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INFLUENCE OF RASHAQA INSTRUCTIONS, 2030 ON BEHAVIORS OF FEMALE STUDENTS OF DEPARTMENTS OF HOME SCIENCE EDUCATION AND KINDERGARTEN, UMM AL-QURA UNIVERSITY, MAKKA, SAUDI ARABIA

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ABSTRACT

College students' prosperity advancing and harming behaviors are vital and include numerous parameters as eating and healthy habits. The activities of 185 undergraduate Saudi female university students from departments of Home Science Education (n=82) and Kindergarten (n=103), faculty of Education, UMM AL- QURA University, Makkah, Saudi Arabia were reported. Data was collected using self-administered questionnaires. Students in departments exposed to information on proper nutrition and healthy behavior through their learning period at university. Researcher compared differences between students of both departments on eating of breakfast, junk foods, fruits, vegetables, sweets and soft drinks; and healthy habits as brushing teeth, sleeping hours, smoking, sports, engagement in physical activity, duration spent watching TV and interacting on social media. Data were collected from April to October 2019 and compared. Results showed that students in the Department of Home Science Education had significantly higher levels of body mass index (BMI) (P= 0.002), total body weight (P= 0.002) using unpaired student "t" test, significantly higher increase of body weight since beginning of university study (P =0.026), spent significantly more free time watching TV per week days (P =0.013), spent significant more free time on social media at days of week (P =0.002); significantly higher chances of eating supper with their parents (P =0.004) and significantly more sleeping hours (P =0.005) *versus* those in Kindergarten Department. Skipping breakfast and snack pattern were common among Saudi university students. This study showed insignificant difference in other health related behaviors between students of Home Science Education and Kindergarten departments as eating breakfast during the week (P =0.293), days of eating breakfast (P =0.547), eating fast food during week (P =0.195), days of eating fast food (P =0.666) and bowel problems (P =0.109) using Chi-Square test. There was insignificant difference in fast foods intake (P =0.195), engagement in physical activities (P =0.163), intake of vegetables (P =0.370) and fruits (P =0.876) between students in both departments using Chi-Square test. Results indicated that behaviors to health-related habits are bad among female students of both Home Science Education and Kindergarten departments and this may be due to the fact that students living alone had more difficulties in adapting to healthy diets. These habits require more than having only knowledge about nutrition. A health program is required to elevate awareness and increase good behavior habits among students of Faculty of Education at UMM AL- QURA University, Makkah, Saudi Arabia as they are the future teachers.

Key words: Eating habits, Health behavior, Faculty of Education, Saudi students, Female

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INTRODUCTION

University students represent future decision-makers in communities and nations [1]. College years are the time when undergraduate students increasingly do independent selections regarding their lifestyle and health practices [1]. College life also stresses students during their academic studies in spite of financial constraints [2]. Stressors and experiences of 'freedom' from parental restrictions lead to development of risky lifestyles. Some habits acquired during university study could be temporary, while others continue and could be responsible for health problems afterward [3]. University students have many unhealthy lifestyles such as frequent eating of snack foods [3-5], convenience foods [6], fast foods [7] and inadequate intake of vegetables and fruits [4].

Starting university is an important time in life, as it is the time of raised responsibility about food choices and healthy lifestyle practices; meanwhile most young adults often do not have experience of food shopping and of preparation of meals. The most common influences of food choices in these young people include changes in lifestyle, financial resources and increased accessibility to fast foods [8].

University students represent a large number of emerging adults [9] who are expected to fulfill influential roles in the society as policy makers, teachers and other professionals [10]. Although it is suggested that one's behavior is better with much health awareness [11], another research revealed that changing attitude and behavior could not be done through acquisition of only knowledge [12].

As Home Science Education Department teaches school students proper nutrition and healthy behavior, while Kindergarten Department has a major role in implanting ideal nutrition and healthy habits among kindergarten children, this study was carried out to investigate and compare health-related dietary habits and life style behavior among the female students of Departments of Home Science Education and Kindergarten, Faculty of Education at UMM AL- QURA University, Makkah, Saudi Arabia according to Saudi Arabia's Ministry of Health program of School-Based Obesity Control (Rashaqa) instructions, 2030 to decrease obesity rate among students.

METHODS

The study adopted a cross-sectional study design. The study site was UMM AL-QURA University, Makkah, Saudi Arabia. This is in the West Region of Saudi Arabia. The university began in 1949. Faculty of Education began in 1962 and consisted of 11 departments. In Saudi Arabia, the male and female students were separated. All female students attending Home Science Education and Kindergarten departments from April to October, 2019 were invited to participate in this study. RASHAQA instructions were only offered to students in these departments. One hundred and eighty-five students ≥18 years, 82 from Home Science Education department and 103 from Kindergarten Department, participated after explaining the research objectives to them and consenting to participate in the study. The samples represented all the students from both departments during the study period. Female students in both departments who declined to fill the questionnaire or failed to return or complete it were excluded from

the study. Self-administered previously validated questionnaire [13] was randomly distributed to students electronically. Answering an online questionnaire was considered agreed consent. The questionnaire was translated to Arabic to reduce language barrier.

The questionnaire was evaluated by Faculty of Education members and they chose 22 items that were compatible with Saudi community habits. Questionnaire reliability was assessed using Cronbach's alpha of 0.715. The questionnaire was divided into several parts [healthy habits, dietary habits, exercise, spend free time and bad heath habits].

Statistical analysis

Data were analyzed using IBM SPSS Statistics for Windows, version 23 (IBM SPSS, IBM Corp., Armonk, N.Y., USA). Data expressed as mean +/- standard deviation (minimum–maximum) or frequency (%). Differences between groups were made using Pearson's Chi-Square test for categorized and unpaired students' "*t*" test for parametric data. *P*- value <0.05 was considered significant.

RESULTS AND DISCUSSION

Body mass index was significantly higher in Home Science Education students than Kindergarten department students (P =0.002) based on Pearson's Chi-Square test. Body mass index category was underweight (≤18 kg/m^2), normal weight (18-24.9 kg/m^2), overweight (25- <30 kg/m^2) and obese (≥30 kg/ m^2). Nutritional status based on the body mass index categories were (12%, 50%, 21%, 17%) in Home Science Education department students and (18%, 58%, 19%, 5%) among the Kindergarten department students, respectively. The differences in the results were significant between the students in the two departments (P=0.004) based on Person Chi-Square test. In Home Science Education and Kindergarten department students, eating breakfast was 79% and 75%, respectively. Most students of Home Science Education and Kindergarten departments ate fast food (89%, 84%), mostly 3 days /week among Home Science Education (31%) and 2 days/ week among Kindergarten department students (28%) (Table 1).

Based on BMI classification, normal weight and underweight were more prevalent among Kindergarten department students (58% and 18%, respectively) than Home Science Education students (50% and 12%, respectively), whereas, overweight and obesity were more common between Home Science Education (21% and 17%, respectively) than Kindergarten department students (19% and 5%, respectively). In Kingdom of Saudi Arabia, obesity among adults was 3% [14]. High prevalence of overweight (32%) and obesity (9%) was found among 842 university students in Kuwait [15]. A Canadian research showed that 23% of college undergraduate students were either obese or overweight [16, 17]. Kingdom of Saudi Arabia population had significant alteration in lifestyles due to quick socio-economic changes and urbanization, extensive utilization of cars and expanded use of social media [18]. The socio-economic outcomes of overweight/ obesity are terrible self-image that caused decline in self-esteem [19]. The better eaters had more knowledge about nutrition as they tend to eat healthy foods [20]. In this study, majority of students ate breakfast

(77%) contrary to EL-Qudah *et al*. [21] who reported that about 16% of Saudi university students did not take breakfast. About 84% of French students took breakfast almost daily, compared with 62% in UK and 76% among all European countries [22]. Breakfast is the most important meal as it provides students with adequate energy for raised learning abilities [23]. Unhealthy eating behaviors of students were reported in fast food intake during the week (86%), mostly 2-3 days/ week. Frequent eating of fast food adversely affects students' health, given abundance of energy dense and high fat ingredients they include in their food.

About 32% of students in this present study had bowel problems that indicated the adverse effects of fast food. The prevalence of fast meals consumption at Washington University, St Louis, MI, USA was found to be three or greater times/ week [7] and *"at least many times/ week"* [4] among university students in four European countries (Germany, Denmark, Poland and Bulgaria), and 3-4 times/ week or more [5].

Values found among medical students in University of Silesia, Poland, in different studies, ranged from 20% in Polish college students [5] to 46% in USA college students [7]. Higher fast meals consumption linked with decline in fruit and vegetables intake in USA [7] and decrease in diet quality have been reported from studies done in Melbourne, Australia [6].

In regards to the frequency of eating fruits between Home Science Education department students mostly ate <once/week (29%), while Kindergarten department students mostly ate 2-4 times/ week (25%). Home Science Education and Kindergarten departments' students mostly ate 2-4 times/week vegetables (33%, 25%), sweets (23%, 35%) and drank soft drinks (23%, 28%) (Table 2).

Fruits and vegetables play an important role in reducing caloric density, due to accelerated water and fiber contents [24]. Most students in this study ate fruits 2-4 times/ week (26%) and vegetables (29%). World Health Organization (WHO) and UK guidelines suggest minimum consumption of 5 portions of fruits and vegetables daily. Average daily consumption by college undergraduate students in the United Kingdom showed a consumption pattern which ranged from 2.2-3.8 portions daily [25]. Vegetable consumption is little in most of Saudi diets, as many Saudis eat fruits after meals [26]. In USA, 8% of university students reported consuming ≥5 vegetables and fruits daily [3]. In Hong Kong, 36% and 34% of female and male university students ate 2-4 fruit servings daily and 55% and 41% ate 3-5 vegetables servings daily [27].

Consumption of sweets in our study was mostly 2-4 times/ week (30%) and soft drinks were 2-4 times/ week (27%). Hong Kong study revealed that they limit utilization of sugars and food that had sugar (23% female and 29% males) [27]. Diets high in sugar are believed to be responsible for dyslipidemia, insulin resistance and type 2 diabetes mellitus [28]. Collison *et al*. [29] reported positive association between sugary drinks utilization and waist circumference and body mass index (BMI) in Riyadh City (KSA) between 10–19 years old male students. Significant decline in eating vegetables, fruits, pulses and fish, and more consumption of fast foods and fries have been reported among students [30].

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Most Home Science Education and Kindergarten Departments students ate supper with their parents 5-6 times/ week (31%, 44%, respectively) and the difference was significant (P=0.004) using Pearson's Chi-Square test. However, these percentages declined to <once/ week in both groups in having breakfast with family.

The results of this study revealed that most of the students ate in the evening with their families, while taking breakfast with family was low. Al-Rethaiaa *et al*. [26] reported negative association in-between BMI and consuming foods with family among health sciences students in Saudi university. Amin *et al*. [31] reported positive association between BMI and eating food away from family.

Many mechanisms exist for positive hyperlinks between eating with family and youth nutrition such as presence of different healthy food choices at home, family discussions with family members about healthy nutrition, and/or parental modeling healthful food ingestion [32].

Students of Home Science Education thought that their body weights were increasing since the university study began (35%) while, Kindergarten department students thought that their body weights decreased (42%). Sleeping hours were mostly 8 hours/day in Home Science Education department students (29%), while 6 hours in Kindergarten department students (26%), with significant difference between them (P=0.005) using Pearson's Chi-Square test. About 6% of Home Science Education students and 2% Kindergarten department students had sleep troubles with significant differences between them (P=0.033) (Table 3).

Only about half of the students from both departments believed that their weights were normal. Many studies revealed that undergraduate students tend to gain weight during their college time, with weights declining after the first year [7]. They mostly gain weight during their first year then it declines, probably for ignored traditional eating, lifestyle changes, going to cafés and fast-food restaurants and hormonal disorders related to decreased sleeping hours [33]. Results of this study revealed that majority (68%) of students never used hypnotics or had sleep problems. Students of Home Science Education department (29%) had sleep hours of 8 hours/ day while, those of Kindergarten department (26%) slept 6 hours/ day. In USA, 71% of students reported getting satisfactory sleep to wake sensation of rested sleep with minimum 5 of proceeding 7 days [3]. In Hong Kong, about 26% of males and 26% of females reported that they had satisfactory sleep [1]. Learning capacity of working students was negatively affected by being tired and sleepy [34]. Educational programs adapted to sleep hygiene should be one of educational curriculum needs.

There was significant difference between Home Science Education and Kindergarten departments' students on watching TV/week (P=0.013) using Pearson's Chi-Square test and on engagement in social media (P=0.002) using Pearson's Chi-Square test with Home Science Education department students spending more time than Kindergarten department students.

Physical activity is necessary for normal growth and development. This present study revealed that majority of our students (41%) never did any form of exercise. Most Saudi adolescents (71%) and children (60%) were physically inactive [35]. Keating *et al*. [36] reported that 40–59% of undergraduate students were physically inactive in meta-analysis study. In USA, 44% of students reported requirement of international physical activity rules as documented by the Health government [3]. Lee and Loke [27] reported 69% of college undergraduate students at Hong Kong engage in any type of physical activities and 14% of undergraduate students exercised regularly. Students living alone spend little time to engaging in exercise according to a study done in Southern Italy [37].

Most of Kindergarten departments' students in this study showed that they spent a few periods watching TV, playing on social media. This can be clarified by their nature of study. Other studies had reported that in spite of 42% of obese and overweight cases among undergraduate students, most of the cases were found among undergraduate students who spent 2–4 hours/ daily watching TV compared to those who spent 4-6 hours watching TV [18, 24].

In this present study, 95% of students never smoked. Most of Home Science Education and Kindergarten departments' students never smoked cigarettes (96% and 93%) or Shisha (92% and 97%). Other studies had reported high prevalence of non-smokers among students in Lithuania (76%), Germany (76%), Spain (68%) [38] and USA (65%) [3]. In Jordan, 35% of university students were current smokers [39].

These study limitations were probably due to small numbers of students. This study used subjective self-reported data which could present inaccuracies in information provided due to social desirability and recall bias. Future research should attempt to address these limitations.

CONCLUSION

This study revealed an insignificant difference of lifestyle among Home Science Education and Kindergarten departments' students. Knowledge about healthy lifestyle and nutrition only is insufficient for changing behavior to health-related issues. Only few students had good dietary habits such as taking fruits and vegetables and engagement in physical activity. Most undergraduate students had bad behaviors such as eating fast foods and spending free time on social media. These results revealed that moving away from family home and being responsible for food preparation and purchasing unhealthy food at university time affect dietary habits among University students. As altering of adults' behavior begins from altering the students' behavior, so Faculty of Education should teach their undergraduate students how to have healthy life by increasing their behavior-changing awareness. There should be programs and courses in addition to studying curriculum as these can assist them to change their attitudes and behaviors. Health risks related to unhealthy behaviors in the youth contribute to the development of health hazards in later life.

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Table 1: Demographic characteristics, eating habits and bowel problems among the participants

Items	**Total** (n= 185)	**Home Science Education department students** (n= 82)	**Kindergarten department students** (n= 103)	**P- value**
Weight (kg)	56.23±13.78 (37-108)	59.76±15.19 (37-108)	53.43±11.89 (38-98)	**0.002**
Height (cm)	155.99±6.42 (136-175)	156.50±7.73 (136-175)	155.59±5.15 (137-169)	041
Body mass index (kg/m^2)	23.06±5.13 (13.65-40.65)	244±5.54 (14.69-40.65)	22.04±4.56 (13.65-39.26)	**0.002**
Body mass index category				**0.004**
Underweight (≤18 kg/m^2)	25 (15%)	10 (12%)	18 (18%)	
Normal weight (18-24.9 kg/m^2)	101 (55%)	41 (50%)	60 (58%)	
Overweight (25- <30 kg/m^2)	37 (20%)	17 (21%)	20 (19%)	
Obese (≥30 kg/ m^2)	19 (10%)	14 (17%)	5 (5%)	
Eating breakfast during week				0.293
Never	43 (23%)	17 (21%)	26 (25%)	
Usually	142 (77%)	65 (79%)	77 (75%)	
Number of days of eating breakfast				0.547
0 day	21 (11%)	10 (12%)	11 (11%)	
1 day	10 (5%)	7 (9%)	3 (3%)	
2 days	32 (17%)	15 (18%)	17 (17%)	
3 days	36 (20%)	14 (17%)	22 (21%)	
4 days	16 (9%)	8 (10%)	8 (8%)	
5 days	70 (38%)	28 (34%)	42 (41%)	
Eating fast food during week				0.195
Never	26 (14%)	9 (11%)	17 (17%)	
Usually	159 (86%)	73 (89%)	86 (84%)	
Number of days of eating fast food				0.666
0 day	32 (17%)	12 (15%)	20 (19%)	
1 day	24 (13%)	12 (14.6%)	12 (11.7%)	
2 days	47 (25%)	18 (22.0%)	29 (28.2%)	
3 days	47 (25%)	25 (30.5%)	22 (21.4%)	
4 days	20 (11%)	9 (11.0%)	11 (10.7%)	
5 days	15 (8%)	6 (7%)	9 (8.7%)	
Bowel habits problems				0.109
No	125 (68%)	51 (62%)	74 (72%)	
Yes	60 (32%)	31 (38%)	29 (28%)	

Data were expressed as mean +/- standard deviation (minimum – maximum) or number (%) as appropriate. Significant between two groups was made using Pearson's Chi-Square test for non-parametric data and unpaired student "t" test for parametric parameters

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Table 2: Frequency of eating of fruits, vegetables, sweets and soft drinks among participants

Items	Never	< once/ week	Once/ week	2-4 days/ week	5-6 days/ week	Once /day / day	More than once/ day
How often you eat fruits							
Total (n=185)	25 (14%)	47 (25%)	37 (20%)	48 (26%)	8 (4%)	14 (8%)	6 (3%)
Home Science Education department students (n= 82)	9 (11%)	24 (29%)	15 (18%)	22 (27%)	4 (5%)	5 (6%)	3 (4%)
Kindergarten department students (n= 103)	16 (16%)	23 (22%)	22 (21%)	26 (25%)	4 (4%)	9 (9%)	3 (3%)
Pearson's Chi-Square	0.876						
How often you eat vegetables							
Total (n=185)	13 (%)	38 (21%)	33 (18%)	53 (29%)	15 (8%)	19 (10%)	14 (8%)
Home Science Education department students (n= 82)	5 (6%)	19 (23%)	9 (11%)	27 (33%)	8 (10%)	9 (11.0%)	5 (6%)
Kindergarten department students (n= 103)	8 (8%)	19 (18%)	24 (23%)	26 (25%)	7 (7%)	10 (10%)	9 (9%)
Pearson's Chi-Square	0.370						
How often you eat sweets (chocolate, candy, etc.)							
Total (n=185)	3 (2%)	28 (15%)	21 (11%)	55 (30%)	28 (15%)	29 (16%)	21 (11%)
Home Science Education department students (n= 82)	2 (2%)	17 (21%)	10 (12%)	19 (23%)	16 (20%)	8 (10%)	10 (12%)
Kindergarten department students (n= 103)	1 (1%)	11 (11%)	11 (11%)	36 (35%)	12 (12%)	21 (20%)	11 (11%)
Pearson's Chi-Square	0.085						
How often you drink soft drink							
Total (n=185)	49 (27%)	35 (19%)	16 (9%)	48 (26%)	16 (9%)	9 (5%)	12 (7%)
Home Science Education department students (n= 82)	18 (22%)	16 (20%)	8 (10%)	19 (23%)	11 (13%)	3 (4%)	7 (9%)
Kindergarten department students (n= 103)	31 (30%)	19 (18%)	8 (8%)	29 (28%)	5 (5%)	6 (6%)	5 (5%)
Pearson's Chi-Square	0.313						

Data were expressed as number (%). Significant between two groups was made using Pearson's Chi-Square test

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Table 3: Heath habits among the participants

Items	**Total** (n= 185)	**Home Science Education department students** (n= 82)	**Kindergarten department students** (n= 103)	**P- value**
On a diet or doing something else to lose weight				**0.104**
No, my weight is fine	80 (43%)	35 (43%)	45 (44%)	
No, but I should lose some weight	52 (28%)	28 (34%)	24 (23%)	
No, because I need to put on weight	28 (15%)	13 (16%)	15 (15%)	
Yes	25 (14%)	6 (7%)	19 (18%)	
Thinking about their body				**0.208**
Much too thin	13 (7%)	4 (5%)	9 (9%)	
A bit too thin	41 (32%)	18 (22%)	23 (22%)	
About the right size	63 (34%)	27 (33%)	36 (35%)	
A bit too fat	61 (33%)	27 (33%)	34 (33%)	
Much too fat	7 (4%)	6 (7%)	1 (1%)	
Body weight since the beginning of the university study				**0.026**
Increased	46 (25%)	29 (35%)	17 (17%)	
Decreased	67 (36%)	24 (29%)	43 (42%)	
No differences	40 (22%)	15 (18%)	25 (24%)	
Don't know	32 (17%)	14 (17%)	18 (18%)	
Brush the teeth				0.116
More than once/ day	121 (65%)	49 (60%)	72 (70%)	
Once /day	62 (34%)	33 (40%)	29 (28%)	
At least once a week but not daily	2 (1%)	-	2 (2%)	
Dental problem in the last year				0.412
Yes	75 (41%)	32 (39%)	43 (42%)	
No	110 (60%)	50 (61%)	60 (58%)	
Sleeping hours/ day				**0.005**
≤ 5 hours	35 (19%)	8 (11%)	28 (25%)	
6 hours	42 (23%)	15 (18%)	27 (26%)	
7 hours	32 (17%)	19 (23%)	13 (13%)	
8 hours	37 (20%)	24 (29%)	13 (13%)	
9 hours	15 (8%)	7 (9%)	8 (8%)	
≥ 10 hours	24 (13%)	8 (10%)	16 (16%)	
Had sleep troubles that you had to use hypnotics in the last year				**0.033**
Yes	7 (4%)	5 (6%)	2 (2%)	
Never	126 (68%)	61 (74%)	65 (63%)	
No, I don't use but I have sleep trouble	52 (28%)	16 (20%)	36 (35%)	

Data were expressed as number (%). Significant between two groups was made using Pearson's Chi-Square test

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