



Association of Unhealthy Exercise Patterns with Overweight and Obesity in Kuwaiti Adults

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Abstract

Background: Our aim was to investigate the frequency of the behaviors that are most often associated with excess weight gain in Kuwaitis and to determine which gender and age groups are at highest risk for each behavior.

Methods: A questionnaire developed to identify barriers to exercise in western populations was modified for use with Kuwaitis and posted online during September through December 2012. Data from 1370 adults 18 to 59 years old with BMIs ranging from 15.1–70.8 was collected. The prevalence of seven behavior patterns was examined for age, BMI, and gender groups as well as the odds ratio of each behavior for each BMI group.

Results: Both individual unhealthy exercise behaviors and the sum of all such behaviors were more frequent in overweight and obese individuals. For all behaviors the odds ratio was significantly greater for those with BMIs of 30-39 than for those with BMIs below 25 ($P < 0.05$). Some exercise avoidance behaviors were more frequent in older age groups and in overweight females.

Conclusion: Unhealthy exercise behavior patterns were highly prevalent in obese individuals. Tailoring programs and counseling to the most common of these patterns in Kuwaiti obese should facilitate greater success in weight management.

Keywords: Obesity, Overweight, Exercise, Physical activity, Kuwait

Introduction

Reduction in bodyweight of overweight and obese individuals is most often achieved through "Patient centered care" - a combination of identification of desired goals, education in appropriate behaviors and elimination of unhealthy lifestyle habits of eating and physical activity (1). There are many obstacles to reach a desired goal through enhanced physical activity: a long-established sedentary lifestyle, poor self-esteem preventing initiation of exercise, perceived inadequate time for physical activity or physical limitations, and underestimating the importance of taking the action (2-3). Kushner and Choi (1) have identified seven unhealthy exercise behaviors have been identified

as possible barriers to weight management: dislike of exercise ("Couch Champion"), discomfort in exercising around others ("Uneasy Participant"), ignorance in how to start exercising ("Fresh Starter"), frequent change from "on" to "off" in exercising ("All-or-Nothing Doer"), adherence to a fixed exercise routine until it becomes tedious ("Set-Routine Repeater), perceived injury which limits ability to exercise ("Tender Bender") and inability to find time to exercise ("Rain Check Athlete"). Identifying these exercise behaviors in Kuwaitis and tailoring programs that can eliminate them should lead to improvements in counseling

overweight and obese patients and to the development of community action programs.

Currently there are no published reports describing exercise behaviors in Kuwait, though there is ample evidence of a high prevalence of physical inactivity. The oil-rich Persian Gulf countries have the highest prevalence of physical inactivity of any region in the world (4). The Kuwait National Nutrition Surveillance System for 2010 reported that 75% of females and 60% of males did not engage in any exercise (5). Participation in a regular exercise program was associated with a significant reduction in obesity risk for Kuwaiti men but not for women who rarely exercised (6).

The objective of the present study was to determine the prevalence of unhealthy physical activity behaviors, which may account for this inactivity in a sample of Kuwaiti adults and to identify barriers to be overcome in weight management counseling.

Materials & Methods

A convenience sample of overweight and obese Kuwaiti patients ($n=30$) was requested to complete two questionnaires. The exercise pattern questionnaire, a 17-item self-report survey, was adopted and translated to Arabic from Kushner and Choi (1) to identify seven exercise patterns using a 6-point Likert scale. To validate the pattern questionnaire, a second questionnaire was used to assess participants' ability to identify exercise patterns by them. Descriptions of the seven exercise patterns were given to the participants to recognize their top three exercise patterns. Cronbach's coefficient α was used to analyze the internal consistency reliabilities for the seven patterns. Cronbach's coefficient α ranged from 0.78 to 0.89 (mean 0.85). Chi square test (χ^2) for each exercise pattern was used to examine the agreement between the pattern and valid questionnaires. Agreement was observed for all the exercise patterns. Positive correlations were seen between BMI and exercise patterns scored by both questionnaires. Based on this analysis, the translated 17-item questionnaire was used in this study.

From September 1st 2012 to December 31st 2012, the questionnaire was posted online on social net-

working services (Twitter and Facebook). The questionnaire included 17 questions to appraise seven unhealthy eating patterns (Table 1) with a 4-point Likert scale ranging from "disagree" to "agree all of the time" was used to rate each question. Each pattern was characterized by answers to 2–3 questions and scored by assigning a numerical value to the Likert scale responses: disagree = 0, agree much of the time = 1, agree most of the time = 2, and agree all of the time = 3. The total score for each pattern = participant's score/total maximum possible score \times 100 and a pattern was considered present only if this percent was 66 or higher.

Additional questions were asked to obtain information regarding age, gender, height, weight, age and ethnicity of the participants.

Responses from 1381 participants were received from which those less than 18 or over 59 or with missing data were excluded leaving 1370 responses. The average age of the participants was 26 years with a standard deviation (s.d.) of 7.9 and the average BMI was 26.9 (s.d. = 7.3). Participants were categorized according to gender, age, or healthy weight (BMI 18.5–24.9, 13% of participants), Overweight (BMI 25–29.9, 41% of participants) and Obese (BMI \geq 30, 46% of participants). The prevalence of seven eating patterns in the total and subsets of the population sample were analyzed statistically.

The study was approved by the Research Administration from Kuwait University and a written informed consent from each of the participants was obtained.

Statistical analysis

The significance of difference was estimated using three effect size measures (Cohen's d , b , and η^2). The quotient of difference between proportions and standard deviation represents the Cohen's d . For linearization of proportions before calculating the difference, effect size b was used. The comparison of two groups was made using Cohen's d and b , and for three or more groups, η^2 was used, representing the proportion of the total variance assigned to the effect.

Table 1: Exercise pattern questionnaire

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1. I really don't know the first thing about how to get started with an exercise program.
Not me at all.
This is true some of the time.
This is me most of the time.
That's me!
 2. I exercise regularly but I may be in a rut because my routine doesn't vary much.
 3. It hurts when I exercise.
 4. I want to exercise but have little time to devote to being more active.
 5. I'm too embarrassed by my body to go to the gym.
 6. I have physical limitations that make it difficult for me to be active.
 7. Being physically active has never been one of my priorities.
 8. I limit my exercise because I fear injury or stress on my heart.
 9. I don't exercise because frankly I don't like it.
 10. I alternate between being sedentary and working out excessively.
 11. Once my week-to-week exercise routine is interrupted, I find it very hard to get back on track.
 12. I'm someone who has never exercised and will need direction.
 13. My heightened awareness of other people's and my own body size and shape prevents me from exercising.
 14. If I can't do my full workout, I typically do nothing at all.
 15. I have been doing the same workout for the past 3 months or more.
 16. Despite trying, I can't seem to fit exercise into my hectic schedule.
 17. I don't usually vary the type, intensity, length, or frequency of my exercise routine.
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Replies are similar for all questions

We defined Cohen's *d* and *b* of 0.2 as a "small" effect, 0.5 as "medium" and 0.8 as "large" effect. Small effect for η^2 was considered 0.01, medium 0.06, and large 0.14. Data were analyzed using the SPSS statistical software package version 11.0.

Results

The prevalence of exercise patterns for the total population sample and sample subsets by gender, age and BMI categories are shown in Table 2. Set-

Routine Repeater and Tender Bender behavior patterns showed the highest frequency among the seven exercise patterns in the total sample, while Fresh Starter and Uneasy Participant had the lowest frequencies.

Tender Bender and Coach Champion patterns were more frequent in persons older than 40 year, while Uneasy Participant and Fresh Starter were less frequent. There were small effects for two of the physical activity patterns (Fresh Starter and tender bender).

Table 2: Prevalence of exercise patterns in the general population by sample total subset (n=1370)

Pattern	Average percent score	Frequency per sample
	Total subset	Total subset
Couch champion	22.0	301
Uneasy participant	8.4	116
Fresh starter	10.5	144
All-or-nothing doer	14.8	202
Set-routine repeater	55.2	756
Tender bender	42.4	580
Rain check athlete	30.2	414

There were significantly more Uneasy Participant behaviors among women than among men (33.2% vs. 27.2%, $d = 0.128$ and $h = 0.131$). Figure 1 depicts this prevalence of Uneasy Participant by BMI with values for females represented by a solid line and for males by an intermitted line. The biggest disparity between the genders occurred for BMIs between 25 and 30 or the overweight category. The other patterns did not differ between genders with the patterns having the highest prevalence in both genders being All-or-Nothing Doer and Rain Check Athlete.

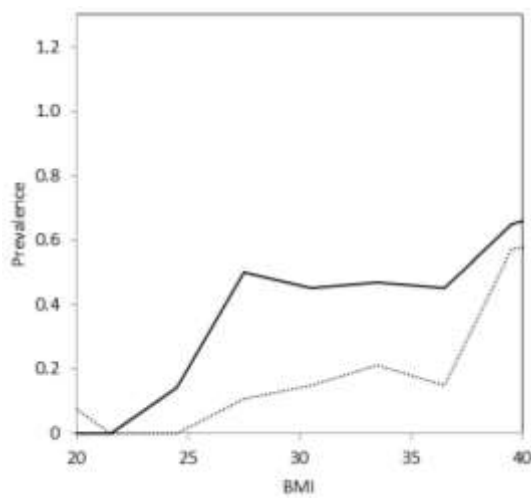


Fig. 1: Prevalence of uneasy participants by gender and BMI

Among physical activity models, four of seven (couch champion, set routine repeater, tender bender and rain check athlete) had larger effects. A positive association was found between number of reported models and BMI category, but the number of behaviors did not show a consistent change with age for either gender.

We have also examined how BMI affected the prevalence of the models in multiple logistic regression analysis with age and gender included in the analysis with the group with the lowest BMI (18.5 – 24.9) as the reference group (Table 3). Three of the behaviors showed an OR with a small effect size (OR of at least 1.20) in the Overweight participants an all the behaviors patterns showed significantly higher odds ratios with medium (OR of 1.50) or large effect size (OR of 2.00) in the Obese participants. One behavior, Rain Check Athlete, became insignificant in the Morbid Obese participants. We considered odds ratio of 1.20 to be small effect size, 1.50 – medium ($d = 0.5$), and 2.00 – large ($d = 0.8$). Thus, odds ratios obtained for the third BMI group (30–39.9) when compared to the reference group (18.5–24.9) are recognized to have a small effect for majority of the models. The odds ratios for fourth BMI group (≥ 40) are recognized to have larger effects ($d = 0.5$) in three models.

Table 3: Odds ratio for pattern prevalence (n = 1370)

Pattern	BMI		
	25-29.9	30-39.9	≥ 40
Couch champion	1.16	1.89	2.20
Uneasy participant	1.33	1.83	1.92
Fresh starter	1.29	2.48	2.77
All-or-nothing doer	1.27	1.59	1.62
Set-routine repeater	1.14	1.99	2.44
Tender bender	0.21	1.55	1.41
Rain check athlete	0.20	2.82	1.07

Base MBI = 18.5 - 24.9

Discussion

This study aimed to investigate the prevalence of unhealthy exercise patterns in Kuwaiti adults,

most of whom were overweight or obese. There was a high prevalence of unhealthy practices, particularly in the Morbid Obese ($BMI \geq 40$). In older aged persons, increased prevalence of exer-

cise models (couch champion and tender bender) indicated an increase in sedentary behavior. This result is consistent with other studies (7-10) which indicated that sedentary behavior is positively associated with age.

Only two physical activity models (tender bender and rain check athlete) did not have increased odds ratio with higher BMI (Table 3). This finding is in agreement with several studies clearly indicating that exercise obstruction is one of the most important risk factor for overweight and obesity (11). As might be expected Overweight women had much higher prevalence for Uneasy Participant meaning they are more uncomfortable exercising around others than are men quite likely due to cultural sensitivities that make them more vulnerable to perceived overweight and obesity. This is consistent with surveys prepared by the International Association for the Study of Obesity (12). Determination of an individual's behavior patterns is crucial for the development of effective counseling (1). A significant number of studies have reported differences in physical activity traits between obese and healthy weight persons. As there are many lifestyle factors limiting the low success of obesity treatment (13), the inclusion of those common to a population in a tailored treatment would certainly be expected to improve the effectiveness of counseling.

Conclusion

Lifestyle behavior pattern identification could be a new technique for analyzing critical factors for the health of obese and overweight persons. There is clear evidence that unhealthy physical activity patterns are very frequent in these persons and that certain patterns positively correlated BMI. Age was very significant factor affecting the prevalence of some patterns and gender was highly associated with one exercise model – Uneasy Participant. Further investigation is needed to determine the effectiveness of pattern identification in the treatment of obesity.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or fal-

sification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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