World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

Check for updates

Nutritional and health benefit knowledge of milk and dairy products consumption among medical students at Benghazi university

Mashallah Mohamed Abdul-Aziz [1], Aya Abdul-Salam Algomati [1], Timh Salem Alhasi [1], Mailud Saad El-Amari [1], Abdelmetalab Ferjani Tarhuni [2], Abdullah Ramadan Sheikhi [3] and Ali Ateia Elmabsout [1,*]

[1] *Department of nutrition, faculty of public health, university of Benghazi, Benghazi, Libya.*
[2] *Department of Environment health, Faculty of public health, University of Benghazi, Benghazi, Libya.*
[3] *Curtin university, Perth, Western Australia, Australia.*

World Journal of Advanced Research and Reviews, 2021, 12(01), 162–174

Publication history: Received on 28 August 2021; revised on 06 October 2021; accepted on 08 October 2021

Article DOI: https://doi.org/10.30574/wjarr.2021.12.1.0499

Abstract

Backgrounds: Milk well- known important source of human nutrition and contain considerable amounts of macro and micronutrients and have enormous health benefit. This study was performed to determine the nutritional knowledge and health benefit knowledge of diary and dairy products consumption among medical students at Benghazi university.

Methodology: This a cross section study comprised of 541 students from branches of medical faculties in which 290 female and 251 male. Data were collected by using a semi-constructed questionnaire. Data was analysis by either mean ± SD or frequencies and percentages according to the natural of data. Chi-square test was used at $\alpha < 0.05$.

Results: The result of present work revealed that milk was consumed by one serving a day (53%) ($P < 0.05$), and among types of milks, whole fat milk significantly consumed ($P < 0.05$). Our result also shown that dairy products were highly consumed by one serving/day. Furthermore, 65.2 % of the students drink milk with tea ($P=0.000$). Nutrition knowledge of milk and dairy products reported that students have good knowledge score for nutritional knowledge questions and poor knowledge scores for questions related to health benefit with exception question on oral health ($P < 0.05$). Even though, the nutritional status of the students reveals that they fall under normal weight categories. However there were abnormal low levels of Hb, vitamin D have been found and abnormal high levels of calcium among male students.

Conclusion Dairy consumption among students was relatively higher with good nutritional knowledge of dairy and dairy products consumptions and poor knowledge regarding health benefit. The result of this study suggested that nutritional education program might be in great importance of dairy and dairy product knowledge and benefit. The data of this study needed to be validated in large samples.

Keywords: Dairy consumption; Milk, Students; Nutrition status; Knowledge; Health benefit

1. Introduction

Milk is very- known source of human nutrition since 4000 BC [1, 2]. Milk consumption can increase intake of not only calcium but also overall nutrient and milk contains all the different nutrients that humans need as well [3, 4].

A little knowledge provided in the literature in which few people know that milk is a source of protein, full of B-group vitamins (thiamin, riboflavin, niacin, vitamin B6, B12 and folate), vitamin A, vitamin C, magnesium, and zinc [5]. Seventy

* Corresponding author: Ali Ateia Elmabsout
Department of nutrition, faculty of public health, university of Benghazi, Benghazi, Libya.

percent of calcium and 16% of potassium in the diet are derived from dairy and dairy products [6]. Furthermore, milk also provide in about 30% of phosphorus, 14% of magnesium, 15 % of zinc, 18% of protein, 16 % of vitamin A, 18% of vitamin B12, and 25 % of riboflavin [5]. In addition, Milk has a good source of carbohydrates lactose, and small quantities of the fatty acids and the main fatty acid present in the milk is monounsaturated [6].

Milk is staple in human consumption, contributing calcium intake which is an important for builds strong bones, proteins for the brains function and muscles to develop and for normal growth as well [7]. Lack of milk in the diet can participate in calcium and vitamin D deficiencies and poor health [8]. Therefore, many dietary guidelines stress milk and dairy foods as an essential component of a healthy diet for all people, regardless of their age [9].

A number of studies have shown that milk and dairy products contribute to bone health and help to prevent cardiovascular diseases, high blood pressure, and Type 2 diabetes [10, 11]. Studies also found that that frequent consumption of dairy foods and milk should be recommended in order to prevent periodontal disease [12, 13]. Moreover, Calcium derived from milk intake has beneficial in reducing cholesterol absorption, and in controlling body weight and blood pressure [14]. However, recent conflict work has emerged about the benefits compared with harms of dairy fat, including concerns over long-term effects [15]. Some traditional diet-heart study held that consumption of fat, and particularly saturated fat associated with arise levels of total and low-density lipoprotein (LDL) cholesterol which result in developing of coronary heart disease [16]. Based on this knowledge, dietary guidelines in some countries and international authorities recommend consumption of low-fat dairy foods [17]. On the other hands, total dairy product intake has not been found associated with increased overall cancer mortality risk [18].

Beside of nutritional values of milk and dairy products there is biologically active compounds (bioactive peptides, probiotic bacteria, antioxidants, vitamins, specific proteins, oligosaccharides, organic acids, highly absorbable calcium, conjugated linoleic acid and others) have important for human functioning and health [19].

Milk is very important during growth periods, especially when growth occurs rapidly, for instance, in adolescence [20]. Since, young adults continue to grow in early adulthood, accurate knowledge and health benefit about milk will lead them to increase their milk consumption. Therefore a according to our knowledge little or no study conducts at medical students for milk nutritional and health point of view and medical student supposed to have more awareness regarding knowledge and benefit of milk and dairy products consumption. For the students, milk and dairy products overall provide better or worse health, and increase or lowering risk of some diseases and all-cause of mortality. Hence, the aim of the present work was to study the nutritional and health benefit knowledge of dairy and dairy products consumption among medical students.

2. Material and methods

2.1. Subjects

A cross sectional study was conducted from end of 2019 to the 15th of March 2020 on 541 students from medical faculties branches by which 290 female and 252 male. All participants with age between 18-26 years old were selected for the study. Medical faculties in Benghazi university consist of faculty of medicine, dental, pharmacy , medical biotechnology and public health faculty. All the subjects selected for the study were fully informed of the purpose and procedure of the investigation and provided consent at the outset.

2.2. Questionnaire Development

A self-administered designed questionnaire including demographic data, anthropometric data and questions for knowledge, and health benefit of milk and dairy consumption. The questionnaire contains in total twenty five questions. The questions were divided between 4- 6 sections including: consumption pattern, knowledge and health benefit of the students about milk consumption.

2.3. Procedure

Questionnaires were distributed to the randomly selected students. The details study procedures were explain to the students and to indicate their rights as students. The questionnaire including questions including demographic profile, consumption pattern, nutritional knowledge of the students. After completing questionnaires, the students were asked for measuring their weight and height. Modified food frequency questionnaire was used and focusing on milk and dairy food intake.

2.4. Anthropometric measurements

Weight and height were measured as previously described [21] by which weight was measured with minimal cloths and nearest to 0.1 kg and height measured with bare foot by measuring tape nearest to 0.2 cm. BMI was calculated as prescribed by WHO, BMI=weight kg/ height m^2. BMI categorized as following:

BMI < 18.5 underweight

BMI > 18.5 and < 24.9 normal weight

BMI 25 and < 29.9 over weight

BMI 30 and above obese.

2.5. Nutritional and health benefit knowledge of milk consumption questions

For scoring nutritional knowledge and health benefit considered that if the answer of the question less than 50% is define as poor knowledge and if 50% or more is defined as good knowledge.

2.6. Ethics

All of the procedures involving human subjects were approved by local Medical Ethics committee. Written consent was obtained from the students before the study began.

2.7. Statistical Analysis

IBM SPSS (predictive analytics software and solutions) version 22.0 (International Business Machines Corporation, Armonk, NY, USA) was used for analysis. Values were presented as mean ± SD for quantitative data or frequencies and or percentage for qualitative data. Chi-squared analysis was used to compare socio-demographic, knowledge and health benefit of milk and dairy products consumption characteristics among participants with different knowledge. A P value less than 0.05 was considered as statistically significantly different.

3. Results

The mean and standard deviation (SD) of participants' ages were 23.5± 3. Participants' age ranged from 18 to 26 years old. The highest and significant age of the students participate in the study were those between 21-23 years old (50.5%) *P*=0.000, followed by age groups 24-26 years old (31%) (Table 1). Furthermore, more than 50% of the students were female (53.6%) and male represent about (46.4%) the gender (Figure 1). In regard family income of the students, more than 50% have an average income between 500-1000 LD, about one fourth have an average income more than 1000 LD (Figure 2).

Table 1 Age distribution of the students

		N	N %	P values
Ages	18-20	101	18.7%	
	21-23	273	50.5%	0.000
	24-26	167	30.9%	
	Total	541	100.0%	

Chi-square test was performed and considered significant at α< 0.05

541 participants were recruited from branches of medical faculties by which 153 (28.3%) from medicine, 165 (30.5%) from pharmacy, 149 (27.5%) from public health, 44 (8.1%) from dental, and 30 (5.5%) from medical technology, in which students class ranking as the following: about 30% of the students belong to third class followed by 26.4% from second and first and fourth class 17.9% and 18.7% respectively whereas the fifth class being the lowest (7.8%) (Table 2).

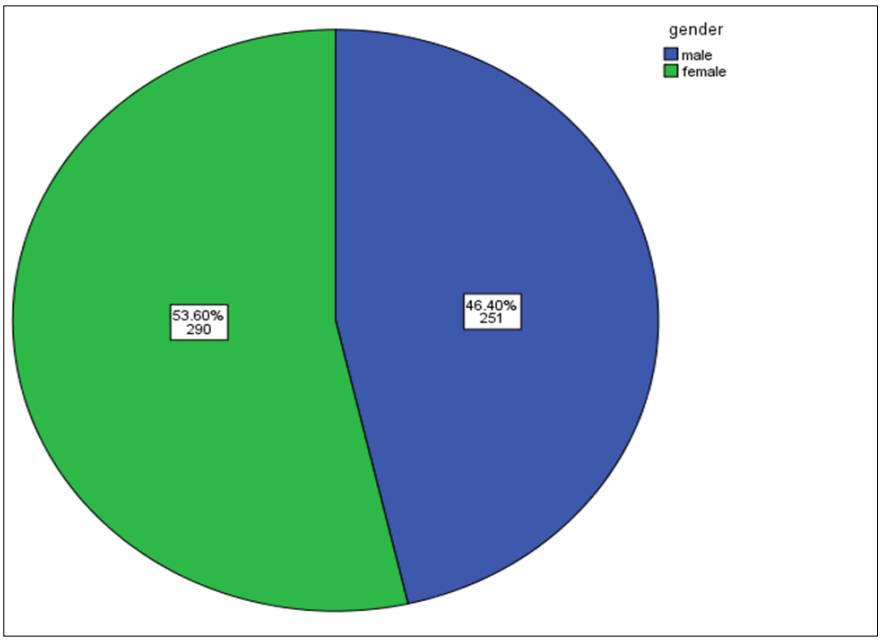

Figure 1 Gender distribution

Table 2 Students from different branches and classes of medical faculties

		N	N %
Faculties	public health	149	27.5%
	pharmacy	165	30.5%
	dental	44	8.1%
	medicine	153	28.3%
	medical technology	30	5.5%
	Total	541	100.0%
Class	first	97	17.9%
	second	143	26.4%
	third	158	29.2%
	fourth	101	18.7%
	fifth	42	7.8%
	Total	541	100.0%

The milk drinking habits of the students were shown in Table 3. Table 3 shown that 82.6 % of the students were stated consumed milk. Milk is mostly consumed by one cup a day (53%) and two cups were come in the next with around 21.6% and three cups a day being the least (8.1%). The questions regarding types of milk consumption reported that, whole milk was highly significant reported (60.1%) P =0.000. Pasteurized, raw and low fat reported with lowest percentages 30%, 7.8% and 17% respectively.

Table 3 Milk habits and types of milk consumption

		N	N %	P values
Drink milk	yes	447	82.6%	
	no	94	17.4%	
	Total	541	100.0%	
Cups per day	No drink	94	17.4%	
	one cup	286	52.9%	0.000
	two cups	117	21.6%	
	three cups and more	44	8.1%	
	Total	541	100.0%	
Pasteurized milk	yes	162	29.9%	
	no	379	70.1%	
	Total	541	100.0%	
Raw milk	yes	42	7.8%	
	no	499	92.2%	
	Total	541	100.0%	
Low fat milk	yes	92	17.0%	
	no	449	83.0%	
	Total	541	100.0%	
Whole milk	yes	325	60.1%	0.000
	no	216	39.9%	
	Total	541	100.0%	

Chi-square test was performed and considered significant at $\alpha < 0.05$

Analysis of food frequency of study sample regarding the amount and types of dairy products revealed the following results. There was an increase in the consumption of dairy products (97.2%) include 91.1% consumed cheese, 73.8% yogurt, and 54.9% cream. These dairy products were found most often consumed once/day (57.5%) and 36.4% twice/day. When milk consumption is examined; 65.2 % of the students drink milk with tea (*P*=0.000), and least drink it with coffee (15.2%) and moderately drink it alone (20%) (Table 4).

The answers of the question about nutrition knowledge of the milk were shown in Table 5. Among the six questions, over half of the students (59.1%) have answer milk contain lacto-globulin, approximately 92.2% , 90.9%, 98% and 84.8% have good knowledge of that milk rich sources of protein, lactose, calcium and good sources of energy, more than two third were reported that milk containing vitamin D (Table 5).

In response to questions of health benefit of diary and dairy products, poor knowledge have been reported in which about 36.6%, 29.4% , 14.2% , 27.2% and 33.1% answered "Yes" for dairy and dairy products prevent CVD, colorectal cancer, ovarian cancer, lose weight, and reduce risk of T2DM respectively Moderate knowledge have been reported by the student for the questions milk protect oral health (58.8%) (Table 6).

Further investigation of health risk and dairy product consumption shown in table 7. Poor knowledge reported in the table 7 in which 19%, 47% and 35.7% answered "Yes" for excessive consumption of skim milk cause acne, Cheese contain large amount of sodium, and Pasteurized cheese cause constipation respectively.

Table 4 Dairy products consumption

		N	N %	P values
Dairy product	yes	526	97.2%	
	no	15	2.8%	
	Total	541	100.0%	
cheese	yes	493	91.1%	
	no	48	8.9%	
	Total	541	100.0%	
yogurt	yes	399	73.8%	
	no	142	26.2%	
	Total	541	100.0%	
cream	yes	297	54.9%	
	no	244	45.1%	
	Total	541	100.0%	
How often	once	311	57.5%	0.000
	twice	197	36.4%	
	three times	33	6.1%	
	Total	541	100.0%	
Habit of drink milk	coffee	82	15.2%	
	tea	353	65.2%	0.000
	milk only	106	19.6%	
	Total	541	100.0%	

Chi-square test was performed and considered significant at $\alpha < 0.05$

Table 5 Milk knowledge questions

		N	N %	P values
Lactoglobulin	yes	320	59.1%	0.00
	no	221	40.9%	
	Total	541	100.0%	
Protein	yes	499	92.2%	0.000
	no	42	7.8%	
	Total	541	100.0%	
Lactose	yes	492	90.9%	0.000
	no	49	9.1%	
	Total	541	100.0%	
Calcium	yes	530	98.0%	0.000
	no	11	2.0%	
	Total	541	100.0%	
Vitamin D	yes	406	75.0%	0.000
	no	135	25.0%	
	Total	541	100.0%	
Sources of energy	yes	459	84.8%	0.000
	no	82	15.2%	
	Total	541	100%	

Chi-square test was performed and considered significant at $\alpha < 0.05$

Table 6 Health benefit of dairy and dairy products consumption equestions

		N	N %	P values
Prevent CVD	yes	198	36.6%	
	no	343	63.4%	
	Total	541	100.0%	
Prevent colorectal cancer	yes	159	29.4%	
	no	382	70.6%	
	Total	541	100.0%	
Prevent ovarian cancer	yes	77	14.2%	
	no	464	85.8%	
	Total	541	100.0%	
Lose weight	yes	147	27.2%	
	no	394	72.8%	
	Total	541	100.0%	
Reduces risk T2DM	yes	179	33.1%	
	no	362	66.9%	
	Total	541	100.0%	
Oral health	yes	318	58.8%	0.000
	no	223	41.2%	
	Total	541	100.0%	

Chi-square test was performed and considered significant at $\alpha < 0.05$

Table 7 Health risk of dairy products consumptions

		N	N %
Excessive consumption of skim milk cause acne	yes	103	19.0%
	no	438	81.0%
	Total	541	100.0%
Cheese contain large amount of sodium	yes	254	47.0%
	no	287	53.0%
	Total	541	100.0%
Pasteurized cheese cause constipation	yes	193	35.7%
	no	348	64.3%
	Total	541	100.0%

In Table 8, nutritional status of students was evaluated by using BMI (body mass index). The results of the table 8 showed that most of the study participants fall in the normal weight (58.6%) On the other hand, there was also a decrease in the participants having obesity and underweight 7.9% and 10.9% respectively. The mean weight 66.0±5 kg. The mean Body Mass Index (BMI) of the study participants was 23.64±4.0 kg/m^2 indicating that majority of the study participants had normal weight.

The nutritional lab indices shown that, both male and female have lowered Hb and vitamin D levels. However serum calcium shown great differences in which normal values for female and abnormal high values for male (Table 9).

Table 8 Anthropometric measurements

		Mean± SD	N	N %
weight		66± 5		
BMI		23.64±4		
BMI categories	Underweight		59	10.9%
	Normal		317	58.6%
	Overweight		124	22.9%
	Obese		41	7.6%
	Total		541	100.0%

Table 9 Lab values for some nutritional indices

	gender	
	male	female
	Mean± SD	Mean± SD
Hb	12.87± 5	10.69±3
Ca^{++}	12.87±7	9.17±4
Vit.D	16.20±8	14.73±6

Table 10 Relationship between health benefit of dairy product consumption and students' knowledge

		Medical Faculties branches									
		public health		pharmacy		dental		medicine		medical technology	
		N	N %	N	N %	N	N %	N	N %	N	N %
Prevent CVD	yes	57	38.3%	55	33.3%	18	40.9%	57	37.3%	11	36.7%
	no	92	61.7%	110	66.7%	26	59.1%	96	62.7%	19	63.3%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
Prevent colorectal cancer	yes	48	32.2%	48	29.1%	9	20.5%	46	30.1%	8	26.7%
	no	101	67.8%	117	70.9%	35	79.5%	107	69.9%	22	73.3%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
Prevent ovarian cancer	yes	28	18.8%	24	14.5%	3	6.8%	21	13.7%	1	3.3%
	no	121	81.2%	141	85.5%	41	93.2%	132	86.3%	29	96.7%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
Lose weight	yes	52	34.9%	41	24.8%	12	27.3%	37	24.2%	5	16.7%
	no	97	65.1%	124	75.2%	32	72.7%	116	75.8%	25	83.3%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%

Reduces risk DM	yes	57	38.3%	49	29.7%	13	29.5%	50	32.7%	10	33.3%
	no	92	61.7%	116	70.3%	31	70.5%	103	67.3%	20	66.7%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
Oral health	yes	92	61.7%	88	53.3%	27	61.4%	94	61.4%	17	56.7%
	no	57	38.3%	77	46.7%	17	38.6%	59	38.6%	13	43.3%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%

Chi-square test was performed and considered significant at $\alpha < 0.05$

Dairy and dairy products knowledge was evaluated among medical faculties branches as shown in table 10. Public health and medicine faculty students have good knowledge for oral health $P=0.004$ while the other faculties lack such knowledge (Table 10). For the knowledge for other disease listed in table 10 did not reveal any differences.

The knowledge for milk containing lactoglobulin was high significant among students from public health, pharmacy and medicine faculty (P =0.000) (Table 11) whereas similar trend for all milk components and medical faculties branches (Table 11).

Table 11 Nutritional knowledge of milk composition of student of medical faculties

		Medical Faculties branches									
		public health		**pharmacy**		**dental**		**medicine**		**medical technology**	
		N	**N %**	**N**	**N %**	**N**	**N %**	**N**	**N %**	**N**	**N %**
protein	yes	133	89.3%	160	97.0%	41	93.2%	138	90.2%	27	90.0%
	no	16	10.7%	5	3.0%	3	6.8%	15	9.8%	3	10.0%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
lactoglobulin	yes	94	63.1%	104	63.0%	19	43.2%	94	61.4%	9	30.0%
	no	55	36.9%	61	37.0%	25	56.8%	59	38.6%	21	70.0%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
lactose	yes	138	92.6%	151	91.5%	38	86.4%	140	91.5%	25	83.3%
	no	11	7.4%	14	8.5%	6	13.6%	13	8.5%	5	16.7%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
calcium	yes	145	97.3%	162	98.2%	44	100.0%	149	97.4%	30	100.0%
	no	4	2.7%	3	1.8%	0	0.0%	4	2.6%	0	0.0%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%
Vitamin D	yes	111	74.5%	131	79.4%	35	79.5%	109	71.2%	20	66.7%
	no	38	25.5%	34	20.6%	9	20.5%	44	28.8%	10	33.3%
	Total	149	100.0%	165	100.0%	44	100.0%	153	100.0%	30	100.0%

Chi-square test was performed and considered significant at $\alpha < 0.05$

The knowledge of the students classes for benefit of milk and dairy products consumptions presented in table 12. Similar poor knowledge was found in all classes and benefit of dairy and dairy products consumption except for oral health found significant in second, third and fourth classes ($P< 0.05$). (Table 12).

Table 12 Relationship between student classes and knowledge of health benefit of diary and dairy products consumption

		Years (classes)									
		first		second		third		fourth		fifth	
		N	N %	N	N %	N	N %	N	N %	N	N %
1-Prevent CVD	yes	32	33.0%	47	32.9%	62	39.2%	40	39.6%	17	40.5%
	no	65	67.0%	96	67.1%	96	60.8%	61	60.4%	25	59.5%
	Total	97	100.0%	143	100.0%	158	100.0%	101	100.0%	42	100.0%
2-Prevent colorectal cancer	yes	23	23.7%	38	26.6%	60	38.0%	27	26.7%	11	26.2%
	no	74	76.3%	105	73.4%	98	62.0%	74	73.3%	31	73.8%
	Total	97	100.0%	143	100.0%	158	100.0%	101	100.0%	42	100.0%
3-Prevent ovarian cancer	yes	9	9.3%	20	14.0%	32	20.3%	8	7.9%	8	19.0%
	no	88	90.7%	123	86.0%	126	79.7%	93	92.1%	34	81.0%
	Total	97	100.0%	143	100.0%	158	100.0%	101	100.0%	42	100.0%
4-Lose weight	yes	23	23.7%	45	31.5%	41	25.9%	29	28.7%	9	21.4%
	no	74	76.3%	98	68.5%	117	74.1%	72	71.3%	33	78.6%
	Total	97	100.0%	143	100.0%	158	100.0%	101	100.0%	42	100.0%
5-Reduces risk DM	yes	33	34.0%	49	34.3%	58	36.7%	31	30.7%	8	19.0%
	no	64	66.0%	94	65.7%	100	63.3%	70	69.3%	34	81.0%
	Total	97	100.0%	143	100.0%	158	100.0%	101	100.0%	42	100.0%
6-Oral health	yes	54	55.7%	84	58.7%	89	56.3%	71	70.3%	20	47.6%
	no	43	44.3%	59	41.3%	69	43.7%	30	29.7%	22	52.4%
	Total	97	100.0%	143	100.0%	158	100.0%	101	100.0%	42	100.0%

Chi-square test was performed and considered significant at $\alpha < 0.05$

4. Discussion

Milk is main contributor of basic nutrients that are required for normal growth and development and prevent of many disease [22].

This study determined that there was significant number of students at ages between 21-23 years old involved in the study and also more female to male 1: 0.8 and this was the fact of students at medical faculties according the registry data by which female twice than male. Similar results have been found by other authors [1, 2].

According to the present study most of the students drink milk which represent by 82.6% and dairy products 97.2% by which one serving/ day ($P < 0.05$), drink whole fat milk ($P < 0.05$) and the consumption of milk habits revealed that significant numbers of students drink milk with tea ($P < 0.05$). The results of our study were inconsistent with Jafari *et al*, who concluded that 78.1% of the participants did not consume enough dairy products [8]. Maryam *et al*. also reported that the average milk consumption of students was as low as 100 g, which was only one third of their recommended daily amount [1]. According to Rizzoli and et al adequate servings of dairy products were required to meet the recommended calcium intake for bone health and fitness [9]. Furthermore, a study conducted at Kafkas University to access the milk consumption patterns of students and the results concluded that only 33% of them consume milk while 67% of them did not consume milk throughout the study [10] Similar findings have been found and reported by national health and nutrition of America in which 39% of men and 43% of women consumed less and even less than single serving of milk and dairy products on the daily basis [10]. In fact that, decrement serving size of drink milk in our study could contribute to calcium and vitamin D deficiency and this due to the milk and dairy product serving found less than

the recommended and it well known milk and dairy products are good sources of vitamin D and calcium [23, 24]. Milk has low amounts of iron, and its bioavailability is low. It is known that milk cannot meet iron requirements [24] .

For habits of drinking milk, there was a number of studies shown that students preferred drink milk with coffee [25]. But our result indicated that significant numbers of students which present by about 65% drink milk with tea.

Milk contains a number of vitamins, minerals and other nutrients and one of the best sources of protein [11-13]. The nutritional knowledge of milk and dairy products consumption were shown very good knowledge for numbers of questions listed in table 5. These knowledge were generally found among all students in medical faculties branches. There were also several studies reported similar results [26, 27]. This indicated our students have good idea for nutritional components of the milk.

Milk is regarded as a 'complete food' and the results of the present study showed that most of our students did not know about the importance of milk for our health and this could be related to milk and dairy products serving preferences as mentioned above and also could be due to other factors by which college and university life are considered 'busiest' due to the study burden and tough schedule [28] and also because of many other factors such as food preferences, expectations as well as changes in lifestyles and increased availability of fast foods were responsible towards the selection of foods among students. College life is considered as a period of students gain independence from their parents and this period is crucial in which turning point of food habits that have their implications through the adulthood. Sakamaki *and et al*, in China and reported that only 7% of the university students follow the concept of healthy eating while selecting food [13]. According to what have been mentioned above for poor knowledge of health benefit of dairy and dairy products there were a number of studies found similar results [29, 30].

Nutritional status of the students revealed that majority of the student fall under normal body weight BMI (18.5-24.9) and this probably explained by Forshee and *et al* decreased milk consumption was associated with change in the body weight and it was indirectly linked to wrong food choices and negative dietary patterns [14]. Although in current work as many as 82% of the students were drink milk so that the normal body weight found in this study was in parallel with high number of milk and dairy products consumer which prevent development of obesity. Furthermore studies by Maryam and et al, and Ozdogan and et al conducts on university students and their result were conclusive that the majorities of the students have normal body weight [1, 2]. In addition, there was reported that a number of students have vitamin D deficiency and low hemoglobin values and this in part due to low consumption of milk and dairy products and habit of milk drinking with tea could contribute to less iron absorption.

This study suggested that nutrition interventions were important in improving the diet quality by changing the nutrition knowledge as well as food habits of the target population. Furthermore, this study need further validated in large samples.

5. Conclusion

This study conducts on students from medical faculties braches and the result of this study revealed that students consumed one serving of milk on the daily basis , consumed whole fat milk and habit milk consumption significant was with tea. Although, vitamin D deficiency and low levels of hemoglobin were common. In regard milk knowledge, high nutritional knowledge scores have been revealed among students but poor knowledge were reported regarding health benefit of milk and dairy products consumption except for oral health. The result of nutritional status by BMI indicated majorities of students fall under normal BMI. This data suggested that high nutritional knowledge and poor health benefit knowledge need to be further investigated. Its highly recommended that students should be educated for the daily recommended intake of milk and dairy products in order to achieve good health and vitamin D status.

Compliance with ethical standards

Acknowledgments

We are grateful to all subjects who participated in the study.

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

All of the procedures involving human subjects were approved by local Medical Ethics committee. Written consent was obtained from the students before begun of the study.

References

[1] Maryam F, Chughtai A, Iqbal S, Tahir SK. Impact of nutrition education interventions on milk consumption among students (20-22 years). Life Science Journal of Pakistan. 2019; 1(1): 34-39.

[2] Yahya O, Hülya Y, Ayse OO. Young adults' milk consumption habits and knowledge about milk. Studies on Ethno-Medicine. 2017; 11(1): 106-113.

[3] Dietz WH, Gortmaker SL. Preventing obesity in children and adolescents. Annu Rev Public Health. 2001; 22: 337-53.

[4] Dror DK. Dairy consumption and pre-school, school-age and adolescent obesity in developed countries: a systematic review and meta-analysis. Obes Rev. 2014; 15(6): 516-27.

[5] Huncharek M, Muscat J, Kupelnick B. Impact of dairy products and dietary calcium on bone-mineral content in children: results of a meta-analysis. Bone. 2008; 43(2): 312-21.

[6] Bonjour JP, Kraenzlin M, Levasseur R, Warren M, Whiting S. Dairy in adulthood: from foods to nutrient interactions on bone and skeletal muscle health. J Am Coll Nutr. 2013; 32(4): 251-63.

[7] Soedamah-Muthu SS, Ding EL, Al-Delaimy WK, Hu FB, Engberink MF, Willett WC. Milk and dairy consumption and incidence of cardiovascular diseases and all-cause mortality: dose-response meta-analysis of prospective cohort studies. Am J Clin Nutr. 2011; 93(1): 158-71.

[8] Jafari F, Beladian-Behbahan SE, Samadpour M. Application of the stages of change model to dairy consumption among students of Shahrekord University of Medical Sciences. Journal of Shahrekord University of Medical Science. 2014; 15(6): 65-74.

[9] Rizzoli R. Dairy products, yogurts, and bone health. Am J Clin Nutr. 2014; 99(5): 1256S-62S.

[10] Çetinkaya A. A survey of the consumption habits of milk and milk products among the students in Kafkas University, Ataturk University. J Vet Sci. 2010; 5(2): 73-84.

[11] Mozaffarian D. The great fat debate: Taking the focus off of saturated fat. J Am Diet Assoc. 2011; 111(5): 665-666.

[12] Claeys WL, Verraes C, Cardoen S, De Block J, Huyghebaert A. Consumption of raw or heated milk from different species: An evaluation of the nutritional and potential health benefits. Food Control. 2014; 42: 188-201.

[13] Ruka S, Kenji T, Rie A. Nutritional knowledge, food habits and health attitude of Chinese university students –a cross sectional study. Nutr J.2005; 4(4): 15-20.

[14] Pei-Lin H. Factors influencing students' decisions to choose healthy or unhealthy snacks at the University of Newcastle, Australia. J Nusr R. 2004; 12(2): 83-91.

[15] de Goede J, Soedamah-Muthu SS, Pan A, Gijsbers L, Geleijnse JM. Dairy consumption and risk of stroke: a systematic review and updated dose response meta-analysis of prospective cohort studies. J Am Heart Assoc. 2016; 5(5): 123-132.

[16] Rice BH. Dairy and cardiovascular disease: a review of recent observational research. Curr Nutr Rep. 2014; 3: 130-8.

[17] Qin LQ, Xu JY, Han SF, Zhang ZL, Zhao YY, Szeto IM. Dairy consumption and risk of cardiovascular disease: an updated meta-analysis of prospective cohort studies. Asia Pac J Clin Nutr. 2015; 24(1): 90-100.

[18] Lampe JW. Dairy products and cancer. J Am Coll Nutr. 2011; 30(5 Suppl 1): 464S-70S.

[19] Miller GD, Jarvis JK, McBean LD. Hand book of Dairy foods and nutrition. 3rd ed. London: Taylor & Frances Group. 2007.

[20] Abargouei AS, Janghorbani M, Salehi-Marzijarani M, Esmaillzadeh A. Effect of dairy consumption on weight and body composition in adults: a systematic review and metaanalysis of randomized controlled clinical trials. Int J Obes (Lond). 2012; 36(12): 1485-93.

[21] Alwerfaly, M, Tarkhan A, Alzowi S, and Elmabsout AA. Ketogenic Diet Practices for Weight Management and Health Outcomes. International Journal of Applied Sciences: Current and Future Research Trends. 2021; 10(01): 16-30.

[22] Faghih A, Anoosheh M, Ahmadi F, Ghofranipoor F. The effect of boy students' participation on consumption of milk and dairy. Hormozgan Medical Journal. 2007; 10(4): 349-56.

[23] Hosseini, Z, Gharlipour G, Zabihollah MS, Sharifirad G, Mohammadbeigi AZ. Associated factors of milk consumption among students: Using Health Belief Model (HBM). 2017; 5: 4439-4448.

[24] Trave, T. Intake of milk and dairy products in a college population. Nutrición hospitalaria : organo oficial de la Sociedad Española de Nutrición Parenteral y Enteral. 2008; 23: 89-94.

[25] Hosseini Z, Gharlipour Z, Mohebi S, Sharifirad Gh, Mohammadbeigi A, Kazazloo Z. Associated Factors of Milk Consumption among Students: Using Health Belief Model (HBM). Int J Pediatr. 2017; 5(2): 4439-48.

[26] Mahon AK, Haas EJ. A mixed-methods approach to targeting college students' dairy behaviors. American Journal of Health Behavior. 2013; 37(5): 703-10.

[27] Lee, L, Jung I. A Study on Consumption Behavior of Milk and Dairy products in College Students. Journal of the Korean Society of Food Culture. 2002; 17: 123-134.

[28] Stearns SF, Rabinowitz AN. Understanding Milk Consumption Habits Among College Students in Order to Redesign Outreach. Journal of Extension. 2021; 59(2): 1-9.

[29] Rose AM, Williams RA, Rengers B, Kennel JA, Gunther C. Determining attitudinal and behavioral factors concerning milk and dairy intake and their association with calcium intake in college students. Nutrition Research and Practice. 2018; 12(2): 143-148.

[30] Kim SH, Kim WK, Kang MH. Relationships between milk consumption and academic performance, learning motivation and strategy, and personality in Korean adolescents. Nutr Res Pract. 2016; 10(2): 198-205.