



FREQUENCY OF CONSUMPTION OF HIGH-FAT HIGH-SUGAR CONTAINING FAST FOODS AMONG SAUDIS IN AL-AHSA CITY

Public Health

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ABSTRACT

Introduction: High risk of Non-Communicable Disease (NCD) and metabolic changes correlated with harmful dietary habits. High-Fat High-Sugar products (HFHS) have strong relationship with Obesity incidence. Western diet which is HFHS become popular, and Kingdom of Saudi Arabia has been adapted this diet. Fats and sugar should be taken moderately rather than cutting both completely. **Aim:** To assess the frequency of consumption of high-sugar and high fat containing fast foods among Saudis in Al-Ahsa city. **Method:** The design was a descriptive, cross-sectional survey with a prestructured validated questionnaire to obtain quantitative data as a result. Data was collected among the adults (18-65 yrs), in Al-Ahsa region from September 2021 to November 2021. The questionnaire consisted of three sections, which are demographic variable, Questions about HSHF containing fast foods, frequency of consumption, and quantity of consumption. Questions about the prevalence of obesity, diabetes, hypertension, cardiovascular diseases. People who are responded to the survey are 710 persons. The responses who did not meet the inclusion criteria were excluded and the total of responses became 625. **Results:** The results shown higher percent of participants were in the age group of 18 to 30 years and were females. The study revealed frequent weekly consumption of sweets such as chocolate (53.6%) and cakes/cookies (41.1%), fried foods including French fries (39.7%) and fried chicken (35.4%), and soft drinks (34.9%) among Saudis in Al-Ahsa, while processed meat intake such as sausages/hot dogs remained low (1.1%). **Conclusion:** Frequent intake of sweets, fried foods, and sugar-sweetened beverages among Saudis in Al-Ahsa highlights unhealthy dietary patterns that may contribute to obesity and non-communicable diseases, emphasizing the need for public health interventions.

KEYWORDS

HFHS, Fast food consumption, Sugar-sweetened beverages, NCD

INTRODUCTION / BACKGROUND:

Unhealthy dietary patterns are associated with metabolic changes and an increased risk of non-communicable diseases (NCDs). NCDs are a group of medical conditions that are non-infectious and non-transmissible among people (World Health Organization [WHO], 2024). Examples of NCDs include cardiovascular disease, obesity, hypertension, and type 2 diabetes (WHO, 2024). Obesity is a major risk factor that can increase the incidence of hypertension and diabetes (Al-Jawaldeh et al., 2022). Moreover, there is evidence suggesting that

unhealthy dietary habits, particularly the high consumption of high-fat and high-sugar (HFHS) products, can lead to obesity (Alhusseini et al., 2024). Recent studies have shown a shift in the Saudi Arabian diet from a traditional pattern to a Western-style diet characterized by high intake of HFHS products (Alhusseini et al., 2024). However, moderation in the intake of fats and sugars is more important than eliminating them completely (Al-Jawaldeh et al., 2022). Overconsumption of any nutrient can lead to serious health issues (Al-Jawaldeh et al., 2022). As a result, obesity has become a common health problem among adult

Saudis, with a prevalence rate of 68.2% (Alsulami et al., 2023). A study conducted in Saudi Arabia in 2012 found that 25% of females were obese or overweight and consumed fast food at a rate of 1–2 times per week (Al-Jawaldeh et al., 2022). According to the WHO, 90% of obese or overweight individuals are at risk of developing diabetes (WHO, 2024). Obese individuals with high levels of visceral fat and abdominal adiposity are more likely to develop NCDs such as cardiovascular disorders (WHO, 2024). Balancing the diet by increasing fruit and vegetable intake and decreasing fat and sugar intake has shown a significant reduction in obesity rates (Al-Jawaldeh et al., 2022). Additionally, unhealthy eating behaviors should be prevented as they may be the cause behind most chronic diseases, especially metabolic disorders (Al-Jawaldeh et al., 2022). Studies conducted worldwide have investigated the frequency of consumption of HFHS-containing fast foods. In South Africa, a study stratified the community into different groups based on geographic, ethnic, and socio-economic differences to assess the frequency of fast food consumption. It concluded that 6.8% of the population bought fast food at a frequency of two times or more per week (Alhusseini et al., 2024). Furthermore, a study conducted by the Department of Health Sciences at Princess Norah Bint Abdulrahman University in Riyadh, Saudi Arabia, found that 22.7% of university students consumed fast food at a frequency of 1–2 times per week (Alhusseini et al., 2024). Another study conducted in Al-Ahsa among King Faisal University students investigated dietary practices. The total participants were 564 students, with a mean age of 20.45 ± 1.64 years. The study found that 36.3% and 37.8% of the students consumed fast food and fried food, respectively, indicating a frequency of 1–2 times per week (Alhusseini et al., 2024). On the other hand, 45.7% of the students ate snacks twice a day, and 25.7% and 20.7% consumed vegetables and fruits once daily, respectively (Alhusseini et al., 2024). Consumption of HFHS-containing fast food is a major dietary practice that leads to serious health problems. Studies have examined the diseases and health issues related to this dietary habit. A study in Singapore found an association between fast food intake and the risk of developing type 2 diabetes mellitus and mortality. The study concluded that consuming fast food more than twice a week increased the risk of developing type 2 diabetes (Alhusseini et al., 2024). Another study conducted in Kuwait found a high prevalence of cardiovascular disease among Kuwaiti adults, which has been linked to dietary patterns such as consumption of fast food and refined grains (Alhusseini et al., 2024). A cross-sectional study conducted at the College of Medicine at King Khalid University Hospital in Riyadh, Saudi Arabia, investigated the quality of life, physical activity, and frequency of fast food consumption. The study found that participants who consumed fast food three times per week or less had smaller waist circumference, lower body mass index (BMI), lower triglyceride levels, and higher HDL-cholesterol levels compared to those who consumed fast food more than three times per week (Alhusseini et al., 2024). The study concluded that there are significant effects of fast food consumption on metabolic functions (Alhusseini et al., 2024). A study conducted in Al-Ahsa aimed to assess dietary patterns and their impact on chronic diseases. The study found that obesity was prevalent in the population, accounting for 60.3% of the study participants. Additionally, glucose-6-phosphate dehydrogenase (G6PD) deficiency, hypertension, and diabetes were prevalent among the population who consumed fast food (Alhusseini et al., 2024). The study also found that lower intake of fruits and vegetables, as well as higher consumption of fat, carbohydrate, and salt-rich foods, increased the risk of metabolic diseases (Alhusseini et al., 2024). The Eastern Region of Saudi Arabia has shown a remarkable change over time from a Mediterranean-style diet to a Western-style diet, which is high in salt, sugar, saturated fat, and trans-fat but low in fiber (Alhusseini et al., 2024). This study justifies the frequency of consumption of HFHS-containing fast food among the population and its effects on health status. For example, the incidence of type 2 diabetes mellitus, cardiovascular diseases, and hypertension has increased significantly with high consumption of HFHS-containing fast food (Alhusseini et al., 2024). Therefore, increasing awareness among the population is crucial to prevent the complications resulting from unhealthy dietary habits (Alhusseini et al., 2024). Moreover, practices to modify these dietary habits should be implemented (Alhusseini et al., 2024). Since no studies have been conducted in the Al-Ahsa region on this concern, we aimed to determine the frequency of consumption of HFHS-containing fast foods among Saudi adults in Al-Ahsa city.

MATERIALS AND METHODS:-

A cross-sectional survey was conducted using a pre-structured questionnaire to collect quantitative data among adults in the Al-Ahsa region from September to November 2021. Ethical approval was obtained from KAIMRC and the IRB prior to data collection. The questionnaire covered demographic variables, awareness of high-sugar and high-fat (HSHF) fast foods, frequency and quantity of consumption, physical activity, anthropometric measurements, Its validity and reliability were confirmed through a pilot study on 10% of the sample.

Out of 710 respondents, 625 met the inclusion criteria and were included in the analysis. Participants, from cities including Al-Hofuf, Al-Mubarraz, Al-Oyoon, and Al-Omran, completed the self-administered questionnaire via social media or in-person interviews. Inclusion criteria were adult Saudis aged 18–65 years residing in Al-Ahsa, while those not meeting these criteria or unwilling to participate were excluded.

Data were checked for completeness and analyzed using SPSS software. Descriptive statistics (mean, median, percentages) summarized the data, and inferential statistics, including Chi-square tests, were used to assess associations between categorical variables.

RESULTS AND DISCUSSIONS:

Table 1: Demographic Characteristics Of Respondents.

Demographic characters		N(%)
Age	18-30	426 (68.2)
	30-40	113 (18.1)
	40-50	61 (9.8)
	50 -65	25 (4.0)
Gender	Female	513 (82.1)
	Male	112(19.9)
Education level	Primary level	6 (1.0)
	Intermediate level	12 (1.9)
	Secondary level	125 (20.0)
	University	471 (75.4)
Residence	High education	11 (1.8)
	Eastern region	127 (20.3)
	Northern region	253 (40.5)
Employment	Central region	245 (39.2)
	Student	335(53.6)
	Employed	124(19.8)
	Unemployed	147(23.5)
	Retired	19(3.0)

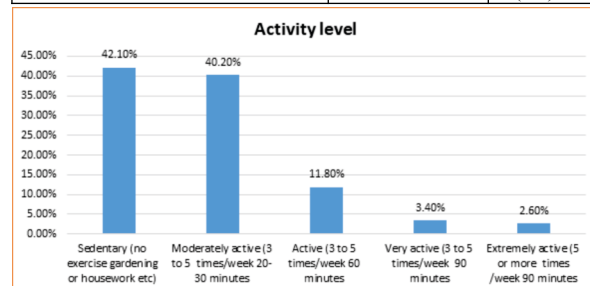


Figure #1 Activity Level Of Respondents

Table 2 : Anthropometric Measurements Of Study Respondents (n= 625)

Variable	Mean	SD
Anthropometric measurements	Height in cms	160.96cm
	Weight in kgs	64.19 kgs
		±8.57cm
		±18.23 kgs

Majority of the participants were in the age group of 18 to 30 years (68.2%) depicted in table 1. The gender distribution revealed that 513 respondents (82.1%) were female, while 112 (19.9%) were male. Higher number of respondents were undergraduates (75.4%). The majority of the attendees were students (53.6%), with most of them coming from the northern region (40.5%). The analysis of physical activity levels depicted in figure #1 indicated that a majority of participants were sedentary (42.1%), followed by those who were moderately active (40.2%), with only a small fraction being extremely active (2.6%). The detailed information about the demographic characteristics among the study subjects is presented in **Table 1**. The

mean height of study participants was 160.96 cm (± 8.57 cm) while their mean weight was found to be 64.19 kg, (± 18.23 kg) is presented in **Table 2**

Table 3: Frequency Of Consumption Of Fast Foods (1-2 times per week) (n= 625)

Variable	Not eaten	2-3/ month	1-2 / week
a) Mince, beef, or lamb, such as burgers	186(29.9%)	280(44.8%)	159(25.4%)
b) Beef such as steaks, ribs, roasts	361(57.8%)	201(32.2%)	63(10.1%)
c) Fried chicken or chicken burgers	151(24.2%)	253(40.5%)	221(35.4%)
d) Sausages or hot dogs	586(93.8%)	32(5.1%)	7(1.1%)
e) Pizza	253(40.5%)	320(51.2%)	52(8.3%)
f) French fries	121(19.4%)	256(41%)	248(39.7%)
g) Corn chips, potato chips, or popcorn with Butter	187(29.9%)	232(37.1%)	206(33%)
h) Doughnuts, pastries, or croissants	163(26.1%)	276(44.2%)	186(29.8%)
i) Cakes or cookies	99(15.8%)	269(43%)	257(41.1%)
j) Ice cream	166(26.6%)	262(41.9%)	197(31.5%)
k) Chocolate	89(14.2%)	201(32.2%)	335(53.6%)
l) Lollipops	503(80.5%)	80(12.8%)	42(6.7%)
m) Spreads incl. peanut butter, jam, or Honey	241(38.6%)	184(29.4%)	200(32%)
n) Soft drink	221(35.4%)	186(29.8%)	218(34.9%)
o) Other sweetened beverages	309(49.4%)	189(30.2%)	127(20.3%)
p) In the past month, how many times have you eaten food from a takeaway or fast-food restaurant for example McDonalds, KFC, Mexican? Chinese, Thai, or Italian?	192(30.7%)	292(46.7%)	141(22.6%)

The **table 3** shows that many HFHS items are consumed at least occasionally by a large share of participants in Al-Ahsa. Processed meats such as sausages and hot dogs were rarely eaten, with 93.8% of respondents reporting "not eaten." In contrast, sweets and confectionery items were frequently consumed: chocolate (53.6%) and cakes/cookies (41.1%) were most often reported as eaten 1–2 times per week, while ice cream (31.5%) and doughnuts/pastries (29.8%) also showed notable weekly consumption.

Fast-food items such as French fries (39.7%), fried chicken (35.4%), and pizza (8.3%) were consumed weekly by a significant proportion, while the majority reported 2–3 times per month for these items. Sugar-sweetened beverages (SSBs) were also prevalent, with 34.9% consuming soft drinks weekly and 20.3% consuming other sweetened beverages weekly.

Takeaway/fast-food meals (e.g., McDonald's, KFC, Italian, or Chinese cuisine) were consumed 1–2 times per week by 22.6% of participants, while almost half (46.7%) reported consumption 2–3 times per month. Overall, the data highlight a pattern of frequent intake of energy-dense, nutrient-poor foods, particularly sweets, fried items, and Sugar-sweetened beverages (SSBs).

DISCUSSION

The data from study indicate that sweets and confectionery items are frequently consumed among participants in Al-Ahsa. Specifically, chocolate (53.6%) and cakes/cookies (41.1%) were reported as being eaten 1–2 times per week, while ice cream (31.5%) and doughnuts/pastries (29.8%) also showed notable weekly consumption. These findings align with national trends observed in Saudi Arabia, where high intake of fast food and junk food is prevalent. A study by Amer et al. (2022) found that 87% of the Saudi population had a high intake of fast food, and a previous survey of Saudi teenagers found that

approximately 85% of them choose to consume fast food over homemade meals (Amer et al., 2022; Washi & Ageib, 2010).

Fast-food items such as French fries (39.7%), fried chicken (35.4%), and pizza (8.3%) were consumed weekly by a significant proportion of participants, while the majority reported 2–3 times per month for these items. This is consistent with findings from Al-Otaibi and Basuny (2015), who reported that fast food consumption was associated with obesity/overweight risk among university female students in Saudi Arabia.

Sugar-sweetened beverages (SSBs) were also prevalent, with 34.9% consuming soft drinks weekly and 20.3% consuming other sweetened beverages weekly. Excessive consumption of SSBs is linked to various health risks, including obesity, type 2 diabetes, and cardiovascular diseases (Zafar et al., 2025). A study by Al-Hanawi et al. (2022) found that interventions directed toward education on the adverse health effects of these drinks are needed to reduce SSB intake among adults in Saudi Arabia.

Processed meats, such as sausages and hot dogs, were rarely eaten, with 93.8% of respondents reporting "not eaten." This low consumption may be attributed to cultural dietary preferences and the availability of alternative protein sources in the region.

The high frequency of HFHS food consumption observed in your study raises concerns about the potential health implications. Regular intake of such foods is associated with increased risks of obesity, type 2 diabetes, and other non-communicable diseases (NCDs) because such foods are high in added sugars, saturated fats and sodium and tend to be energy-dense but nutrient-poor. A comprehensive review by Agjei et al. (2025) highlighted that higher consumption of ultra-processed foods (UPFs) is associated with an increased risk of obesity and other health-related issues.

CONCLUSION

This study demonstrates that high-fat and high-sugar foods are frequently consumed among Saudis in Al-Ahsa, with sweets, chocolate, and fast-food items forming a regular part of weekly diets. While the consumption of processed meats remains low, the high prevalence of weekly intake of confectionery, fried foods, and sugar-sweetened beverages raises concern, given established links with obesity, type 2 diabetes, and other non-communicable diseases (NCDs).

These findings are consistent with national and international evidence highlighting the rising burden of diet-related NCDs in populations with high fast-food and sugar intake. Public health interventions in Al-Ahsa should therefore prioritize reducing the intake of sugary snacks and beverages, encouraging healthier alternatives, and raising awareness of the risks associated with frequent HFHS food consumption.

Future studies should explore portion sizes, dietary context, and longitudinal health outcomes to better understand the impact of these dietary patterns on population health

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