Prevalence of Dyslipidaemia in Saudi Arabia

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Abstract

Dyslipidaemia is an important modifiable risk factor for development of cardiovascular disease. Dyslipidaemia is a medical disorder described as an increase in any or all lipid profiles and/or lipoproteins in the blood. The major risk factors for dyslipidaemia include changes in lifestyle and dietary habits, such as eating saturated fat more than 10% and fat consumption more than 40% of total calories/day. The aim of this study is to determine the prevalence of dyslipidaemia among adults in Saudi Arabia. Sixty-two male adults aged 35 years and older participated in this study. The researcher collected body mass index and blood samples. The study results indicated that 91.9% of male adults have low high-density lipoprotein cholesterol (< 40 mg/dl). The findings also showed that 24.2% of male adults have high triglycerides (≥ 150 mg/dl). Moreover, 11.3% of male adults have high total cholesterol (≥ 200 mg/dl). The results also indicated that 16% of male adults have high low-density lipoprotein (≥100 mg/dl).

Keywords : Prevalence; dyslipidaemia; LDL; HDL; TG

Introduction:

Dyslipidaemia is an important modifiable risk factor for development of cardiovascular disease (CVD) and atherosclerosis (Alamri et al., 2019; El-Daloa & Hamama, 2017; Lin et al., 2018; Supiyev et al., 2017). According to the World Health Organisation (WHO), dyslipidaemias cause one fifth of worldwide CVD and one third of ischemic heart disease, which associates to around 2.6 million mortalities yearly worldwide (3). Dyslipidaemia is a medical disorder described as an increase in any or all lipid profiles and/or lipoproteins in the blood (5).

The major risk factors for dyslipidaemia include changes in lifestyle and dietary habits, such as eating saturated fat more than 10% and fat consumption more than 40% of total calories/day. Abnormal blood lipid levels can be caused by other lifestyle issues, such as high body mass index (BMI), physical inactivity, heavy alcohol use, and smoking. Additionally, diabetes, pregnancy, and kidney disease have been associated with high prevalence of dyslipidaemia (4,6).

The increasing prevalence of dyslipidaemia has become an obvious public health issue in Saudi Arabia (SA) and worldwide (4). The prevalence of dyslipidaemia in the Saudi adult male population is significant. Many men are unaware of their lipid profile, leading to a high prevalence of individuals with untreated lipid abnormalities. Guides for examining and treating high blood lipids show that appropriate management of blood lipids is both cost-effective and lifesaving. Therefore, understanding the present prevalence of blood lipids is a significant step for rising awareness of the problem and appropriate planning of health strategies for preventing the problem and its negative health effects.

Methods:

This was a cross-sectional study targeting male adults aged 35 years or older. BMI was calculated as weight divided by height squared (kg/ m^2). All biochemical measurements — low-density lipoprotein (LDL), total cholesterol (TC), high-density lipoprotein (HDL), and triglycerides (TG) — were taken early in the morning after an overnight fast of 10–12 hours via capillary finger stick. Blood lipid measurements were performed according to the manufacturer's instructions, using the LipiDiag 4 in 1 optics blood lipid analyser. The sample of blood lipids was taken in accordance with the WHO guides on obtaining blood (7,8). Dyslipidaemia was defined by the National Cholesterol Education Programme-Adult Treatment Panel III (NCEP-

ATP III) criteria as the existence of one or more of the following: total serum cholesterol less than 200 mg/dL, serum LDL greater than 130 mg/dL, serum TG levels of 150 mg/dL, and serum HDL levels of 40 mg/dL in men (Altowerqi et al., 2020; Altowerqi & Zainuddin, 2021).

Statistical analysis

For statistical analysis, version 23 of the SPSS software was used. The data are presented in the form of the mean, standard deviation, or percentage (%).

Results

Data were obtained from biochemical measurements, body measurements, and a questionnaire. The total number of participants in this study was 62. All were males aged 35 years or older from the western region of SA.

Table 1 shows BMI categories and smoking status. The percentage of underweight was 3.2%, normal weight 17.7%, overweight 41.9%, and obesity 37.1%. Regarding smoking status, 66.1% of Saudi males were smokers.

Table 1. Corresponding percentages of BMI and smoking

Variables	Percentage
BMI	
Underweight	3.2%
Normal weight	17.7%
Overweight	41.9%
Obesity	37.1%
Smoking status (Yes) (%)	66.1%

The study findings indicated that 91.9% have low HDL (< 40 mg/dl), 24.2% have high TG (≥ 150 mg/dl), 11.3% have high TC (≥ 200 mg/dl), and 16% have high LDL (≥100 mg/dl).

Discussion

There is a dearth of available data regarding the burden of dyslipidaemia in SA adults in general. Hence, the present study sought to determine the prevalence of dyslipidaemia among men ≥ 35 years old in the western region of SA. In this study, the prevalence of blood lipid components, especially elevated low HDL and high TG, was unacceptably high. The high prevalence of blood lipids may be attributed to change in eating habits, sedentary behaviours, and improved socioeconomic status (6).

Low HDL was the most prevalent (91.9%) component of dyslipidaemia, which is consistent with recent results reported in northwestern China, India, and SA (Ge et al., 2015; Wankhade et al., 2018; Xi et al., 2020; Al-Hassan et al., 2018). This phenomenon could be explained by the increasing excessive consumption of simple carbohydrates and high saturated fat diets parallel to rapid urbanisation (13). Low HDL increased with high waist size and high BMI (2,11,12,14). The prevalence of high low HDL (91.9%) in this study is higher than previous findings reported in SA (40%) (15), India (62%) (12), southwestern China (5.7%) (14), and Jordan (59.5%) (16).

In this study, the prevalence of high TG (24.2%) is higher than earlier results reported by Alhassan et al. (2018) (17%) and Huang et al. (2021) (15.7%). However, the prevalence was lower than in the study conducted by Abujbara et al. (2018) (41.9%). The prevalence of high TC (11.3%) in this study is similar to the findings of Hofuf city (13.8%) (Al-Hassan et al., 2018) and lower than in Wankhade et al.'s (2021) (15.3%) and Abujbara et al.'s (2018) (44.3%) studies. Unlike many previous studies, the prevalence of LDL in this study (16%) is lower than in Jordan (75.9%) (16) and India (23%) (12). These variances may be attributed to the differences in the cut-offs, study settings, socioeconomic status, and lifestyle behaviours.

The cross-sectional design of the current study and the small sample size are two of the

study's limitations, which cannot establish causality. However, future studies can use a larger sample size and may include gender as well as detailed information on physical activity levels, diet, and family history of blood lipids.

Conclusion

This study shows the latest data on the blood lipid levels in the western region of SA. Low HDL and high TG are the main components of blood lipids, and it is difficult to prevent and control blood lipids. They are strongly associated with higher incomes, unhealthy lifestyle, and low physical activity levels. Only by increasing public health awareness and intervening in risk factors will we be able to face the challenge.

Ethical conduct of research

The ethics committee of the Department of Physical Education at Umm AlQura University approved this study, and written informed consent was obtained from all participants.

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Conflicts of interest

The author declares that he has no conflicts of interest.

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