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Original Research Article

Association between Physical Activity and Obesity of Hail University Students in Hail, Saudi Arabia

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Background and Methods: The majorities of young people have no healthy dietary or exercise habits. In the current study, we investigated the associations between dietary habits and body mass index among Hail university students in Saudi Arabia. A cross-sectional study was conducted among university students. Data were collected on a self-completed questionnaire on weight, height and physical activity. Statistical Package for Social Sciences (SPSS) version 13 was used for statistical analysis.

Results: The numbers of Participants were 100 males and 100 females aged 18–23years.57% of females were within normal weight, 20% overweight and 23% obese. 48% of males were within normal weight, 28% overweight and 24% obese.17.9% of university students were within a high level of physical activity,40.5% and 41.6%) moderate and low level of physical activity respectively. There was no significant correlation was found between BMI and PA (p>0.5).Despite that, there was a statistically significant correlation was found between physical activity and BMI within normal BMI participants positively (p<0.5). There were no significant differences between males and females.

Conclusions: Obesity is a complex disease resulting from complex interactions between genetic and environmental factors such as correlations of gut microbiota composition with diet.

Recommendation: Importance of understanding the genetic and environmental interactions contributing to obesity in developing novel therapies and preventive strategies.

Key words: Obesity, body mass index, physical activity, overweight.

INTRODUCTION

Obesity is the fifth most significant preventable cause of death worldwide and is one of the most pressing health threats facing children and young adults today. Obesity has more than doubled in children and quadrupled in adolescents during the last 30 years (Ogden, 2014). The pandemic of obesity, once thought to be restricted to developed, high-income countries, has now penetrated even the poorest of nations in virtually every part of the world. The extreme growing in obesity during the past few decades is strongly correlated with the increase in obesity-related complications, such as type 2 diabetes, heart disease, and cancer. High Calorie Diets along with a sedentary lifestyle are believed to be the most significant environmental factors contributing to this epidemic (Finucane *et al.,* 2011; Malik *et al.,* 2010).

The gut microbiota within the gut has been administered to control obesity in humans and mice (Turnbaugh *et al.,* 2006, 2009a). The microbial community is a transmissible trait and can undergo dynamic population shifts with varied dietary composition (Benson *et al.,* 2010; Turnbaugh *et al.,* 2009b; Yatsunenko *et al.,* 2012). In recent years, a potential emerging health concerns internationally is likely to be the increasing incidence of young people enormous public health burden (Monterio CA, 2004). Although previous studies have determined the associations between Physical activity and dietary habits in relation to obesity, it is not clear if their findings can be generalized. The current study aimed to examine the associations between the body mass index (BMI) and Physical activity patterns among Hail University Students.

METHODS

Data collection

The data were collected using combined pre-piloted questionnaires. The questionnaire was administrated to university students at Hail University, Saudi Arabia (50 males, 50 females). The questionnaire included questions concerned with FIND RISC and questions concerned with physical

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activity. Prior to filling out the questionnaire, the participants were informed about the objectives of this study and will be requested to fill out the questionnaire. The FINDRISC test: The part of the FINDRISC test in the questionnaire includes a total of questions regarding age, body mass index (BMI), physical activity. The risk of developing T2D within 10 years is categorized as low, slightly elevated; moderate, high, and very high.

Measurement of BMI and waist circumference Body weight, height, weight was measured using calibrated electronic weighing scales (Proton Digital Scale, Model PHC 309 MD) and height will be measured using a Portable Height Scale (Mentone Educational, Model PE087, Australia). BMI was calculated as weight (in kilograms) divided by height (in meters) squared. Participants with BMI between 25-30 kg/m2 or greater than 30.0 kg/m2 was defined as overweight or obese respectively. For males, waist circumference of less than 94 cm will be considered low, while 94–102 cm was high and more than102 cm was very high. For females, waist circumference of less than 80 cm was considered low, 80–88 cm will be high and more than 88 cm was very high.

Ethical consideration

Ethical approval was obtained from the Ethics and Research Committee at Hail University, Saudi Arabia. Participation will be voluntary and verbal consent will be acquired from each participant. Confidentiality of all participants was maintained as no identifying information will be collected or recorded.

Statistical analysis

Statistical Packages for the Social Sciences (SPSS) version 13.0 will be utilized for data analysis. The demographic variables (age, weight, height, BMI) were expressed as mean ± standard deviation. The frequencies of risk factors of dietary habits were expressed as a percentage (%). Differences between male and female participants will be estimated using a Chi-squared test (for categorical variables) and Student's t-test (for continuous variables) according to the statistical distribution of the data. Differences were considered statistically significant at ($P<0.05$).

RESULTS AND DISCUSSION

Overall, the numbers of Participants were 100 males and 100 females aged 18–23 years. 57% of females were within normal weight, 20% overweight and 23% obese. 48% of males were within normal weight, 28% overweight and 24% obese. This findings are very in agreement with other studies regarding Kuwaiti adolescent children, aged 15–19 years, in the most recent National Nutrition Surveillance System report (Ministry of Health, Administration of Food and Nutrition, 2010). The results of this study show there was no statistically significant correlation was found between BMI and PA among Hail university students in general at ($P<0.05$). Despite that, there was a statistically significant correlation was found between physical activity and BMI within normal BMI participants positively ($p < 0.5$). This finding reflects the importance of physical activity in maintaining body weight. The current result was agreed with the study done by (Khan MA *et al.,* 2012).

This study was shown that the prevalence of participation in physical activity among Hail university students was low.17.9% of university students were within a high level of physical activity, 40.5% and 41.6%) moderate and low level of physical activity respectively. Our results agree with previous studies showing that physical activity level is low in general. The current results were consistent with the findings from the National Health and Morbidity survey, in which 35.7% of young adults were, recorded physically inactive (Sreeramareddy CT *et al.,* 2012).

CONCLUSIONS

Obesity is a heritable disease; with estimates ranging from 50% to 90%.Obesity is a complex disease resulting from complex interactions between genetic and environmental factors such as correlations of gut microbiota composition with diet (Barsh *et al.,* 2000; Stunkard *et al.,* 1986). Large human Human genome-wide association studies show less than 3% of this genetically inherited component and environmental interactions with diet composition likely add significant complexity to such studies (Kilpelainen *et al.,* 2011; Sonestedt *et al.,* 2009; Speliotes *et al.,* 2010).

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