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Dietary Patterns among Khat Chewing Students at Jazan University, KSA

Research Article

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Abstract

Khat is a green leafy plant that is used in many countries including southwest of Saudi Arabia. Around one third of Jazan people chew Khat in which males represent the majority.

Aim: The purpose of the study was to evaluate the dietary patterns and the gender differences among Khat chewing students of Jazan University.

Methods: A cross sectional study conducted using a validated Food Frequency Questionnaire (FFQ) at the Applied Medical Sciences College. Male and Female Khat chewing students were involved between December 2019 to February 2020.

Results: One hundred and fifty five Khat chewing students participated, among them 124 (80.0%) were male and 31 (20.0%) were female. The most consumed food items by Khat chewing students were bread, cold drinks, and Masoub/Asseda. In addition, more than 50% of the participants consumed poultry, chicken and beef burgers, cream cheese. Our results also showed that male Khat chewers had significantly consumed more red meat, hot drinks and cold drinks, fruits, and vegetables than female. On the other hand, female Khat chewers had significantly consumed more bread and snacks than male Khat chewing students.

Conclusion: Khat chewing students followed unhealthy food habits. Educational sessions are highly advised to improve the nutritional practices.

Keywords: Diet; Food; Nutrition; Food habits; Food frequency questionnaire (FFQ); Dietary patterns; Khat (Catha edulis) and t-test

Introduction and Literature Review

Khat (Catha edulis) is a green leafy plant that grows in southwest of Arabian Peninsula and extends across the eastern and southern Africa [1]. Khat is prevalent in many countries such as Ethiopia, Yemen, Somalia, Turkestan, Afghanistan, Israel and south of Saudi Arabia 1&3. Patel has described the method of using the plant of khat. Chewers tend to consume its young leaves garden fresh and they swallow it's fluid and took off the rest in sessions manner. In each session, they chew around 100-500 gm of khat for an average of 3-4 hours per day [2]. The prevalence of Khat chewers in Jazan region, Saudi Arabia had around 33.2% and the majority of chewers were male 42.2% compared to female 11.3% [3]. Similarly, it was found that men have chewed khat more than women in many different countries such as in Yemen 82% men to 43% women; in Ethiopia 75% men to around 10 % women; and among Somali community in the United Kingdom 63% men to 17% women [1,4-8].

Khat was found to improve chewers mood, but caused alertness, hypertension, tachycardia, and reduced appetite [2]. In addition, Bani addressed the most common reported diseases in Jazan region such as hypertension, bronchial asthma, diabetes mellitus, and joint diseases [9]. Most of these diseases can be prevented by following healthy dietary patterns [10]. Khat chewers believe that consuming high calorie foods is important to stay in the stomach for a long time. This step is used to keep their satiety for a long time while they chew Khat because they typically chew Khat for at least five hours in every session [11]. Another study found that college students tend to consume less fruits and vegetables and more of French fries, Kabsa, Pizza, and sweets [12]. Hence, assessing Khat chewers food intake is essential to determine the need of nutrition interventions. As a Jazani resident who encounter with many Khat chewers, people tend to consume high calorie foods right before chewing Khat. So, this study would help to establish a start point to assess the Khat chewers dietary

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patterns, then fix it as need it to prevent the onset of nutrition-related diseases. This would be the first study to address the common food intake among Khat chewers. The aim of the study was to assess the dietary habits among students who chew Khat and also to find the gender differences of dietary patterns among khat chewers.

Methods

This is a cross-sectional study where a validated Food Frequency Questionnaire (FFQ) was distributed among Khat chewer students at Jazan University [13]. Male and female students were included. There were no exclusion criteria in this research except those whom do not chew Khat.

Sample size calculation

Sample size calculated by using Epidemiological Tools (EPITOOLS) calculator. The prevalence of Khat chewers in Jazan region, Saudi Arabia was around 33.2%3. At 5% level of significance, the desired sample size obtained 145 for a finite population of size 250 at Applied Medical Science College. Finally, 155 Khat chewers returned the filled questionnaires.

Statistical analysis

The filled questionnaire was collected in a database with Microsoft Excel 2010. The frequencies of individual food items of the food frequency questionnaire were transformed into number of servings per week (servings/week). The studies equated the number of times "consumption" to "proportions" [14,15]. As in the same way in the present study the frequency of consumption of each food item was transformed as follows. The frequency value "+6 times daily" was transformed to "49 times per week", "5-6 times daily" was transformed to "36 times per week", "2-4 times daily" was transformed to "28 times per week", "once daily" was transformed to "7 times per week", "5-6 times per week", was transformed to "6 times per week", "2-4 times per week" was transformed to "4 times per week", "once weekly" was transformed to "1 per week" and "1-3 times per month" was transformed to 0.75 times per week". Obtained data was analyzed through Statistical Package for Social Sciences (SPSS) 21.0 version. Independent student t-test for unequal variances was applied for finding the significance mean differences in the weekly consumption of food items between male and female Khat chewing students. P-value less than 0.05 was considered as statistically significant.

Results

One hundred and fifty-five Khat chewing students participated and filled out the questionnaires, among them 124 (80.0%) were male and 31 (20.0%) were Khat chewing female students (Figure 1).

According to the age distribution, the highest number of the students 126 were between 20-29 year-old. The male samples were103 (81.7%) and only 23 (18.3%) were Khat chewing female students. However, the least number 5 Khat chewing students were in the age group of younger than 20 year-old (Table 1).

Figure 2 shows the mean number of consumed food items per week. The most consumed food and beverages items were bread (4.58 servings/week), cold drinks (4.35 servings/week), traditional foods (Massoub/Aseeda) (4.19 servings/week), dairy products (3.92

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servings/week), rice/maccaroni/corn (3.69 servings/week), hot drinks (3.56 servings/week), poultry (3.53 servings/week), burgers (3.46 servings/week), snacks (3.43 servings/week), pizza and pastries (3.41 servings/week), low fat dairy (3.15 servings/week), vegetables (3.10 servings/week), potatoes (2.89 servings/week), fruits (2.83 servings/week), fish (2.81 servings/week), fat (2.61 servings/week) and meat products (2.21 servings/week).

Among the meat products, meat with broth was highly consumed compared to kabsa, grilled meat, kabab meat, camel meat and beef. Simple sugar sources such as bread, cold drinks, traditional foods, rice/maccaroni/corn were among the highest consumed food and beverage items.

Table 2 illustrates that the frequency of consumption is influenced by gender differences. Khat chewing male students reported a significantly larger consumption of meat products (2.52 servings/week, P-value 0.000), fish (3.17 servings/week, P-value 0.001), cold drinks (4.86 servings/week, P-value 0.001), fruits (3.17 servings/week, P-value 0.000) and vegetables (3.34 servings/week, P-value 0.02) respectively. Khat chewing male students reported a larger consumption but statistically not significant in pizza/pastries





Table 1: Age and GenderDistribution of Participants.

| Age (years) | Gender | | | | | |
|-------------|-------------|------------|--------------|--|--|--|
| | Male (%) | Female (%) | Total (%) | | | |
| <20 | 4 (80.0%) | 1 (20.0%) | 5 (100.0%) | | | |
| 20 - 29 | 103 (81.7%) | 23 (18.3%) | 126 (100.0%) | | | |
| ≥30 | 17 (70.8%) | 7 (29.2%) | 24 (100.0%) | | | |
| Total | 124 (80.0%) | 31 (20.0%) | 155 (100.0%) | | | |

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| Table 2: Mean Weekly Consumption (serv | rings/week) of Food and Beverage Items. |
|--|---|
|--|---|

| Foods | Gender | N | Mean | Std. Deviation | P-Value |
|---------------------|--------|-----|--------|----------------|---------|
| Most Draduate | Male | 124 | 2.5202 | 2.98760 | 0.000** |
| Weat Floducis | Female | 31 | .9607 | .45076 | |
| Boultry | Male | 124 | 3.7782 | 5.15334 | 0.084 |
| Fould y | Female | 31 | 2.5581 | 2.90302 | |
| Fich | Male | 124 | 3.1709 | 5.45927 | 0.001** |
| FISH | Female | 31 | 1.3407 | 1.14835 | |
| Dias/Massarani/Carn | Male | 124 | 3.3836 | 3.92083 | 0.295 |
| Rice/Maccaroni/Con | Female | 31 | 4.9294 | 7.85664 | |
| Prood | Male | 124 | 4.3553 | 4.69667 | 0.479 |
| Dieau | Female | 31 | 5.5060 | 8.63466 | |
| Dizze/Destries | Male | 124 | 3.5202 | 4.97960 | 0.682 |
| FIZZA/Fasilies | Female | 31 | 2.9435 | 7.36399 | |
| Datataa | Male | 124 | 2.8999 | 4.06067 | 0.963 |
| Folaloes | Female | 31 | 2.8360 | 7.34319 | |
| Maaaaub/Aaaada | Male | 124 | 4.6643 | 7.25288 | 0.119 |
| Massoud/Aseeua | Female | 31 | 2.3145 | 7.39741 | |
| Burgers/candwiches | Male | 124 | 3.6512 | 4.30085 | 0.497 |
| Durgers/sandwiches | Female | 31 | 2.7061 | 7.35509 | |
| Deini | Male | 124 | 3.6106 | 3.77015 | 0.390 |
| Dairy | Female | 31 | 5.1682 | 9.77580 | |
| Levy Fet Dairs | Male | 124 | 2.9316 | 3.81440 | 0.528 |
| LOW Fat Daily | Female | 31 | 4.0308 | 9.40512 | |
| Eat | Male | 124 | 2.5578 | 4.20492 | 0.831 |
| Fai | Female | 31 | 2.8038 | 6.01155 | |
| Chaoka | Male | 124 | 3.3717 | 3.68690 | 0.837 |
| SHACKS | Female | 31 | 3.6430 | 7.04259 | |
| Hot Drinko | Male | 124 | 3.6097 | 3.97662 | 0.825 |
| HOLDHIKS | Female | 31 | 3.3629 | 5.84836 | |
| Cold Drinko | Male | 124 | 4.8573 | 6.41652 | 0.001** |
| COID DITINS | Female | 31 | 2.3177 | 2.78542 | |
| Fruite | Male | 124 | 3.1660 | 3.23664 | 0.000** |
| FIUIIS | Female | 31 | 1.5040 | 1.25371 | |
| Vegetables | Male | 124 | 3.3359 | 3.66946 | 0.021* |
| | | | | | |

*Significance, **highly significance

(3.52 servings/week), traditional foods (massoub/aseeda) (4.66 servings/week), burgers (3.65 servings/week), poultry (3.78 servings/ week), potatoes (2.90 servings/week) and hot drinks (3.61 servings/ week). On the other hand, Khat chewing female students reported excessive consumption but not statistically significance among rice/ macaroni/corn and bread (4.93 servings/week and 5.51 servings/week respectively), dairy (5.17 servings/week), low fat dairy (4.03 servings/ week), fat (2.80 servings/week) and snacks (3.64 servings/week).

Discussion

The study was conducted to assess and find the dietary patterns and gender differences among Khat chewing students of Applied Medical Sciences College, Jazan University, Kingdom of Saudi Arabia. A study from Saudi Arabia has developed a food frequency questionnaire and tested its reliability and validity [13]. They reported that 82% and 64.5% of the study participants consumed at least once or more times in a week of chicken kabsa and grilled chicken respectively [13]. Simultaneously, the present study has found that Khat chewing students consumed poultry items 3.17 servings/week.

The study conducted in Italy stated that there was no statistical

significance effect by gender in consumption of meat, poultry, and fish products [15]. In contrast, our results found that the consumption of meat and poultry products were statistically significant by gender among Khat chewing students. The results of the present study were in the same agreement with the study that reported the mean daily consumption of red meat was significantly high in male than female [16], and the mean consumption of meat in male primary school children was 1.7 servings/day [17]. In addition, Khat chewers consumed more animal protein such as meat, chicken and fish products in order to reach their satiety stage [11].

Another study reported that the mean weekly consumption of bread/cereals among undergraduate students was 5.1 servings/ week [15]. Similarly, the current study addressed that the mean consumption of bread among male and female Khat chewing students was 4.93 servings/week. Likewise, other study reported that 85.5% and 77.5% of the participants had consumed white bread and rice at least once or more times/week respectively [13], while 95.4% and 81.2% of adolescent and adult girl students daily consumed rice and wheat respectively [18].

The current study results are in parallel with another study results in which 60.0% and 54.0% of students had consumed chicken burger and beef burger at least once or more times/week respectively [13].

The present study results headed to the same direction with the results of another study that 62% of the students had consumed cream cheese at least once or more times/week [13]. Male and female undergraduate students mean weekly consumptions of dairy products were 4.00 servings/week and 4.24 servings/week respectively [15]. Another study showed that 85% of adolescent and adult student girls had consumed dairy products daily [18].

The study reported that 45.9% of female students consumed bakery foods daily, among that, 82.5% consumed sweets, 87.9% consumed cakes [18]. The mean consumption of nuts was 0.269 servings/daily in males and 0.243 servings/daily in females [13]. Current study showed that snacks had been consumed more by female Khat chewers. Conversely, other study reported that chips, snacks, packaged ready foods and sauces had been consumed more by male students, but cakes were consumed more by female students [15].

A study reported that fruit juice consumption in male students was 2.86 servings/week and in female students was 2.65 servings/ week; the consumption of soft drinks in male students was 3.79 servings/week and in female students was 2.38 servings/week; and the consumption of coffee/tea was 6.58 servings/week in male students and was 6.98 servings/week in female students [15]. Furthermore, other study stated that 72% participants consumed coffee/tea at least once or more per week [13]. Moreover, a study reported that fruit juice mean consumption in males was 0.241 servings/daily and in female was 0.214 servings/daily, whereas there were significant differences in sugary beverages consumption in males 0.972 servings/ daily than in females 0.699 servings/daily [16]. Similarly, the results of the current study are in the same agreement that hot drinks and cold drinks consumption were more in male Khat chewers than in female Khat chewers.

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The study reported that 67% of the students consumed dates at least once or more on weekly basis and 54% of the participants consumed banana at least once or more on weekly basis13 and the study from India reported that 58% of the adolescent and adult female students consumed fruits daily and 98% of the adolescent and adult female students consumed banana daily18. Another study from Italy reported that mean weekly consumption of fresh fruits in male was 3.39 servings/week and in female was 5.21 servings/week [15]. Hence, the present study observed that overall male Khat chewers had consumed fruits significantly more times/week than female Khat chewers.

The study reported that 75% of the study participants consumed tomato at least once or more on weekly basis and 71% of the participants consumed lettuce at least once or more on weekly basis [13]. The study from Italy reported that mean weekly consumption of raw vegetables in male was 3.46 servings/week and in female was 5.25 servings/week, while male and female consumed 1.92 and 3.63 cooked vegetables respectively [15]. In addition, another study reported that vegetables mean consumption in males was 0.904 servings/daily and in female was 1.032 servings/daily [16]. In contrast, the present study found that male Khat chewers consumed vegetables significantly more number of servings/week than female Khat chewers.

Limitation of the study

Further researches are highly recommended to explore the associations between demographic variables and food habits in addition to increase the sample size.

Conclusion

The majority of the Khat chewers tempt to follow unhealthy dietary patterns. Despite to stop Khat chewing habits, it is highly recommended to provide nutritional education sessions to enhance the nutritional status.

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