

Risk Factors of Dyslipidemia among Saudi Population, 2017

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ABSTRACT

Background: the dyslipidemia and its associated risk factors and co-morbid diseases are the focus of many studies in KSA, however the data regarding the prevalence are very little. **Objectives:** this study aimed to assess the risk factors of dyslipidemia and its association with the subject's demographics and life style pattern in Kingdom of Saudi Arabia (KSA). **Methods:** this was a cross-sectional study based on a check list and questionnaire sheet conducted for 6 months among 840 Saudi adults. **Results:** about 33% of the subjects were suffered from dyslipidemia after checking their lipid profile and anthropometric measures. The subjects were divided into two groups: **group I** included dyslipidemic subjects and **group II** included control subjects. The older age and jobless subjects showed a significant association with the prevalence of dyslipidemia. **Group I** showed a significant association between dyslipidemia and comorbid conditions than group II. The irregular physical activity, consuming less healthy food and consuming more fast food are significantly related to Group I than **group II**.

Conclusion: dyslipidemia is common among Saudi subjects and associated with health problem as hypertension, diabetes and obesity as well as bad lifestyle habits.

Keywords: risk factors, dyslipidemia, Saudi population, KSA.

INTRODUCTION

The dyslipidemias is defined as a multiple syndromes in the metabolism of lipoprotein as decrease or overproduction of lipoproteins. It is considered as a significant risk factor for chronic non-communicable diseases and cardiovascular diseases (CVD) which contribute to high morbidity and death rates worldwide ⁽¹⁾. Dyslipidemia also impacts the health and economic status and increased the worldwide medical costs ^(2,3).

The dyslipidemia could be assessed using anthropometric measurements and assessing serum increase in the concentrations of triglycerides, total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C) concentrations, with a marked reduction in level of the high-density lipoprotein (HDL-C) ^(4,5). In KSA the situation of dyslipidemia is intensely increased with studying the economic impacts, dietary factors, life style habits and demographics and showed an obvious reduction in the encumbrance of infectious diseases ^(4,5). However, there is no evident on an exact prevalence of dyslipidemia in KSA yet, but it differs with different gender, distinct populations, demographics and cultural features ⁽⁶⁾.

The approach for evaluating the predictors, prevalence as well as risk factors is a principal for controlling and preventing this disease and contributing to decreasing its comorbid impacts ^(7,8). Being overweight or obese and T2DM were associated with high prevalence of dyslipidemia. Also, changing the life style and physical activity habits are linked with decreasing the risks and prevalence of dyslipidemia ⁽⁹⁾.

Also, another study showed that dyslipidemia was most frequent in diabetic patients characterized by high LDL in males and low HDL in females, with a subsequent increased risk of CHD ⁽¹⁰⁾.

Subburam et al. studied the association between dyslipidemia in diabetic patients, atherosclerosis and higher risk of coronary vascular diseases and concluded that LDL dyslipidemia is widespread in T2DM patients and highlighted the urgent need for managing LDL dyslipidemia to suppress their risk on CVD ⁽¹¹⁾.

Other studies focused on the treatment of dyslipidemia have used therapeutic and lifestyle interventions to target additional risk factors associated with dyslipidemia. By improving lipid profile the global risk of CVD in the diabetic patients can be reduced ⁽¹²⁻¹⁴⁾. Hence, many studies supported good global management and better control of dyslipidemia in patients with diabetes type 2 which are essential in reducing the risk of CVD ^(15,16).

The hypothesis of this study was that dyslipidemia is associated with hypertension, obesity, T2DM, bad physical and life style habits. This study allowed to estimate the major risk factors and pattern of dyslipidemia in KSA population. This study aimed to assess risk factors of dyslipidemia among Saudi Arabia population. Also, to determine the association between dyslipidemia and subject's demographics, risk factors and life style pattern.

METHODS

Study design: This was a cross-sectional community-based study.

Setting: This study was conducted in thirteen governorates all over KSA with a population size of 31,742,308 people as reviewed by the General Authority for Statistics (GAS), KSA in 2016 ⁽¹⁷⁾. This study was conducted for 6 months to cover all governorates in KSA.

Sample size

The sample size was determined using Raosoft sample size calculator as the response to all questions was assumed to be 50%. Using a 5% margin error and a confidence interval of 95% and a population size of 31,742,308 people, the minimum sample size estimated for the study was 377 ⁽¹⁸⁾. Assuming a response rate of 50% a large sample size of 840 Saudi people were enrolled in this study.

Study population

840 Saudi participants from all governorates were included from both gender and aged from 20-60 years old.

Study tools and data collection:

The data were collected according to the WHO design including two approaches as a checklist for assessing the anthropometric measurement and the lipid profile and a self-administered questionnaire which included information regarding the socio-demographics, comorbid conditions, risk factors as well as assessing the physical activity pattern of included subjects ^(19, 20). The questionnaire was translated into Arabic and distributed among the participants for 3 hours per day.

Ethical considerations

The instrument and questionnaire used in this study were approved by supervisors. Oral or written consent were obtained from all participants and they were informed that their data were confidential and informed that this study poses no hazards on their health.

Statistical analysis

The data analysis was done using the SPSS version 22 for windows. The variables were shown as percentages and frequencies. Chi-square test was used for assessing the dependent variables. P-value <0.05 was considered as significant.

RESULTS

After reviewing the anthropometric measurement and the lipid profile of the participants, 277 (33%) out of 840 subjects were diagnosed to suffer from dyslipidemia. Thus the subjects were divided into two groups:

Group I included dyslipidemic subjects and **Group II** included control subjects. The two groups were compared according to their demographics, comorbid conditions, risk factors and lifestyle habits.

Demographics of the studied subjects

The older age showed a highly significant association with the prevalence of dyslipidemia. Neither gender nor educational level showed a significant association with dyslipidemia. Also, there was a significant difference between working status and dyslipidemia prevalence as the retired or jobless subjects had a higher prevalence of dyslipidemia (**Table 1**).

Table 1: characteristics of included participants (840)

Variable	Group I (277)	Group II (523)	P-value
Age (year)			
20-40	86 (31%)	321 (61.4%)	0.001
40-60	191 (69%)	202 (38.6%)	
Gender			
Male	136 (49.1%)	281 (53.7%)	0.071
Female	141 (50.9%)	242 (46.3%)	
Educational Level			
Collage	204 (73.6%)	401 (76.7%)	0.64
Secondary School	73 (26.4%)	122 (23.3%)	
Working status			
Working	143 (51.6%)	351 (67.1%)	0.05
Jobless or retired	134 (48.4%)	172 (32.9%)	

Comorbid conditions and risk factors of included subjects

The comorbid and chronic conditions included hypertension, diabetes and obesity showed a highly significant difference among dyslipidemic group than **group II**. **Group I** showed a significant association between dyslipidemia and comorbid conditions (**Table 2**).

Table 2: comorbid conditions and risk factors among included subjects

Variable	Group I (277)	Group II (523)	P-value
Hypertension			
Yes	199 (71.8%)	114 (21.8%)	0.001
No	78 (28.2%)	409 (78.2%)	
Diabetes			
Yes	164 (59.2%)	148(28.3%)	0.001
No	113 (40.8%)	375 (71.7%)	
Obesity			
Yes	201 (72.6%)	193 (36.9%)	0.001
No	76 (27.4%)	330 (63.1%)	

Life style habits among respondents:

As for the lifestyle habits, there was a significant difference between the two groups regarding the regular physical activity, consuming health food and consuming fast food. The irregular physical activity, consuming less healthy food and consuming more fast food are significantly related to **group I than group II (Table3)**.

Table 3: respondents' life style and physical activity

Variable	Group I (277)	Group II (523)	P-value
Regular Physical activity			
Yes	51 (18.4%)	384 (73.4%)	0.001
No	226 (81.6%)	139 (26.6%)	
Eating healthy food			
Yes	120 (43.3%)	378 (72.3%)	0.001
No	157 (56.7%)	145 (27.7%)	
Consuming fast food			
Yes	141 (50.9%)	252 (48.2%)	0.05
No	136 (49.1%)	271 (51.8%)	

DISCUSSION

The present study evaluated the risk factors of dyslipidemia among Saudi subjects. The present study showed that about 33% of the subjects suffered from dyslipidemia. Also, the status of dyslipidemia among Saudi subjects was found to be high in several studies ^(2, 8, 21). Old age, diabetes, hypertension and obesity were found to be significantly associated with increasing the lipid profile and result in dyslipidemia ⁽²¹⁾. Also, lifestyle is modifiable risk factors for dyslipidemia ⁽²²⁾ as decreasing the junk food as well as doing regular exercise could decrease the prevalence of dyslipidemia.

Weight gain, getting older, obesity, and diabetes type 2 (DM) showed significant association with suffering from dyslipidemia resulting in increasing the low density lipoproteins thus could result in high morbidity rates of cardiovascular diseases and high

mortality rates ^(23, 24). In western countries, replacing the healthy food with junk food as well as decreasing the practice time showed a significant association with raising the dyslipidemia incidence and many studies showed that healthy lifestyles could be a preventive way from dyslipidemia and its complications ^(24, 25). The same happens in our society due to the eating junk and fast food and this is also associated with restriction of physical activity in KSA especially among women. This study has some strength factors including the sufficient sample size and checklist for evaluating the dyslipidemia prevalence. This study has also some limitations including that it is a cross sectional survey, the life style and diseases were self-reported, limitation in the reaching the rural areas as well as high costs of transportation and scheduled time.

CONCLUSION

Dyslipidemia is common among Saudi subjects and associated with health problem as hypertension, diabetes and obesity as well as bad lifestyle habits. Health educational campaigns should be conducted to increase the knowledge of Saudi subjects and increase their attention to good lifestyle habits.

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