits and lowest on questions concerning health beliefs (20)

Results of the present study clearly indicate that snacking is prevalent among the two groups (54%). These findings are consistent with other studies on adolescent dietary habits (21, 22). Some previous studies have shown that students are only slightly aware of nutrition issues and that their knowledge and attitude are average (23). In the present research, the average knowledge, attitude and practice scores of the nutrition students were significantly higher than that of the non-nutrition students, which is consistent with previous studies which showed that nutrition knowledge is related with the field of study (24, 25). Another study recommended that health education programs directed to female adolescents in the schools and universities will increase the awareness about healthy eating habits and practice exercise (12)

Sharma et al. (2008) also reported that nutritional knowledge is significantly related to dietary habits (including consumption of green, red and yellow vegetables, fruits and avoiding fried foods). The findings of these studies show that educational interference leads to an increase in nutrition knowledge and the enhancement of people’s attitudes (26). Maybe in this research, higher knowledge, attitude and practice scores of nutrition students also verify this.

Physical activity is widely recognized as an important health behavior, providing benefits against cardiovascular diseases and some cancers, as well as improving mental health (27). Around 30% of the girls under the present study engaged in no physical activity.

This is similar to the proportion of inactive young women in UK (27). In our study walking and jogging were the most frequently performed type of sport (54%). This may be attributed to the fact that these exercises need no equipment, no companions and could be performed easily in the college, house, garden etc.

VI. Conclusion

A large proportion of adolescent females do not practice healthy dietary habits.

While breakfast skipping was more among the non-nutrition students, the overall breakfast skipping was also found to be high.

This research was conducted according to the knowledge-attitude-practice model based on the cognitive-affective-behavior theory in the area social psychology (Figure 2) and this model suggests that an increase in knowledge affects attitude and consequently changes the diet.

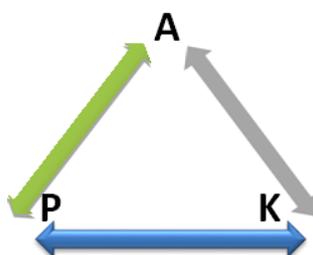


Fig.6. knowledge-attitude-practice model (Schwartz, 1976)

In the current research the knowledge and nutrition attitude of the students were average and the students' diet needed improvement. According to the above mentioned model, it can be hypothesized that the diet is related to the nutrition attitude and knowledge and subsequently nutrition practices. Then we can come to the conclusion that the promotion of knowledge leads to the promotion of their attitude and subsequently to the improvement of their diet. In fact, this research suggests the importance of nutrition knowledge and its influence on nutrition attitude and diet. (29)

An appropriate diet has a considerable effect on the improvement of a society's health. Therefore, the results of this research suggest that students should pay more attention to nutrition issues, with regard to the fact high nutrition knowledge and attitude of nursing and physical education students are related to their nutrition courses.

School curricula should include the needed information and guidelines for a healthy dietary habit.

Emphasis should be upon the following points: having adequate diet; minimizing intake of sweets and snacks in between the meals; regular physical activity, never to skip breakfast and Students should be guided as how to read the food labels and count their daily calorie intake. Holding nutrition workshops and courses in college and even including nutrition courses in the curriculum can enhance their attitudes and nutrition behavior and have a positive effect on them. In addition, owing to the limited number of nutrition studies in Hail (and Saudi Arabia as a whole) and the importance of the promotion of nutrition knowledge and attitude for keeping the society healthy, further studies in this area seem necessary. Since university student will form the main body of families and professionals in every society and every region as well as they represent the future parents.

VII. Recommendation:

There is a need for a renewed proactive role for the education sector; much more research into the ways people learn and use food-related Knowledge is required in the form of experimental interventions and longitudinal studies as according to one study by Deng in china, 2006. (30). The authors of different studies on KAP on nutrition suggested that the contents of nutritional education should be added into the physical education curriculum for institutes of higher learning, and that college students acquire knowledge about nutrition from multiple channels, enhance health recognizing ability, and change bad living behaviors, so as to boost the development of college students comprehensively in terms of physical and mental health. (30)

Bibliography

- [1]. Ahmed Al-Naggar, Redhwan, and Robert Chen; Nutrition and Cancer Prevention: Knowledge, Attitudes and Practices among Young Malaysians; Asian Pacific J Cancer Prev., 2011, vol. 12, 691-694
- [2]. AMAMOTO, R.; DOZONO, M.; TOYAMA, K. (2004). The relationship between dietary life and indefinite complaint in female Nutrition department students. Seinan Jo Gakuin Bulletin, (3): 75–85.
- [3]. MARGETTS, B.M.; THEMPSON, R.L.; SPELLER, V.; MCVEY, D. (1998). Factors which influence healthy eating pattern: result from the 1993 health education authority health and life style survey in England. Public Health Nutrition, (3):193-198.
- [4]. STAMPFER, M.; HUF, B.; MANSSEN, J.E.; RIMM, E.B. (2000). Primary prevention of coronary heart disease in women through diet and life style. New England Journal of Medicine, 6:343(1): 16-22.
- [5]. HARVEY-BERINO, J.; HOOD, V.; ROURKE, J.; TERRANCE, T.; DOWALDT, A.

- (1997). Food preferences predict eating behavior of very young Mohawk children. *Journal of the American Dietetic Association*, 97(4):750-753.
- [6]. Lbrahim, G. Knowledge, attitude and practice the three pillars of excellence and wisdom: a place in the medical profession; 1995, *Eastern Mediterranean Health Journal*, vol.1(1), 8-16
- [7]. COTUGNA, N.; CONNIE, E.; VICKERY, R.D.; SHELDON, M. (2005). Sports Nutrition for Young Athletes. *Journal Scandinavia Nutrition*, 21(6): 323–328.
- [8]. O'DEA, A.J. (2004). School-based health education strategies for the improvement of body image and prevention of eating problems. An overview of safe and successful interventions. *J Health Educ*, 105 (1): 11-33.
- [9]. Chen ST1, Soo KL, Azriani AR, Van Rostenberghe H & Sakinah H; Nutrition Knowledge, Attitude and Practice of Teachers in Rehabilitation Centres in Northern Malaysia; 2012, *Mal J Nutr*, vol.18(2) 185-205.
- [10]. GATES, G.E.; DE LUCIA, B.A. (1998). Influences of lifestyle patterns on diet. *Journal American Association of nutrition*, 989(9): 82-87.
- [11]. BAN AHMED MAJEED ; Knowledge , attitudes , and practices of adolescent school girls towards dietary habits and physical activity;
- [12]. IBRAHIM HODA D.F., AML M. AHMED MARZOKA A. GADALLAH, and ASMAA A.M. HUSSEIN; Body Image, Eating Habits and Practice Exercises Attitudes of Female Adolescent Students at Assiut University; 2010, *Med. J. Cairo Univ.*, Vol. 78(2), 765-772
- [13]. YIN Jian-zhong, WANG Qi, ZHOU Jian-yu, et al; INVESTIGATION ON NUTRITIONAL KNOWLEDGE, ATTITUDE AND PRACTICE OF STUDENTS IN A MEDICAL COLLEGE AND A NORMAL UNIVERSITY IN KUNMING; *Modern Preventive Medicine*, 2009, vol. 14
- [14]. QIAO Ling and LU Feng; Investigation of the nutrition knowledge, attitudes and dietary behavior in non-medical students; *Henan Journal of Preventive Medicine*, 2009, vol. 01
- [15]. Adolescent and young adults. Retrieved from the World wide web on 13/1/2003 www.cdc.gov/nccdphp/sgr/adoles.htm
- [16]. WONG, YUECHING; HUANG, YI-CHIA; CHEN, SU-LIN. (1999). Is the College Environment Adequate for Accessing to Nutrition Education? *Journal of Nutrition research*, 19(9): 1327-1337.
- [17]. AZIZI, M.; RAHMANI-NIA, F.; MALAE, M. KHOSRAVI, N. (2010). A study of Nutritional knowledge and attitudes of elite College Athletes in Iran. *Brazilian Journal of Biometricity*, 4(2): 105-112.
- [18]. AMBROISE MARTIN , SYLVIE NORMAND and MONIQUE SOTHIER . (2000) Is advice for breakfast consumption justified ?. *British journal of nutrition*;84, 337-344.
- [19]. Retrieved from the World Wide Web on 13/1/2003 [www.isuagcenter.com/news/july2002/back to schoolbreakfast.html](http://www.isuagcenter.com/news/july2002/back%20to%20schoolbreakfast.html)
- [20]. McArthur. Laura H., Karen R. Greathouse, Erskine R. Smith and Donald Holbert; A Quantitative Assessment of the Cultural Knowledge, Attitudes, and Experiences of Junior and Senior Dietetics Students Original Research Article; 2011, *Journal of Nutrition Education and Behavior*, Vol43(6), 464-472
- [21]. Retrieved from the World Wide Web on 13.1.2003 www.euh.k12.nf.ca/cparsons/nutrition.html lakewayparenting.com/calcium.html
- [22]. ANNIE S. ANDERSON , Sally Macintyre and Patrick West (1994) *British Journal of Nutrition* 71, p.111-122
- [23]. JENNIFER WARWICK, HEATHER MCLLVEEN and Christopher Strugnell(1999). Food choices of 9-17 year olds in Northern Ireland – influences and challenges. *Nutrition and food science* ,1999(5):p.229-236
- [24]. SAKAMAKI, R.; TOYAMA, K.; AMAMOTO, R.; LIO, C.H.; SHINFUKU, N. (2005). Nutritional knowledge, food habits and health attitude of Chinese university students –a cross sectional study. *Journal of Nutrition*, 4 (4): 1-5.
- [25]. GEORGIA, S.; GULDAN, Y.W.; LIN, Y.; ZHAO, M.; XIANG, D.P.; YANG, L.; LONG, F. (1993). Evaluation of a nutrition education activity for medical student in china. *Asia Pacific Journal of Clinical Nutrition*, 2(8): 71-76.
- [26]. SHARMA, S.V.; GERNAND, A.D.; DAY, R.S. (2008). Nutrition knowledge predicts eating behavior of all food groups except fruits and vegetables among adults in the Paso del Norte region: *Qué Sabrosa Vida*. *Journal of Nutrition Education and Behavior*, 40(6): 361-368.
- [27]. S. MONGA, R. SACHDEVA, Efficacy of Nutrition Counselling on the Knowledge, Attitude and Practices of Working Women; *Stud Home Comm Sci*, 2(2): 99-102 (2008)
- [28]. SCHWARTZ, N.E. (1976). Nutrition knowledge, attitudes and practices of Canadian public health nurses. *Journal of Nutrition Education*, 8(2): 28-31.
- [29]. National Obesity Obsevatory; Knowledge and attitude towards Healthy eating and physical activity, NHS, May 2011.
- [30]. DENG Shu-xun, HUANG Yu-shan, CHEN Nan-sheng, GUO Hong and WANG Qiu-hai; Dietary behaviors of and nutritional education for college students; 2006, *Journal of Physical Education*.