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Impact of social media as a risk factor of increased fast-food consumption and increased bad health habits in children and adolescents in Saudi Arabia

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ABSTRACT

Background: Because of the worsening health effects, fast food consumption and its effects have become a serious public health problem worldwide. **Aim:** Our study sought to determine the relationship between the effects of different social media usage and its impact on the frequency of fast-food intake, as well as the growth in poor nutritional implications in children and adolescents among the Saudi Arabian general population. **Methods:** Our study adapted a cross-sectional study design. The study included a sample of Saudi children and adolescents of both sexes. A predesigned questionnaire was used for data collection and data were managed using the Statistical Package for Social Sciences (SPSS) version 26. **Results:** The study included 300 participants of whom 80.7% were females. 95% of the participants in the study reported using social media and 45.7% reported using it more than four hours per day. Social media usage habits were reported to be high by 46% of respondents. In total, 76.7% of the participants in the research said they like fast food and 61.3% said they enjoyed soda. Only 31% believe that watching online fast-food promotions increases their fast-food consumption. **Conclusion:** Fast food choices and behaviors were significantly connected with the average daily usage of social media. People, who like fast food, consume it in restaurants, prefer salty food, dislike sweet food, drink soda and do not think that seeing online advertisements for fast food promotes consumption were more likely to use social media heavily.

Keywords: Fast-food, dietary habits, healthy food, public health

1. INTRODUCTION

Because of the escalating health effects, particularly in children, adolescents and the elderly, consumption of fast food and its effects has become a serious public health problem worldwide. Fast food typically refers to quick, unhealthy, hunger satisfying food, purchased in self-service from restaurants with precooked ingredients and served in a packaged form to the customer to take-away such as burgers, French fries and pizza (You et al., 2009). Fast food usually contains high level of refined sugar, white flour, polyunsaturated fats, salts and numerous food additives but lacking in protein, vitamin and fibers. Fast food is popular because of their simplicity of manufacture, consumption and good taste (Guthrie et al., 2002). Fast food first popularized in the 1970s in the United States, which has today the largest fast-food industry in the world. Fast food consumption has been shown to have a substantial positive correlation with weight gain and insulin resistance, indicating an increased risk of obesity and type 2 diabetes (Pereira et al., 2005). Globally, fast foods are popular stuff and consumption is increasing constantly. Traditional foods have been nearly replaced by food items that can be found in a state of ready to eat, in canned form and preserved for a longtime (Chaosap et al., 2022). The consumption of such foods has peaked in developed countries; however, there is an increasing trend in the developing countries of the world (Kearney, 2010).

Being overweight is defined as having too much bodily weight for one's height, whether it comes from water, bone, fat, muscle or a composite of these. A succinct definition of obesity is having too much body fat (Sikaris, 2004). The childhood obesity is a serious public health problem that increases morbidity, mortality and has substantial long term economic and social costs. In the past 30 years childhood obesity has more than doubled in children and quadrupled in adolescents. The rates of obesity in America's children and youth have almost tripled in the last quarter century. Similarly, the percentage of adolescents aged 12–19 years who were obese increased from 5% to nearly 21% over the same period. In 2012, more than one third of children and adolescents were overweight or obese. Approximately 20% of our youth are now overweight with obesity rates in preschool age children increasing at alarming speed (Sikaris, 2004).

Today's children, ages 8 to 18, consume multiple types of media and spend very long time (44.5 hours per week) in front of computer, television and game screens than any other activity in their lives except sleeping. Many previous studies on childhood overweight and obesity modeling illustrate that the main factors are family environment and children's lifestyle. A number of studies indicate that family environment is an important determinant of children's lifestyle and both have an impact on child BMI level. Hence, information on children's lifestyle is often collected based on household environment surveys (Brown et al., 2010).

By their very nature, many forms of advertising aimed at kids these young are exploitative. Children have a great capacity for remembering details from the advertisements they have seen, which influences their desire for fast food. It has been proved that product preference can develop with just one advertising exposure and can get stronger over time. Children's repeated product preferences have an impact on their requests for product purchases and these requests have an impact on parents' purchasing choices (Bohara et al., 2021). Previous studies found varying results in associating fast food consumption with social media usage (Robinson et al., 2017). In this study, we will discuss the effect of different types of social media exposure and its effect on frequency of fast-food intake and increasing bad nutritional habits in children and adolescents.

Objectives of the study

The study objective is to determine the relation between the effect of different types of social media exposure and its effect on frequency of fast-food intake and increasing bad nutritional habits in children and adolescents among general population of Saudi Arabia.

Study rational

Fast food consumption spread out rapidly in last ten years especially between children and adolescents. Numerous studies' findings revealed that younger adults, those of higher income levels and kids and teenagers were the groups most likely to consume fast food. Since a few decades ago, the use of fast food, which results in an excess of calories consumed and inadequate physical exercise, has raised the risk of obesity among the global population. While many previous studies were done on the relationships between new media and health-related behaviors are available for developed countries, few have been conducted in Saudi Arabia. By using cross-sectional data from the general population of Saudi Arabia, we investigate if and how Internet-related activities can affect fast food consumption, dietary habits and how they can interact with each other and with health outcome in children and adolescents. In order to account for a health-specific outcome, we also will evaluate the association between Internet use and overweight.

2. SUBJECTS AND METHODS

Study design

A cross-sectional study was undertaken during the period from March 2022 to November 2022.

Study area and setting

Primary, preparatory and secondary school students in Tabuk city

Study population & target group

All students of primary, preparatory and secondary schools in different areas of Saudi Arabia

Sample size

The sample size of this study is calculated by using the formula: $n = P(1-P) * Z_{\alpha}^2 / d^2$, (9) assuming $Z_{\alpha} = 1.96$, $d=0.05$, P is the expected prevalence. The sample size was calculated at 384. It was increased to 420 to compensate for nonresponses and incomplete forms.

Sampling technique

We will follow the multi stage sampling technique. Firstly, three schools were selected randomly. Secondly, 85 students from each school and then one class from each grade randomly.

Study variables

Socio-demographics characteristics such as age, marital status, average family income per month and parents' status. Personal dietary habits and breakfast meal intake, time, regularity and its food content

Data collection tool

Data were collected by personal interviews. Each participant completed an Arabic questionnaire covering the needed variables according to the study objectives.

Ethical consideration

A written informed consent was taken from all study participants. They assured them that the confidentiality of their data would be maintained during the study. Research clearance and approval were obtained from the ethical research committee of Tabuk University.

Data analysis plan

All data was collected, tabulated and statistically analyzed using SPSS 23.0 for windows (SPSS Inc., Chicago, IL, USA). Quantitative data was expressed as the mean \pm SD & (range) and qualitative data was expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using the Chi-square test or Fisher exact test when appropriate. Mann-Whitney U was used to the compared median of the variable of two groups not normally distributed. All tests were two-sided. P-value < 0.05 was considered statistically significant (S) and p-value ≥ 0.05 was considered statistically insignificant (NS).

Research work plan budget

This study is not financially supported from any institution. It will depend on the researcher's financial support.

Expected limitations

This study expected to face some limitations as;

School children may not be cooperative with us.

Some of the primary school children can't fill the questionnaire by themselves and need help from the data collectors.

School time is limited to the classes and we may face this problem.

Students may be afraid to tell us the truth.

3. RESULTS

The study included 300 participants of whom 80.7% were females. University education was the most prevalent among respondents (45%) and 91% of participants had public education (Table 1). Over four hours a day (45.7%) were spent using social media by the vast majority of the study's participants (95%). 46% of respondents claimed to have a high level of social media usage habits. Participants reported habits of watching TV daily (26.7%), online videos daily (74.7%), playing video games daily (26%), using texting and chatting platforms daily (50.7%), surfing social media platform daily (79.7%), seeing online advertisement promoting fast food (79.9%), but only 22% reported following those pages promoting fast food (Tables 1 and 2). Of all, 76.7% of the study population reported that they like fast food and 61.3% reported that they like soda drinks. While 44.3% of people feel that social media in general boosts people's fast-food intake, only 31% believe that watching online fast-food promotions does (Table 3).

Table 1 Socio-demographic characters of respondents, social media and fast-food use (n=300)

Parameter		Frequency (%)
Sex	Female	242 (80.7%)
	Male	58 (19.3%)
Educational level	Primary education	14 (4.7%)
	Secondary education	60 (20%)
	University education	135 (45%)
	Intermediate education	91 (30.3%)
Education	International education	4 (1.3%)
	Public education	273 (91%)
	Private education	23 (7.7%)
Average time spent on social media daily	2 - 4 hours	83 (27.7%)
	Less than 2 hours	80 (26.7%)
	More than 4 hours	137 (45.7%)
Frequency of fast food consumption weekly	More than 2 meals	57 (19%)
	Two meals	78 (26%)
	One meal	165 (55%)
Average social media use	High	138 (46%)
	Medium	162 (54%)
Reason for eating fast food	Save money	6 (2%)
	Unable to cook healthy meals at home	22 (7.3%)
	Not enough time to cook	55 (18.3%)
	Enjoy the taste	178 (59.3%)
	For fun	39 (13%)

Table 2 Social media use habits among respondents (n=300)

Item	Yes	No
Social media usage	285 (95%)	15 (5%)
Do you watch TV daily?	80 (26.7%)	220 (73.3%)
Do you watch online videos daily?	224 (74.7%)	76 (25.3%)
Do you play video games daily?	78 (26%)	222 (74%)
Do you use texting and chatting platforms daily?	152 (50.7%)	148 (49.3%)
Do you surf social media platforms daily?	239 (79.7%)	61 (20.3%)
Do you find online advertisement promoting fast food?	239 (79.7%)	61 (20.3%)
Do you follow social media pages that advertise fast food?	66 (22%)	234 (78%)

Table 3 Fast food eating habits among respondents (n=300)

Item	Yes	No
Do you like fast food	230 (76.7%)	70 (23.3%)
Do you eat in fast food restaurants?	126 (42%)	174 (58%)
Do you like salty fast food meals?	167 (55.7%)	133 (44.3%)
Do you like sugary fast food meals?	121 (40.3%)	179 (59.7%)
Do you like soda?	184 (61.3%)	116 (38.7%)
Does watching more fast food advertisement increase your fast food consumption?	93 (31%)	207 (69%)
Does a social medium increase your fast food consumption?	133 (44.3%)	167 (55.7%)
Does eating fast food affect habits of eating home-made food?	151 (50.3%)	149 (49.7%)
Does eating fast food cause any morbidity to you?	115 (38.3%)	185 (61.7%)

Tables 4 and 5 show the average social media use in association with fast food eating habits. There was a significant association between average daily social media use and liking fast food ($p=0.025$), eating fast food in restaurant ($p=0.000$), liking salty fast food meals ($p=0.000$), liking sugary fast food meals ($p=0.027$), liking soda ($p=0.001$), increased fast food consumption in association with watching online fast food promotions ($p=0.000$), increasing fast food consumption in association with social media usage ($p=0.000$) and affecting homemade food eating habits due to fast food consumption ($p=0.015$). High social media use was more common among those who like fast food (82.6%), those who eat fast food in restaurants (55.8%), like salty food (69.6%), not like sugary food (52.9%), like soda (71%), those who do not think that watching online fast food promotions increases their consumption (58.7%), those who believe that social media increases their fast food consumption (55.8%) and those who believe that eating fast food influences their homemade eating habits (58%).

Table 4 Social media use in association with fast food eating habits among respondents (n=300)

Parameter		Average social media usage		P-value
		Medium	High	
Do you like fast food?	No	46 (28.4%)	24 (17.4%)	0.025
	Yes	116 (71.6%)	114 (82.6%)	
Do you eat in fast food restaurants?	No	113 (69.8%)	61 (44.2%)	0.000
	Yes	49 (30.2%)	77 (55.8%)	
Do you like salty fast food meals?	No	91 (56.2%)	42 (30.4%)	0.000
	Yes	71 (43.8%)	96 (69.6%)	
Do you like sugary fast food meals?	No	106 (65.4%)	73 (52.9%)	0.027
	Yes	56 (34.6%)	65 (47.1%)	
Do you like soda?	No	76 (46.9%)	40 (29%)	0.001
	Yes	86 (53.1%)	98 (71%)	
Does watching more fast food advertisement increase your fast food consumption?	No	126 (77.8%)	81 (58.7%)	0.000
	Yes	36 (22.2%)	57 (41.3%)	
Does a social medium increase your fast food consumption?	No	106 (65.4%)	61 (44.2%)	0.000
	Yes	56 (34.6%)	77 (55.8%)	
Reason for eating fast food	Save money	1 (0.6%)	5 (3.6%)	0.366
	Unable to cook healthy meals at home	11 (6.8%)	11 (8%)	
	Not enough time to cook	33 (20.4%)	22 (15.9%)	
	Enjoy the taste	96 (59.3%)	82 (59.4%)	
	For fun	21 (13%)	18 (13%)	
Does eating fast food affect habits of eating homemade food?	No	91 (56.2%)	58 (42%)	0.015
	Yes	71 (43.8%)	80 (58%)	

Does eating fast food cause any morbidity to you?	No	100 (61.7%)	85 (61.6%)	0.981
	Yes	62 (38.3%)	53 (38.4%)	

Table 5 Fast food eating in association with social media use habits among respondents (n=300)

Parameter		Frequency of consuming fast food per week			P value
		Once	Two times	More than two	
Social media usage	No	10 (6.1%)	4 (5.1%)	1 (1.8%)	0.437
	Yes	155 (93.9%)	74 (94.9%)	56 (98.2%)	
Average social media use	High	62 (37.6%)	38 (48.7%)	38 (66.7%)	0.001
	Medium	103 (62.4%)	40 (51.3%)	19 (33.3%)	
Average time spent on social media daily	2 - 4 hours	47 (28.5%)	19 (24.4%)	17 (29.8%)	0.659
	Less than 2 hours	46 (27.9%)	23 (29.5%)	11 (19.3%)	
	More than 4 hours	72 (43.6%)	36 (46.2%)	29 (50.9%)	
Do you watch TV daily?	No	127 (77%)	60 (76.9%)	33 (57.9%)	0.014
	Yes	38 (23%)	18 (23.1%)	24 (42.1%)	
Do you watch online videos daily?	No	53 (32.1%)	15 (19.2%)	8 (14%)	0.009
	Yes	112 (67.9%)	63 (80.8%)	49 (86%)	
Do you play video games daily?	No	140 (84.8%)	52 (66.7%)	30 (52.6%)	0.000
	Yes	25 (15.2%)	26 (33.3%)	27 (47.4%)	
Do you use texting and chatting platforms daily?	No	91 (55.2%)	33 (42.3%)	24 (42.1%)	0.083
	Yes	74 (44.8%)	45 (57.7%)	33 (57.9%)	
Do you surf social media platforms daily?	No	44 (26.7%)	11 (14.1%)	6 (10.5%)	0.009
	Yes	121 (73.3%)	67 (85.9%)	51 (89.5%)	
Do you find online advertisement for fast food?	No	43 (26.1%)	10 (12.8%)	8 (14%)	0.024
	Yes	122 (73.9%)	68 (87.2%)	49 (86%)	
Do you like social media pages that advertise fast food?	No	136 (82.4%)	60 (76.9%)	38 (66.7%)	0.045
	Yes	29 (17.6%)	18 (23.1%)	19 (33.3%)	

4. DISCUSSION

Due to its worsening health effects and rising popularity, junk food intake and its effects are becoming a somber public health problem on a worldwide scale. Children and teenagers are greater at danger, despite the fact that its harmful health effects are very frequent throughout all age groups. Our study aimed to establish the relationship between the impact of various forms of social media exposure and its influence on the regularity of fast-food eating, as well as the rise in poor nutritional consequences in children and adolescents among the Saudi Arabian general population. Our study included 300 subjects. Our study found that the average daily social media use was significantly correlated with increasing fast-food consumption in correlation with watching online fast-food promotions and increasing fast food consumption in correlation with social media usage. This was consistent with the results in research conducted in Nepal that reported that more than half of participants (60.30 percent) had eaten junk food in the previous 30 days, with public school participants having the highest prevalence (65.1 percent), followed by private school participants (56.3 percent). In the Nepal study, sweets were ingested by (57.5%) of participants, followed by salty snacks (58.7%) (Bohara et al., 2021). The majority of kids and teenagers are exposed to social media and advertising, which shapes their background knowledge and understanding.

One of the well-researched effects of screen media consumption is obesity. Numerous observational studies link screen media exposure to higher obesity risks and fast-food awareness and advertising are the primary culprits (Robinson et al., 2017). Our study found a significant association between high social media use and believing that influencing homemade food eating habits. Our study, did not estimate body mass index of respondents and therefore an association between BMI and social media use is not available. However, research makes predictions about and investigates the effects of teenage social networking site (SNS) usage on health outcomes. SNS usage and its impacts on sleep duration, healthy eating (fruits/vegetables consumption, eating breakfast) and self-rated health were assessed in 11,406 teenagers (13–15 years old) using data from the 2015–16 sweep of the Millennium Cohort Study. They demonstrated that eating and sleeping behaviors completely moderate the total impact of SNS usage on teenagers'

general health and that sleeping also influences eating behaviors. The impact of SNS on health is greater for female than for male teenage users, demonstrating that girls need to use SNS with more caution (Serenko et al., 2021).

According to our results, social media usage was significantly associated with liking salty food and soda drinks. To compare the variations in fast food choices and new media exposure across rural and urban regions, research of a similar kind was conducted in China. The second objective is to investigate the relationship between fast food intake and exposure to new media among Chinese children and adolescents aged 6 to 18 who were enrolled in school at the time of the interview. They found that young people in rural and urban regions were more likely to eat at fast food restaurants when they watched internet videos and played computer games, with the chances being greater in the former. Internet use is linked to increased probabilities of becoming overweight. In comparison to their urban counterparts, children in rural regions spend substantially more time playing video games, watching TV and viewing videos than do children in urban areas (Hansstein et al., 2017).

5. CONCLUSION

Our study found that the average daily social media use was significantly correlated with habits of eating fast food and its preferences. High social media use was more prevalent among people who like fast food, eat it in restaurants, like salty food, do not like sugary food, like soda and do not believe that watching online fast-food promotions increases their consumption. It was also more prevalent among people who think that using social media increases their consumption of fast food.

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Author Contributions

All authors contributed and collaborated in data collection, extraction, paper writing, revising and production.

Ethical approval

The study was approved by the Medical Ethics Committee of Tabuk Institutional Review Board (Ethical approval code: TU-07710221148).

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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