

Influence of lifestyle patterns on perceptions of obesity and overweight among expatriates in Abha city of Kingdom of Saudi Arabia

Gaffar Sarwar Zaman

Department of Clinical Biochemistry, College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia

Address for correspondence:

Dr. Gaffar Sarwar Zaman, Department of Clinical Biochemistry, Government College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia. E-mail: drgszaman@gmail.com

Abstract

Background: We evaluated the influence of lifestyle patterns such as watching TV, working with computer and idle sitting time on perceptions of obesity and beliefs about overweight are associated with obesity and overweight amongst Expatriates in Abha. **Materials and Methods:** The method used in this study was a cross-sectional survey with a self-administered paper-based questionnaire. The survey collected information on lifestyle choices and the risk factors that contribute to obesity. In addition, height and weight were measured. **Results:** Greater number of our study subjects spent over 2 h/day without any physical activity, specifically accounting for over 2 h/day each in viewing TV, computer, and spending idle time. This increased lack of physical activities was significantly associated with overweight. While the overweight subjects were aware of very wide options for treating their condition, a significant number believed in self-effort in managing their diet and exercise regimen as the best efforts to reduce their overweight. Interestingly very few overweight subjects considered medication or surgery as a potential therapeutic option and 75% of the overweight subjects considered overweight to be of no or only slight concern on wellbeing. **Conclusions:** Overweight and obesity among expatriates within Saudi Arabia poses an important public health problem. The lack of awareness about the potential impact of obesity on health and optimal treatment options is a serious concern, which needs to be addressed by appropriate public health programs at national level.

Key words: Lifestyle patterns, obesity, public health

INTRODUCTION

Lifestyle in any society is a reflection of the prevailing culture,^[1] which can influence expatriates to adopt to enhance their social integration. This is especially of importance in the current scenario of increased global migration. Many studies suggests that expatriates do not develop healthy adult lifestyles that include regular exercise due to various barriers such as lack of role models, social

support, time, transportation, finance, social norms, and adequate information. This is of further of concern among women in conservative Saudi Arabian society, which makes it unacceptable for females to participate in sports or other physical activities outdoors. There are also indications of disordered eating being the result of conflicts between traditional lifestyle and liberalization.^[2] Several studies have also documented the impact of the content of TV and the Internet on children's lifestyle choices; these range from the effect of popular TV characters poor eating habits^[3] to consumption of high calorie food which are extensively advertised in the media.^[4-7] In addition to these direct consequences of TV and Internet, it by default promotes a sedentary lifestyle habits among children's, which ultimately leads to the development of obesity.^[8-12] It is indeed not surprising that among children and adolescents, most published research has linked increased television viewing hours with being overweight or obese,^[13-22] however, a

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few studies suggests that such associations are very weak and not of clinical concern,^[26] while a few studies are not consistent with these findings^[23-25] and some studies refute these conclusions.^[27,28]

Body mass index (BMI) with some exceptions is the most acceptable and universal method of measuring overweight and obesity.^[29] BMI (kg/m²) is defined as weight (kg) divided by height squared (m²). It is recommended by the WHO and is an economical method for assessing obesity in large epidemiological studies.^[30] Here, we examined the relationships between sociodemographic, behavioral, and psychosocial lifestyle factors with overweight and obesity among expatriates living in Abha, Kingdom of Saudi Arabia. We also assessed the self-image and opinions about overweight and obesity in this population.

MATERIALS AND METHODS

The study was conducted in Abha, Kingdom of Saudi Arabia from September 1, 2013 to February 15, 2014 and involved 550 expatriates. The study was approved by the King Khalid University Ethical Committee. The aim of this study was to identify known risk factors for obesity, self-image, and opinions about overweight and obesity in a cohort of expatriates in Abha city of Kingdom of Saudi Arabia and to establish various levels of obesity in this population. To achieve our aim, a cross-sectional survey with a self-administered paper-based questionnaire was developed [Table 1]. The survey collected information on lifestyle choices and the risk factors that contribute to obesity. Height, weight, and waist circumference (WC) were measured. Questions were designed to get information on hours spent on watching TV, working with computer, idle sitting time, and walking and leisure activities. Perceptions of obesity and beliefs about overweight were also asked. Respondents were also asked if they would like to lose weight and how they believed the overweight could be treated. The questionnaire was acceptable and within the cultural norms for all the expatriates.

Data management and analysis

The data collected from each expatriate in each location were recorded every day and packed in a big A4 envelope. All the envelopes were labeled with the date of survey, venue, and number of participants. The questionnaires were stored securely to maintain the confidentiality of information and ensure data security. A spreadsheet, Microsoft Excel™ (Microsoft Corporation, New Mexico, USA) was used for the data compilation and analysis. The data were analyzed using GraphPad Prism (GraphPad Software Inc., San Diego CA, USA).

Table 1: Questionnaire

Lifestyle choices and risk behaviors for obesity questionnaire
 serial number _____ demography

What is your age in years?
 Do you have a family history of overweight and/or obesity?
 Yes
 No

How many hours per day do you usually spend on the computer for E-mail, video games, Facebook or twitter?
 I do not use video games or the computer
 <1 h/day
 1-2 h/day
 3-4 h/day
 5-6 h/day
 7 or more h/day

How many hours per day do you usually watch TV/video movies, or play video games like play station?
 I do not watch TV or video movies
 <1 h/day
 1-2 h/day
 3-4 h/day
 5-6 h/day
 7 or more h/day

How would you describe your weight?
 Underweight
 Normal
 Overweight
 Very overweight

Would you like to lose weight?
 Yes
 No
 Not sure

If yes, why would you like to lose weight? (you may choose more than one answer)
 For appearance
 For better health
 For better well-being
 Because I want to exercise and get in shape
 Problems with clothes and sizes
 Other (please specify) _____

Regarding obesity, do you believe that heredity is
 Not at all important
 Only slightly important
 Somewhat important
 Very important

Do you believe that the obesity can be alleviated by diet and exercise?
 Yes
 No
 Unsure

How do you believe that overweight and obesity may be best treated? (you may choose more than one answer)
 By hospital, clinics or specialists
 By general practitioners
 By dietitians
 By social workers
 By the individual's effort to change diet and exercise habits
 Surgery for obesity
 By prescription medication
 Other

Your consent for the measurement of your weight (W), height (H), and WC is being sought for. Please kindly tick the box below as appropriate. Thanks
 I would like my W/H/WC to be measured
 I would not like my W/H/WC to be measured

Please record your weight in kilograms (kg), height in centimeters (cm), and WC in (cm)
 Weight in kilograms (kg)

Table 1: (Continued)

Height in centimeters (cm)
WC (cm)
To be filled in by investigator (Dr. Gaffar Sarwar Zaman)
Weight in kilograms (kg)
Height in centimeters (cm)
WC (cm)

WC: Waist circumference

RESULTS

The features of the lifestyle patterns observed in our study population are presented in Table 2. 19.1% of the participants watched TV for 4 or more h/day while 51.64% watched TV for 2-3 h/day. A number (29.27%) of the participants watched TV for <1 h/day. Eighteen percent of our study population used a computer for 4 or more h/day, and 50% used it for 2-3 h/day. Over 50% (51.45%) of the participants reported that they sat idle for 2-3 h during the 7 days preceding the study.

The study subjects were categorized as normal weight or overweight based on their BMI and WHO criteria. The correlation of BMI with the lifestyle patterns of the study subjects is summarized in Table 3. Statistically significant relationship was observed between participants BMI status and time spent sitting idle ($P = 9.40 \times 10^{-15}$), time spent on the computer ($P = 6.34 \times 10^{-27}$), and time spent watching TV ($P = 3.43 \times 10^{-9}$). Regarding idle sitting time, 34.2% of overweight and obese participants sat idle for 4 or more h/day. Forty percent of overweight or obese participants reported watching TV for 4 or more h/day. Respondents who were overweight or obese reported a steady increase in the TV time and idle sitting time. Interestingly, study subjects who spent >2 h of idle time or watched TV for >2 h/day or spent time on internet for over 2 h had a higher BMI and were categorized as overweight [Table 3].

The study subject's beliefs about the treatments for overweight/obesity are summarized in Table 4. A substantial number (68.55%) of respondents believed that the obesity might best be treated by the individual's effort to change the diet and exercise regime. In terms of the dietitian's methods to treat obesity, approximately 8.73% believed that a dietitian could help in the treatment of obesity. Interestingly, the least common treatment option selected was surgery (3.27%).

The study subject's beliefs about BMI and obesity status are summarized in Table 5. The perception of heredity as a cause of obesity significantly ($P = 5.09 \times 10^{-9}$) differed between normal weight and overweight subjects, with significantly more number of obese individuals associating obesity with heredity factors. Over 37% of respondents who reported that heredity was not at all important

were overweight or obese, while only 40.87% of normal weight subjects indicated heredity as not being important in obesity. 19.57% of normal weight subjects reported that the heredity was only slightly important in being overweight while 38.13% of obese subjects mentioned heredity as a slightly important cause of overweight. 18.13% who were overweight or obese and 37.83% who were not overweight reported that heredity was somewhat important for obesity. 6.25% of overweight subjects and 1.74% normal weight subjects indicated heredity as a very important cause of obesity.

The perception of the study subjects about the various obesity treatment and BMI status is listed in Table 6. The variables of treatment by hospital, clinics or specialists, treatment general practitioners, treatment by dietitians, treatment by social workers, treatment by individual effort, and treatment by surgery were statistically significant ($P = 8.47 \times 10^{-26}$) with the BMI status. It is, however, interesting to note that significantly greater number of overweight subjects (73.75%) believed dietary factors and exercise as a valuable treatment in reducing obesity.

Almost 27.83% subjects who believed in the treatment by dietitians as the best option were not overweight. 25.65% who believed individual effort is the best treatments for obesity were not overweight. It is also interesting to note that prescription medication and surgery were least preferred option by both normal weight and overweight subjects. It was also surprising to note general practitioners bring least preferred by the overweight subjects, which indicate the need to enhance confidence among overweight subject to consult their general practitioners, who could be valuable source of information in planning diet and exercise regimen tailored to individual's needs. Interestingly, social works were also one of the least preferred options by both normal weight and overweight subjects, which is indeed disappointing considering the role social workers can play in counseling and guiding overweight subjects. Nevertheless, it is indeed interesting to know the high degree of variability in perception of treatment options among normal weight and overweight expats in our study subjects.

DISCUSSIONS

The mechanisms most commonly proposed to explain the link between television viewing and obesity are reduced leisure-time physical activity and increased energy intake.^[31] Television viewing is hypothesized to supplant physical activity and/or increase caloric intake through snacking in response to the numerous cues in advertisements for energy dense foods of poor nutritional content.^[32-34] Our study provides some support for both mechanisms.

Table 2: Features of lifestyle patterns

Variable category	Frequency (%) n = 550
Time spent sitting idle on a week day in the past 7 days	
<1 h/day	93 (16.91)
2-3 h/day	283 (51.45)
4 or more h/day	174 (31.64)
Time spent on the computer per day	
<1 h/day	175 (31.82)
2-3 h/day	275 (50)
4 or more h/day	100 (18.18)
Time spent watching TV/day	
<1 h/day	161 (29.27)
2-3 h/day	284 (51.64)
4 or more h/day	105 (19.1)

Table 3: Lifestyle of respondents and BMI status

Variable category	Not overweight n = 230 (%)	Overweight n = 320 (%)	P (Chi-square)
Time spent sitting idle on a weekday in the past 7 days			
<1 h/day	72 (31.3)	21 (6.56)	9.40×10 ⁻¹⁵
2-3 h/day	85 (36.96)	198 (61.88)	
4 or more h/day	73 (27.39)	101 (31.56)	
Time spent on the computer per day			
<1 h/day	132 (57.39)	43 (13.44)	6.34×10 ⁻²⁷
2-3 h/day	77 (33.48)	198 (61.88)	
4 or more h/day	21 (9.13)	79 (24.69)	
Time spent watching TV/day			
<1 h/day	100 (43.48)	61 (19.06)	3.43×10 ⁻⁹
2-3 h/day	92 (40)	192 (60)	
4 or more h/day	38 (16.52)	67 (20.94)	

BMI: Body mass index

Table 4: Beliefs about treatment of overweight and obesity

Variable category	Number of expatriates (%)
How do you believe obesity may best be treated?	
By hospital, clinics or specialists	20 (3.64)
By general practitioners	32 (5.82)
By dietitians	48 (8.73)
By social workers	24 (4.36)
By individual's effort to change diet and exercise	377 (68.55)
By surgery	18 (3.27)
By prescription medication	28 (5.1)
Others	3 (0.55)

Table 5: Beliefs about obesity and BMI status

Variable category	Not overweight n = 230 (%)	Overweight n = 320 (%)	P (Chi-square)
Regarding obesity, heredity is			
Not at all important	94 (40.87)	120 (37.5)	5.09×10 ⁻⁹
Only slightly important	45 (19.57)	122 (38.13)	
Somewhat important	87 (37.83)	58 (18.13)	
Very important	4 (1.74)	20 (6.25)	

BMI: Body mass index

Table 6: Beliefs about obesity treatment and BMI status

Variable category	Not overweight n = 230 (%)	Overweight n = 320 (%)	P (Chi-square)
How do you believe obesity may best be treated?			
By hospital, clinics or specialists			8.47×10 ⁻²⁶
Yes	38 (16.52)	14 (4.38)	
By general practitioners			
Yes	31 (13.47)	9 (2.81)	
By dieticians			
Yes	64 (27.83)	49 (15.31)	
By social workers			
Yes	19 (8.26)	5 (1.56)	
By individual's effort to change diet and exercise			
Yes	59 (25.65)	236 (73.75)	
By surgery			
Yes	13 (5.65)	4 (1.25)	
By prescription medication			
Yes	4 (1.74)	2 (0.63)	
Others			
Yes	2 (0.87)	1 (0.31)	

BMI: Body mass index

Men and women who were frequent television viewers were more likely to be inactive in their leisure time. Low consumption of fruit and vegetables, which is contrasted with a diet high in fat,^[35] was also associated with high levels of television viewing. A third possible explanation of the link between television time and obesity is the low metabolic rate associated with television viewing. It is evident that prolonged excessive internet use and TV viewing takes away valuable time from certain necessary activities that children should engage in.^[36,37] Excessive internet use and TV viewing not only result in the lack of sleep but also affect concentration levels. Indeed in our study overwhelming majority of children received <9 h of sleep; more specifically most of the overweight and obese children received <7 h of sleep (data not shown). This is particularly significant since numerous studies have reported that link of lack of sleep with becoming obese among both children and adults.^[38-41] In a European study, the EPIC-PANACEA survey, which was conducted in nine European countries, physical activity at work and leisure-time physical activity were inversely correlated with BMI and WC.^[42,43] TV watching leads to harmful habits such as passive snacking and lust for sugar-sweetened soft drinks and energy-dense foods.^[44] Which leads to lower metabolic rate in comparison with other sedentary activities like sewing, playing board games, driving a car, reading, and writing.^[45] Finally, the relation between TV watching and metabolic diseases could be partly attributed to the psychological stress induced by TV, which enhances insulin resistance, sympathetic system activation, visceral adiposity, and metabolic syndrome. Notably, the

aforementioned associations between physical activity, sedentary lifestyle patterns, and cardiometabolic risk factors were observed almost exclusively among males rather than females.^[46,47] Intervention studies specifically targeted at reducing television viewing have yielded encouraging results in reducing obesity levels among children and adolescents.^[48] Furthermore, some evidence indicates that recommendations aimed at reducing sedentary behaviors may be more effective than those targeted at promoting physical activity.^[49] Studies have found that sedentary behaviors, particularly television viewing, adopted in childhood track into adulthood, and some even suggest that sedentary behaviors track more strongly than physical activity.^[50-53]

CONCLUSIONS

Overweight and obesity among expatriates within Saudi Arabia poses an important public health problem. Embracing Western influences due to its global consumerism culture, changes in diets, attitudes, and lifestyle due to the economic boom and sudden transition have had a profound impact on the health of the people. This research provides the singular important information concerning attitudes and body image concerns among expatriates in the Kingdom of Saudi Arabia. Hence, there is a need for more public health educational programs by health professionals as well as effective interventions on health awareness and education for the population. Social ties and social networks, to which an individual belongs, have a great influence on the beliefs and attitudes of the individual toward overweight and obesity.

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