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Lifestyle and nutrition of the Gulf countries students living in the UK

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Abstract: This paper reports findings from a cross-sectional study carried out in May- July 2022 among international students from the Gulf Cooperation Council Countries (GCC) enrolled at British University in the United Kingdom. The study aimed to examine the influence of lifestyle and nutrition and the impact on health among Arab students in the UK in comparison with their home country. In total, 80 students from two countries (Saudi Arabia and Kuwait) participated. Students who perceived dietary change since moving to the UK was 68.9%. The most common reason for dietary changes was time constraints, followed by food availability, food cost and type. A significant change was observed in the consumption of sugary drinks, sweets and/or chocolates, cakes, doughnuts, and frequent eating in restaurants among students after moving to the UK. Duration of walking significantly increased by the students in the UK in comparison to home country. The present study shows that international students from the Gulf countries faces different factors influence their dietary practice. Time constraints, price, availability of the food to be barriers to maintaining usual eating patterns. University hosting international students can alleviate some of these issues experienced by students, for example, by providing information on the location of retailers in the area of the university selling good quality fresh products at a reasonable price.

Keywords: Dietary habits, international students, Lifestyle, nutrition.

نمط الحياة والتغذية لطلاب دول الخليج الذين يعيشون في المملكة العربية السعودية

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المستخلص: تعرض الدراسة نتائج دراسة مقطعية أجريت في مايو - يوليو 2022 بين طلاب دول مجلس التعاون الخليجي (GCC) الدراسيين في الجامعات البريطانية في المملكة المتحدة. تهدف الدراسة إلى قياس تأثير نمط الحياة والتغذية على صحة الطلاب في المملكة المتحدة مقارنة ببلدهم الأم. تم تعبئة الاستبيان من قبل 80 طالبًا وطالبة من (المملكة العربية السعودية والكويت). 68.9٪ من الطلاب وجدوا ان السبب الأكثر شيوعًا للتغييرات الغذائية هو ضيق الوقت، يليه توافر الغذاء وتكلفة الطعام ونوعه. لوحظ تغيير كبير في استهلاك المشروبات المحلاة والحلويات و / أو الشوكولاتة والكعك والدونات وتكرار تناول الطعام في المطاعم بين الطلاب بعد الانتقال إلى المملكة المتحدة. زادت مدة رياضة المشي بشكل كبير بين الطلاب في المملكة المتحدة مقارنة بالبلد الأم. تظهر الدراسة الحالية أن طلاب دول الخليج يواجهون عوامل مختلفة تؤثر على ممارستهم الغذائية. القيود الزمنية والسعر وتوافر الغذاء تشكل حاجز أمام الحفاظ على أنماط الأكل المعتادة. يمكن للجامعة التي تستضيف الطلاب الدوليين التخفيف من بعض هذه المشكلات التي يواجها الطالب، من خلال توفير معلومات حول موقع تجار التجزئة في منطقة الجامعة التي تبيع منتجات طازجة ذات جودة عالية وبسعر معقول.

الكلمات المفتاحية: العادات الغذائية ، الطلاب الدوليون ، أسلوب حياة ، التغذية.

Introduction

Internationalization in the area of higher education is increased globally. Universities attempt to gain international identity worldwide and make the students' profiles multinational in the globalizing world, while students want to receive a high education level as international students to ensure a qualified education and provide different educational experiences (ENTERİEvA & Sezgin, 2016). Global Students Mobility 2025 forecasts that by 2025 there will be 7.2 million international students studying abroad, compared to the students learning mobility (1.8) million in 2000 (Bohm, Davis, Meares, & Pearce, 2002). In the past few decades, the GCC countries have expanded their higher education provision in a short time. The number of students from Gulf countries desiring to study abroad has increased remarkably in recent times (David et al., 2017). Saudi Arabia has the highest number of students studying abroad among the GCC countries with 1.8%, followed by Kuwait and Oman with 0.3%, Emirate with 0.3 % and Bahrain and Qatar with 0.1% respectively. The United Kingdom and America, Australia and Canada show to be the desired destinations for students from the GCC countries (David et al., 2017).

University life for international students is a dynamic process in which biological, psychological and social changes that direct young people's lives are experienced intensely (Al-Qahtani, 2019). The educational migration of international students for a better livelihood can provide good opportunities but also includes some risks. In this period, international students may adopt the customs and cultural norms of the host country. Adopting these customs and cultures may affect their food practice and choice, and can lead to change in the students eating behaviour (A. Alakaam & Willyard, 2020; Almoraie, 2018). International students interact every day with different students from different backgrounds and cultures, and due to the multicultural nature of the university environment, student's attitudes and beliefs could interact with their originally acquired values (A. A. H. Alakaam, 2016). There have been some studies concerning nutrition adaptation and its health effect on international students in western countries such as the USA, UK and Canada: dietary habits of international students and knowledge of food practices and preferences (Almohanna, Conforti, Eigel, & Barbeau, 2015). This is because the diet in western countries normally consists of a high amount of sugar, salt, saturated fat, and calories and the availability of ready meals which is all unhealthy choices. Furthermore, many several challenges may face these students such as lack of communication, lack of knowledge and a language barrier (Almoraie, 2018).

Some studies support the hypothesis that international mobility affects students' health and lifestyle behavior. A study conducted in the USA found that students' health behaviors changed as a result of worldwide mobility. A study conducted in Australia concluded that international students' health and well-being were more negative than the well-being of national students.

The nature of studying abroad needs students to move from their home countries to live within a host university community where they often adopt the host culture. This transition to a new culture can have positive or negative impacts on student health lifestyle. No previous study examines diet and health behavior of students from GCC countries living in the United Kingdom and how acculturation can efface

on their healthy lifestyle. International students may have diverse health beliefs and habits due to different circumstances (ALKAN, Özdelikara, & Boğa, 2017; Deasy, Coughlan, Pironom, Jourdan, & Mcnamara, 2014). It was hypothesised that homesickness, culture shock, studying, stress and Changes in eating habits can influence the lifestyle and nutrition. Thus, this study aimed to examine the influence of lifestyle and nutrition and the impact on health among GCC students living in London, UK in comparison with their back home.

Methods

Study design

A cross-sectional study was conducted over three months, from mid of May to the end of July 2022 to examine the influence of lifestyle and nutrition on health among Gulf countries (Saudi Arabia, Kuwait, Oman, Qatar, United Arab Emirate, Bahrain). The participants were students included male and female (N=80, and aged 18 and above) living in London and studied at King' College London (KCL), UK. Participants were eligible to participate if they were from the GCC countries and currently lived in the London for more than three months. Online questionnaire was used and the sample size was calculated, so the sample proportion would be within ± 0.05 of the population, a 90% confidence level.

The sample size n and margin of error E are given by

$$x = Z(^{c}/_{100})^{2} r(100-r)$$

$$n = {}^{Nx}/_{((N-1)E^{2}+x)}$$

$$E = \mathrm{Sqrt}[{}^{(N-n)x}/_{n(N-1)}]$$

Where N is the population size, r is the fraction of response that we are interested in, and Z/(c/100) is the critical value for the confidence level c.

Ethical approval for the study was obtained from the Taibah University Research Ethics Committee (TUCDREC Registration No:12042022). Each participant was given full details of the study protocol and they were informed all their data were protected and they may withdraw at any time from the study.

Data Collection

A validated questionnaire was used to collect information about demographics, dietary behaviour (quality and quantity of food, cooking and eating habits), contributing factors to food (social influence, poor nutrition information, food and grocery price, media influence, food quality and choices in the UK) and physical activity. The questionnaire was adapted from the Arab Teens Lifestyle (ATLS) questionnaire(Al-Hazzaa & Musaiger, 2011) and A pilot study was conducted on nine students which 10% of the total sample size to ensure the clarity of the questionnaire.

Statistical analysis

Categorical variables were shown as numbers and percentages (%) while continuous variables were summarized as mean and standard deviation. The comparison between the food consumption per week, physical activity, and screen time per week between the country of residence in the UK had been performed using paired sample t-test. Two-tailed analyses with $p<0.05$ were used to indicate statistical significance. All data analyses were performed using the statistical package for social sciences, version 26 (SPSS, Armonk, NY: IBM Corp, USA).

Results

Table 1: Socio-demographic characteristics of students (n=61)

Study Data	N (%)
Age group	
18 – 25 years	12 (19.7%)
26 – 30 years	10 (16.3%)
>30 years	39 (64.0%)
Gender	
Male	11 (18.0%)
Female	50 (82.0%)
Country *	
Saudi Arabia	29 (69.0%)
Kuwait	13 (31.0%)
Marital status	
Single	29 (47.5%)
Married	27 (44.3%)
Divorced	01 (01.6%)
Widowed	04 (06.6%)
Length of current stay in the UK	
Less than 1 year	16 (26.2%)
Between 1-5 years	37 (60.7%)
Between 5-10 years	08 (13.1%)
Enrollment status	
Part-time student	0
Full-time student	61 (100%)
Which best describes where you currently live?	
On-campus (Residence Hall)	01 (01.6%)
Off-campus housing (within 5 miles of campus)	44 (72.1%)
Off-campus (farther than 5 miles from campus)	16 (26.2%)
Which of the following apply to your living situation?	
Living alone	26 (42.6%)
Living with students	03 (04.9%)

Study Data	N (%)
Living with parents/guardians/ relatives/spouse	32 (42.5%)

*** Missing data were excluded from the analysis.**

A total of 80 students were included in the study and 61 responded to the questionnaire.

Table 1 shows the social-demographic characteristic of the students. Sixty-one students took part in this survey (82% females vs 18% males). As seen in Table 1, 64% were aged more than 30 years old with 69% of students being of Saudi nationality and 47.5% being single. Students with 1 to 5 years of UK stay constitute 60.7%. None of the students enrolment at the university as part-time. Nearly three-quarters (72.1%) lived outside campus housing (within 5 miles of campus) whereas 42.6% lived alone.

Table 2: Students' dietary changes after moving to the UK (n=61)

Variables	N (%)
Do you perceive dietary change since you moved to the UK?	
Yes	42 (68.9%)
No	07 (11.5%)
Maybe	12 (19.7%)
Do you think you have a healthy eating pattern in your home country?	
Yes	22 (36.1%)
No	23 (37.7%)
Maybe	16 (26.2%)
Do you think you have a healthy eating pattern in the UK?	
Yes	25 (41.0%)
No	22 (36.1%)
Maybe	14 (23.0%)
Are you concerned about the effects of your dietary pattern on your body weight?	
Yes	47 (77.0%)
No	10 (16.4%)
Maybe	04 (06.6%)
Are you concerned about the effects of your dietary pattern on your health status?	
Yes	48 (78.7%)
No	07 (11.5%)
Maybe	06 (09.8%)
Do you believe that food is of vital importance in determining your health?	
Yes	60 (98.4%)
No	01 (01.6%)
Do you consider the UK diet healthy?	
Yes	18 (29.5%)
No	23 (37.7%)
Maybe	20 (32.8%)
How much has the UK diet influenced your eating patterns?	
Very much	22 (36.1%)

Variables	N (%)
Somewhat	33 (54.1%)
Not at all	06 (09.8%)
How often do you only cook a native diet in the UK?	
Always	06 (09.8%)
Mostly	24 (39.3%)
Rarely	20 (32.8%)
Never	11 (18.0%)
How much has the UK diet influenced your buying/cooking pattern?	
Very much	24 (39.3%)
Somewhat	30 (49.2%)
Not at all	07 (11.5%)
Do you believe you are shifting to the UK diet?	
Yes	19 (31.1%)
No	42 (68.9%)

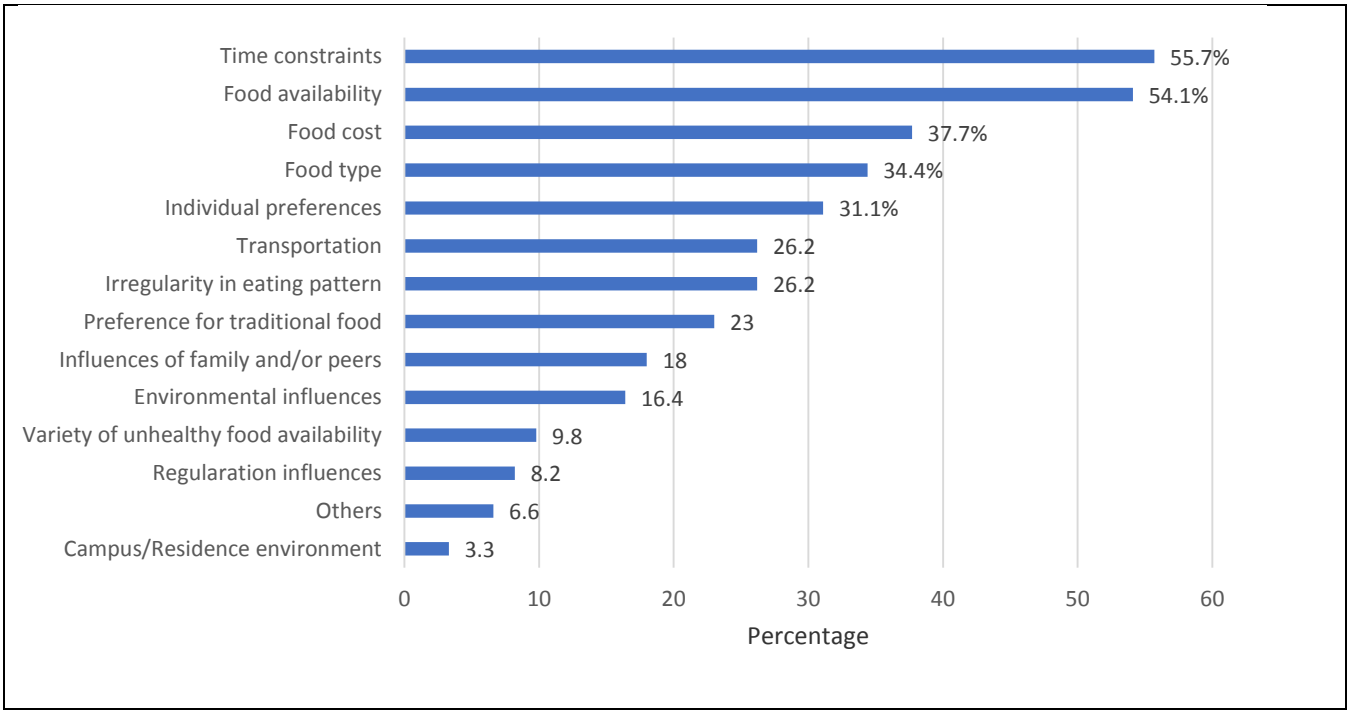

Figure 1: Reasons for dietary changes since moving to the UK

Table 2 illustrates the dietary changes of the students after moving to the UK. It can be observed that the proportion of the students who perceived dietary change since moving to the UK was 68.9%. Students who reported that the healthy eating pattern was better in their home country were 36.1% while students who reported that it is better in the UK were 41%. Students who expressed concerns about the effects of dietary patterns both on body weight and health status were 77% and 78.7%, respectively. Nearly all students (98.4%) believed that food is important in determining health status. Only 29.5% consider the UK diet healthy while 9.8% do not believe that the UK diet influences their eating patterns. Approximately, 18% of the students never cook a native diet in the UK whereas 11.5% of them never

influenced the UK diet in buying/cooking patterns. The proportion of students who consider shifting to the UK diet was 31.1%.

Figure 1 illuminates the reasons for dietary change since students moved to the UK. The most common reason for dietary changes was time constraints (55.7%), followed by food availability (54.1%), food cost (37.7%) and food type (34.4%), while campus/residence environment was the least reason (3.3%).

Table 3: Comparison of students' food consumption habits and frequencies, physical activity, screen time and sedentary lifestyles in their home countries and the United Kingdom (n=61)

Consumption of food per week	In your country Mean ±SD	In the UK Mean ±SD	P-value §
Breakfast	3.71 ± 2.38	3.76 ± 2.37	0.534
Fresh vegetables	4.25 ± 2.36	2.64 ± 1.53	<0.001 **
Fresh fruit	3.39 ± 1.95	3.80 ± 2.18	<0.001 **
Dairy products	4.71 ± 2.32	4.66 ± 2.17	0.486
Sugary drinks	1.88 ± 2.31	2.40 ± 2.32	<0.001 **
Sweets and/or chocolate	3.74 ± 2.14	4.12 ± 2.09	<0.001 **
Cakes, biscuits, doughnuts, or similar food	3.26 ± 2.27	3.56 ± 2.39	<0.001 **
French fries and/or potato chips	2.51 ± 1.59	2.63 ± 1.64	0.200
Frequent eating in a restaurant	1.43 ± 0.78	1.68 ± 1.16	0.006 **
Level of activity	2.57 ± 0.76	2.49 ± 0.85	0.488
Engage in moderate-intensity sports	0.86 ± 1.44	0.12 ± 0.33	<0.001 **
Engage in high-intensity sports	0.14 ± 0.52	0.00 ± 0.00	0.083
Walk regularly	1.75 ± 1.63	5.43 ± 1.76	<0.001 **
Watching TV or Video movies (hr/day)	2.21 ± 2.14	0.57 ± 0.89	<0.001 **
Use of computer or internet (hr/day)	5.00 ± 1.94	4.10 ± 2.02	<0.001 **

§ **P-value has been calculated using Paired sample t-test.**

** **Significant at p<0.05 level.**

Table 3 shows the comparison of students' food consumption habits, physical activity and screen time in their country and the UK. A higher frequency of consumption of fresh fruits (p<0.001), sugary drinks (p<0.001), sweets and/or chocolates (p<0.001), cakes, biscuits, and doughnuts (p<0.001) and frequent eating in a restaurant (p=0.006) had been reported by the students after moving to the UK while a higher frequency of consumption of fresh vegetables (p<0.001) was reported by the students while living in their home country.

Regarding the physical activity and sedentary lifestyle, a higher time engagement in moderate-intensity sports (p<0.001), watching TV or video movies per day (p<0.001), and use of computer or internet per day (p<0.001) was significantly reported by the student in their native country while a significant increase in the duration of walking regularly was reported by the students after moving to the

UK ($p<0.001$). No significant differences were observed in the level of activity and engagement in high-intensity sports in the native country or after moving to the UK ($p>0.05$).

Discussion

Numerous studies of the dietary practice of international students have highlighted several factors such as skipping meals (Ilow, 2005), frequent snacking (Willett et al., 1995) and low intake of fruits and vegetables (Mazıcıoğlu & Öztürk, 2003)`

This study aimed to examine the influence of lifestyle and nutrition and the impact on health among GCC students living in the UK in comparison with their home country.

International students might be exposed to cultural differences that result in acculturation. They have to cope with a different food culture, which may lead to changes in dietary habits (Satia-Abouta, 2003).

In this study, students perceived dietary changes since moving to the UK and the majority of them were concerned about their weight and health status. This is consistent with a study conducted among international students in British universities that reported health concerns mentioned as a reason for changes in dietary habits.(O'Sullivan & Amirabdollahian, 2016). This shows the several dimensions of factors affecting dietary habits, that contribute to the international students' dietary experience.

The food determinates that affected students' dietary practices in the present study included time constraints, food availability, cost and type of food (Figure 1). Such a situation links the time issue with food availability: taken together they may influence food choice as described in Shepherd's food choice model (Shepherd, 1999). A qualitative study conducted among international students and aimed to explore their dietary experience in British universities reported that busy schedules on weekdays caused more skipped meals because of the restricted time available for cooking(O'Sullivan & Amirabdollahian, 2016). Full academic schedules, assignment matters, and their fear of academic failure might be the main reasons for time restriction and students would prioritize their studying and disregard their diets [15].

Price was a discouraging factor that influenced students' food selection and dietary habits living in the UK. Students consumed more fresh vegetables in their home country compared to the UK. This is similar to the study by O'Sullivan et al., who found that the price effect determines health aspects in participants and they replace fresh groceries with cheaper options(O'Sullivan & Amirabdollahian, 2016).

Overall, consumption of sweet and chocolate, and sugary drinks increased and vegetable frequency consumption decreased among students after moving to the UK. This is consensus with the available literature in this field [17-20]. This could be explained by that the greater availability of (unhealthy) snacks and convinces meals contributing to decalin fresh vegetables and homemade food consumption and replacing that with fast food and take away meals.

Our study shows that students considered their home food healthier as 37% of them do not find the UK food healthy. This is the reason that, 39.3% of the students in the present study cook their native

food. In addition, Hartwell and Brown (2011) showed that international students tended to maintain their food culture, this is by making traditional food on their own or eating together with other students from their home countries. This opinion is agreed with the international students in Alakaam et al.s'(2015) study. The study by Alakaam and Willyard in 2020, shows that most students who preferred traditional foods to foreign foods moved to live in flats where they could cook for themselves. At the same time, it was easier for the students who preferred ready-to- eat meals, fast food, and convenience to adapt to the foreign food style. This is comparable to the findings by Cappellinie & Yen (2013) and Kermmyda et al (2008). Our study reveals that students eat at restaurants because of time constraints and approximately half of the students reported that the UK diet influences their cooking patterns(Cappellini & Yen, 2013; Kremmyda, Papadaki, Hondros, Kapsokefalou, & Scott, 2008).

Moreover, religion and personal values played important roles in food choices for example students who follow the vegetarian diet or Muslim students who eat only halal food it was difficult for them sometimes to meet their obligations because of the limited choices of this kind of food in universities campus which make them fall prey to unhealthy meals (A. Alakaam & Willyard, 2020).

Physical activity is vital to overall well-being. The findings of the present study indicated that there was a significant increase in the level of walking regularly among students after moving to the UK compared to their home country. The potential explanation is that the weather in the UK is better for practicing physical activity than in the Gulf countries where the hot weather is a barrier to being physically active (Almughamisi, O'Keeffe, & Harding, 2022). However, the fact that students have a higher time engagement in moderate-intensity sports in their country compared to the UK, could be a result of the busy schedule with their studies and university life. Busy schedules, lack of time as well as lack of social support are major barriers to physical activity (Gómez-López, Gallegos, & Extremera, 2010). Furthermore, a study conducted in Malaysia among 400 university students found that tiredness and exhaustion a key reasons for physical inactivity (Saleem et al., 2018).

In conclusion, the study indicates that international students from the Gulf countries encounter different factors influent their dietary practice. Time constraints, price, availability of food and type of food appear to be the barriers to maintaining usual eating patterns. University hosting international students can alleviate some of these issues experienced by students, for example, by providing information on the location of retailers in the area of the university selling good quality fresh products at a reasonable price.

Implications for Further Practice and Research

This study shows the experience of acculturation in the GCC international students' dietary practices while they are studying in the King' College London and how this differs from what they experienced in their home country. This helps to clarify the health problem that could arise when students are planning to study abroad.

Several reasons that affect the GCC international students' dietary experiences include time constraints, availability of food, prices and type of food. Other students who plan to study abroad might benefit from equipping themselves in areas such as receiving training on time management and improving food selection and preparation before leaving their home country.

Limited resources in the present study highlighted the need for expanded research. A big ample size from other geographical areas in the GCC country and different cities in the UK can help explore more dietary habits among international students living abroad. It is also important to contribute both gender equality in the study in the future and produce research that is more inclusive.

Qualitative studies might lead to clarifying the experience of students' health. Longitudinal studies are required to show long-term dietary experience along with any changes in dietary habits and factors influencing dietary practice.

However, this is the first study conducted among international students from the Gulf countries that showed the understanding of what students could face in terms of their dietary habits when studying oversea.

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Available of the data

The original contributions presented in the study are included in the article. Further inquiries can be directed to the corresponding author.

Conflict of Interests

The authors report no conflict of interests.

Author contributions

MA and AA collected the data, analysed the data and wrote the first draft. All authors reviewed and commented on the manuscript.

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