



**The relationship between dieting and levels of perceived psychological stress in
United Arab Emirates residents**

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Abstract

Aim: The primary aim of this cross-sectional research study was to investigate the potential differences in perceived psychological stress level in those dieting compared to those not undertaking a diet. The secondary objective was to assess if stress levels in those dieting were correlated with the duration of the diet.

Methods: We administered the previously validated Perceived Stress Scale (PSS) to 60 United Arab Emirates residents. Participants were also asked demographic questions concerning age and gender and were requested to indicate if they were currently undertaking a diet to achieve weight loss. Participants who were actively on a diet were also asked about the duration of the diet (days).

Results: A total of 60 participants were recruited to the study, of which 71.7% were female. The majority (71.7%) of the sample were 18-25 years old and 58.3% indicated that they were undertaking a diet at the time of data acquisition. The median total score on the PSS was 19 (14 – 22). There was a significant difference in PSS total score between those on a diet and those not ($p=0.021$). A positive correlation was found between number of days on a diet and perceived stress level ($r=0.147$) but this was not statistically significant ($p=0.406$).

Conclusions: Dieting behaviour was associated with higher levels of perceived psychological stress compared to those not undertaking a diet. Engaging in dieting behaviour is commonly driven by body dissatisfaction and may be linked to heightened stress due to social pressures or other factors.

Keywords: diet; stress; body dissatisfaction; body image; perceived stress

Introduction

The mass media has been consistently implicated in influencing beliefs about ideal body size and shape with recent research reporting adverse effects in young people (Michels and Amenyah, 2017, Rodgers et al., 2016) and women (Jackson et al., 2016, Rodgers et al., 2016). Body dissatisfaction has become a public health concern (Griffiths et al., 2016), although evidence to support this claim in the Middle East region is sparse. Dissatisfaction with body image can result in alterations to lifestyle behaviours which focus on reducing energy intake and increasing energy expenditure in order to reduce body weight and enhance body image satisfaction. Dieting, such as calorie restriction, is a commonly used approach for achieving weight loss and is well documented in young adults in academic settings (Malinauskas et al., 2006, Yahia et al., 2011). Dieting amongst female students appears to be widespread, with one study indicating that of 185 students aged 18-24 years, 83% recruited to the study reported dieting to achieve weight loss (Malinauskas et al., 2006). Despite the well documented chronic effects of dieting such as over-eating, weight regain, weight cycling as well as the long-term physiological and cardiovascular consequences (Montani et al., 2015), psychological distress has also been reported in children (Cho et al., 2012) and adolescent populations (Viner et al., 2006). Conversely, a pilot study in athletes demonstrated that those adhering to a high-protein, low-fat type diet reported lower levels of stress (Helms et al., 2015). The primary aim of the study was to examine the relationship between dieting and perceived stress level in United Arab Emirates residents. Secondary study objectives were to assess if the amount of time spent on a diet was related to perceived psychological stress level. We hypothesised that individuals on a diet would have higher levels of perceived stress compared to those who were not on a diet. We further hypothesised that the longer an individual had been on a diet, the higher the level of perceived stress.

Methods

Ethical approval for the study was provided by a Zayed University to support an undergraduate student-led research study in Health Psychology. Six undergraduate Psychology students collaborated and collected data from other university students as well as through networks of friends and family. Potential participants were approached for study participation and willing volunteers provided written informed consent. Participants were asked questions concerning socio-demographics including information about gender (male/female) and age (years). Participants were also asked if they were on a diet for purposes of weight loss (yes/no) at the time of data collection. Participants who indicated that they were on a diet were also asked about the duration of how long they have been undertaking a diet (days). The Perceived Stress Scale (PSS) is a 10-item instrument used to assess the extent to which ten situations in an individual's life are appraised as stressful during the last month (Cohen et al., 1983). Participants were asked to indicate one response for each of the ten items where the response options were "never", "almost never", "sometimes", "fairly often", or "very often". Higher total scores indicate higher levels of perceived stress and the range of possible scores is 0-40. The tool has been extensively used in higher education students as well as those in various employment (Lee, 2012). The internal consistency reliability, factorial validity and hypothesis validity of the PSS are well documented and the 10-item version has been found to be superior to the original 14-item version (Lee, 2012).

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics Version 24 (Armonk, NY: IBM Corp.). Descriptive statistics of the total sample were conducted to determine the proportions of males and females, age group and dieters versus non-dieters that participated in the study. The PSS was scored according to the pre-defined scoring

instructions by first reversing items 4, 5, 7 and 8. All ten items were then summed to provide a total PSS score. The distribution of the PSS total score was then assessed and the data were not normally distributed. The median and interquartile range (IQR) of the PSS total score was calculated and an independent samples Mann-Whitney U test was performed to assess the mean difference between those who were dieting and those who were not. For those on a diet, the distribution of the number of days on a diet was explored which was not normally distributed and indicated one outlier (1,095 days) which was subsequently removed. A Spearman's rho bivariate correlation was performed to investigate the relationship between number of days on a diet and total PSS score.

Results

A total of 60 participants were recruited to the study. Characteristics of the sample are presented in Table 1. Of the total sample, 28.3% (n=17) were male and 71.7% (n=43) were female. The majority (71.7%; n=43) of the sample were aged 18-25 years, 18.3% (n=11) were aged 26-35 years, 8.3% (n=5) were aged 36-45 years and 1.7% (n=1) was ≥ 46 years old. The median PSS total score was 19 (14 – 22). The majority of participants were undertaking a diet at the time of data acquisition (n=35; 58.3%) and the median number of days on a diet was 21 (14 – 33) days.

Those who were on a diet at the time of data collection had a median PSS total score of 20 (17 - 23). Participants that indicated they were not on a diet had a median PSS total score of 14 (12 – 21). An independent samples Mann-Whitney U-test showed the difference in perceived stress level between dieters and non-dieters was statistically significant (p=0.021).

Table 1: Sample characteristics of 60 United Arab Emirates residents

Characteristic	Percentage or median (IQR)
Gender	
Male (n=17)	28.3%
Female (n=43)	71.7%
Age group	
18-25 years (n=43)	71.7%
26-35 years (n=11)	18.3%
36-45 years (n=5)	8.3%
≥46 years	1.7%
Dieting	
Yes (n=35)	58.3%
No (n=24)	40.0%
Not indicated (n=1)	1.7%
Perceived Stress Scale total score	19 (14 – 22)
Duration on diet (days)	21 (14 – 33)

IQR = Interquartile Range

Spearman’s rho bivariate correlation showed a non-significant positive correlation between the number of days on a diet and the PSS total score, where $r=0.147$, $p=0.406$. A visual representation of the relationship between duration of diet (days) and perceived stress level is depicted in a scatterplot in Figure 1.

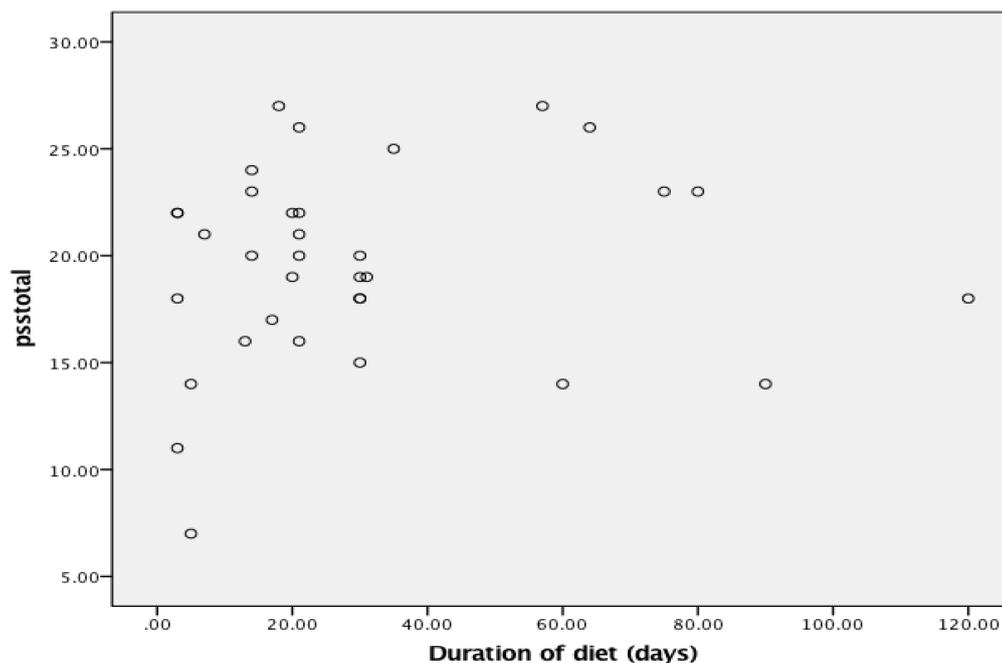


Figure 1: Scatterplot highlighting the relationship between duration of diet in days and perceived stress level in a sample of 35 Emirates.

Discussion

Higher levels of perceived stress were observed in participants undertaking a diet to induce weight loss, compared to those not on a diet. For those on a diet, the duration (days) on a diet was not significantly associated with levels of perceived stress. To our knowledge, this is the first study to investigate the relationship between perceived psychological stress and diet in adults residing in the United Arab Emirates.

Body image dissatisfaction and weight concern is a widespread problem (Bibiloni et al., 2017). Discrepancies between current body weight and desirable weight has been linked to discrimination, internalized stigma and body image trepidations (Jung et al., 2017). An extensive systematic review suggests that those with high levels of body dissatisfaction have a range of cognitive biases to appearance-related stimuli (Rodgers and DuBois, 2016). Furthermore, recent research has shown that higher body dissatisfaction is associated with poorer physical and mental health-related quality of life as well as greater psychological distress (Griffiths et al., 2016). In our study, given that the median duration of those on a diet was just 19 days, body dissatisfaction may have been present in dieters as a potential explanation of the heightened stress levels observed. Whilst the body weight and body dissatisfaction of the sample were not ascertained, it remains possible that the non-dieters in our study were healthy weight individuals with no body dissatisfaction concerns, and could thus explain lower stress levels that were observed.

Addressing the issue of body weight concern is paramount, particularly in young people who have an increased risk of developing an eating disorder. Educating individuals about the risks and symptoms associated with dieting and feeding behaviour, may improve knowledge, subsequent behaviour and help people to better manage stress levels. Internet-based interventions targeted at those with eating disorders have demonstrated a range of favourable psychological and physiological outcomes (Melioli et al., 2016). Thus, educating

those with body weight dissatisfaction, regardless of body weight status, may be an effective approach for reducing psychological and physiological consequences to address this public health concern.

Whilst this is the first study to examine the relationship between dieting and psychological stress in the United Arab Emirates, there are several study limitations that need to be acknowledged. First, the sample size was relatively small, thus our findings may not be generalizable to other populations. Furthermore, a small sample size restricts the statistical power and limits more detailed statistical analyses. Future studies in this area may consider recruiting larger numbers to the sample to overcome such issues. Second, given that our study was cross-sectional, the cause-effect association remains to be determined. It is possible that dieting results in higher levels of stress due to cognitive restrictions the individual places upon themselves or due to social difficulties surrounding meal times. Conversely, higher stress levels may promote the onset of dieting due to body image dissatisfaction. Further studies are needed to disentangle the temporal associations between dieting and subjective psychological stress. Third, no anthropometric measures were performed in our study to assess body weight status. Given that obese individuals report negative obesity-related psychological consequences (Jung et al., 2017), our study could have been improved by obtaining body weight and body image dissatisfaction in an attempt to better understand the driving factors of dieting behaviour. Lastly, although demographic data were obtained and a validated scale was used to estimate stress level, the observed relationship may have been confounded by other factors including academic or employment related stress, education level, physical activity, mental and/or physical health.

Conclusion

In conclusion, this is the first study to examine the relationship between perceived levels of psychological stress and dieting behaviour in the United Arab Emirates. We

observed higher stress levels in those undertaking a diet compared to those not on a diet. Duration of diet was not significantly associated with stress level. Individuals with body dissatisfaction concerns may require exposure to educational interventions to better management stress levels and ease physiological and psychological related symptoms; in turn, this may help to reduce the public health concern of body image dissatisfaction and its adverse consequences.

Conflict of Interest: None

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