Prevalence of Metabolic Disorder in Adolescent Residing in Al-dawadmi and Shaqra Regions of Saudi Arabia

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Authors' contributions

The work was carried out in collaboration of all authors. Authors MA and SKD designed the study, wrote protocol, supervised the study, performed statistics and communicated the manuscript with the Journal since submission to publication. Authors GSSA and HBHA performed the study, collected the data, performed statistics, managed literature search and contributed in writing the manuscript. All the authors have read and approved the final draft of manuscript.

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ABSTRACT

The recent study was aimed to estimate the prevalence and develop the relationship of the clinical history like diabetes, cardiac disease and vitamin D deficiency and obesity and their impact on metabolic disorders for adolescent residing near Dawadmi and Shaqra region. Two hundred samples (142 Females & 58 Males) were utilized in the study with an age ranging 13-20 and distributed the questionnaire to record the responses. The results exhibited that 38% subjects responded positively for clinical history with cardiac disease, while 70.5 and 47% responded positively for the clinical history with diabetes and vitamin D deficiency. The clinical history with diabetes, cardiac disease and vitamin D deficiency was observed the major risk factors acting in descending order diabetes-cardiac disease-vitamin D deficiency.

Keywords: Metabolic disorder in adolescent; risk factors.

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1. INTRODUCTION

The prevalence of metabolic syndrome in adolescent is enhanced due to the increase in the obese population [1]. The amalgamation of dyslipidemia, regulation of glucose, adiposity and hypertension is denoted as the metabolic syndrome that have long been associated in the obese adolescent with high risks of diabetes and heart disease [2]. Metabolic syndrome is reported with an increased risk of death from Coronary heart disease (CHD), Cardiovascular disease (CVD), and all other causes [3]. On the other hand the level of 25(OH)D in the serum has been reported to possess an inverse relationship with the metabolic Syndrome [4-6]. Metabolic syndrome affects nearly twenty five percent of the adolescent population worldwide with varying prevalence according to the definition used, ethnicity under study, and level of urbanization [7]. Many research has been carried out by various countries targeting the prevalence of metabolic syndrome in adolescent population [8-10]. Mar Bibiloni M reported a cross sectional study aiming the metabolic syndrome in adolescent in the Balearic island [11]. Recently the prevalence of metabolic syndrome among adolescents in a city in the Mediterranean area with comparison of two definitions has also been reported by Rafael Galera-Martínez et al. [12]. The worldwide prevalence of the metabolic syndrome has been reported 10-84%, 34.5% (ATP III) and 39 % (IDF) [13,14]. The prevalence of metabolic syndrome in gulf countries like Oman, UAE has been reported to be 17% and 40.5% following both ATP III and IDF Criteria. The prevalence of obesity in Saudi Arabia has been reported as 39.3% following the ATP III criteria additionally the prevalence of other parameters for metabolic syndrome has been reached to the apex in the kingdom [15,16]. Saudi Arabia has been considered worldwide as the country with high prevalence of diabetes and in the same manner the obesity has the direct effect on more than 1/3 adolescent population [17]. The recent study is designed to understand the prevalence of metabolic syndrome, association with obesity and risk factors in adolescent population of Al-Dawadmi and Shaqra Region of Saudi Arabia.

2. MATERIALS AND METHODS

This study was performed in the Department of Basic Sciences, College of Medicine Dawadmi, Shaqra University KSA in collaboration with hospitals of Dawadmi and Shaqra region. The study protocol was approved by the college scientific council and ethical committees of our institute/university.

2.1 Sample Size Estimation

The sample size was estimated according to the prevalence of metabolic syndrome in Saudi Arabia that is to be 39.8% and 31.60% according to the Adult treatment Panel III (ATP III) and International diabetes Federation (IDF) [18]. Two hundred samples were collected randomly which included 142 females & 58 males.

2.2 Study Population

In the present study the subject under investigation was chosen on the basis of some parameters such as- age, sex, dietary conditions and their life styles with the experts.

The inclusion and exclusion criteria will be as follows:

2.2.1 Inclusion criteria

1. Subject having relatives with diabetes
2. Subject having relatives with obesity
3. Subject having relatives with Vitamin D deficiency
4. Subject having relatives with heart disease
5. Subject of age between13-20.

2.2.2 Exclusion criteria

1. Patients below age 13 or above 20
2. Pregnancy
3. Patients undergoing chemotherapy
4. Patients undergone surgeries
5. HIV Patients
6. Patients excluded with Strokes, Ischaemia, cardiac arrest.

2.3 Methodology and Techniques

The recent study is a survey based study that include the questionnaire applying the direct contact to the patients. Statistical analysis of the data was performed using window based latest version of SPSS software, p < 0.05 was considered statistically significant (Performa attached as supplementary material).

3. RESULTS AND DISCUSSION

The survey based study was carried out targeting the peoples residing in Dawadmi and Shaqra region. The questionnaire was distributed among two hundred adolescents (142 Females & 58 Males) with metabolic disorders and their
response were recorded. When we tried to develop the relationship between the clinical history of these people with respect to the cardiac disease 38% responded that they have the relatives with cardiac disease while 62% do not have any relative with cardiac disease. The findings were a different in case of clinical history with respect to diabetes 70.5 percent subjects responded positive and 29.5 percent negative. The clinical history considering the vitamin D deficiency exhibited wonderful results and stated that 47% subjects were having relatives with vitamin D deficiency while 52% subjects responded negatively.

**Fig. 1.** Representing the distribution of subjects on the basis of gender (male or female)

**Fig. 2.** Representing the response of the subjects with clinical history like heart disease, diabetes and vitamin D deficiency

**Fig. 3.** Representing the distribution of subjects on the basis of location of residents
4. CONCLUSION

Two hundred patients (142 females and 58 males) residing in Dawadmi and Shaqra region with metabolic disorder were subjected for the study and results revealed that the metabolic disorder has strong relation with vitamin D deficiency. On the other hand it was also observed that approximately fifty percent people with obesity were found to possess diabetes and cardiovascular diseases despite their age. The study will help to understand the risk factors and monitor the prevalence rate of metabolic syndrome and their proper management.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES


