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Knowledge, attitudes and practices which leads hyperlipidemia among population in Arar city at northern region in Saudi Arabia

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ABSTRACT

Background: The term "hyperlipidemia" (HL) refers to a set of genetic and acquired illnesses where the body's lipid levels are increased. The primary strategy for lowering illness frequency and spread is to educate the public about modifiable risk factors. The current study aims to demonstrate the knowledge, attitudes and practices (KAP) of HL among the adult population in Arar city, northern Saudi Arabia. *Methods*: A quantitative cross-sectional study was employed; including 300 respondents utilizing a self-administered questionnaire, their mean age was 27.7 ± 9.5 years old. Obesity was reported most often risk factor (85%) followed by a diet rich in sugars (81%), physical inactivity (74.3%), diabetes mellitus (66.3%), smoking (52%) and hereditary (48.7%). 93.7% agreed that regular lipid profile screening is essential. Less than one-third of the participants had screened for their lipid profile (30.3%) of whom the physician or hospital visit reported most often reason (59.3%). *Conclusion*: Although most adults are aware of the risk factors for HL, only one-third have ever had their lipid profile checked.

Keyword: Hyperlipidemia, risk factors, knowledge, attitudes, practices.

1. INTRODUCTION

The human body needs cholesterol, particularly for hormone synthesis, fat digestion, cell membrane formation (Dashty et al., 2014). HL is a group of inherited and acquired disorders characterized by elevated lipid levels in the human body (Stewart et al., 2020). HL is a category of illnesses characterized by high blood lipid levels that can manifest in a variety of ways and dramatically impact the quality of life. The condition has reached epidemic proportions in recent years while being a poorly handled condition in clinical

practice (Gómez et al., 2022). A study of the adult population in Arar city, northern Saudi Arabia, revealed that 53.8% of the adult population had HL (Alanazi et al., 2018).

HL is a key factor in the imbalance of low-density lipoproteins and high-density lipoproteins in the blood, which is linked to a higher risk of cardiovascular disorders (Ahmed et al., 2016; Nelson, 2013). The prevention of cardiovascular disease is positively impacted by patient awareness and knowledge of the risk factors and treatment options for HL (Janus et al., 2010). The cost burden of HL is substantial. It is of two parts: The economic cost of HL itself that is linked to the diagnosis and treatment and the burden of disorders caused by HL such as heart diseases and stroke (National Heart Foundation of Australia, 2018).

Numerous factors, such as saturated fat-rich diets, decreased physical exercise, obesity, diabetes and even pre-diabetes, have been linked to rises of HL (Mozaffarian et al., 2016; Huang et al., 2016). HL is asymptomatic disorder and only can be detected by a specific diagnostic test. HL screening has the potential to improve the health of the public. It is crucial to recognize those people at greater risk of hyperlipidemia to begin lifestyle modification counseling (Mannu et al., 2013). Risk factors for HL can be avoided. Early discovery of HL patients might assist in better management and reduction of the occurrence of related problems (Gosadi, 2021).

The fundamental technique for reducing illness incidence and dissemination is to educate the public regarding modifiable risk factors (Jafary et al., 2005). Public awareness programs to highlight the risks of HL and the value of early diagnosis are crucial. These programs will have a greater influence on health if they convey messages about altering healthy behaviors like food and physical exercise (Basulaiman et al., 2014). The current study attempts to determine the KAP of HL in the adult population of Arar, Saudi Arabia.

2. PARTICIPANTS AND METHODS

Study setting

Arar district, the northern border regions capital, Saudi Arabia

Study design

An observational, quantitative descriptive cross-sectional study design was employed from January to July 2022.

Study population

The adult general population (males and females) at least eighteen years and more and willing to participate, were included.

Study tools

A self-administered Arabic structured questionnaire constructed by extensive literature review of the previous relevant studies was used. The questionnaire format was divided into 4 sections: Section I: It comprises the socioeconomic backgrounds of the participants, such as age, gender, marital status, occupation, weight and height. Section II: It collects information on the existence of chronic conditions such as diabetes, hypertension and heart disease among respondents, as well as the practice of physical exercise. Section III: It asks participants on their perceptions of HL risk factors as obesity, a high sugar diet, physical inactivity, smoking, inheritance and diabetes mellitus. Section IV: This assess HL attitudes and practices such as regular lipid profile screening, a healthy diet and physical activity can protect against HL, a negative impact of HL on health as well as the self-reported practice of lipid profile screening. All the questionnaire questions were closed ended and answered with (yes or no) or (agree or disagree). It was written in English, then translated into Arabic and then back into English by an expert. The questionnaire was phrased to enhance clarity.

Tool validation

The questionnaire format was revised by two experts (one family medicine and one internal medicine) to check for the content validity. A pilot study included a convenient sample of 20 participants was employed to check for time needed to complete the questionnaire and questions clarity. Data from a pilot study were not analyzed.

Sample size

For sample size calculations, Epi info software version 7.2.4.0 was used, with a 43.5% expected level of knowledge (Alzahrani et al., 2020), 0.05 margins of error and 95% confidence level, the estimated sample size is 300.

Sampling method

After receiving official approval from Northern Border University's local bioethics committee to conduct the research, data were electronically collected from participants (Google form) using different social platforms (whatsApp, Facebook and twitter). The study objectives were stated at the beginning of the questionnaire and prior to participation, the respondents provided written informed consent.

Statistical analysis

Carried out using SPSS version 20.0 (IBM Corporation, Armonk, NY, USA). Numerical data were presented as mean and standard deviation, while categorical data were expressed as frequency and percent. For categorical data, the chi-square was used and significance level was determined using a p-value less than 0.05.

3. RESULTS

Table 1 Participants' socio-demographic characteristics

Socio-demographic characteristics	No	%
Age (Years) Mean ± SD 27.7 ± 9.5		
18-30	214	71.3
30-40	44	14.7
40 and more	42	14
Sex		
Males	62	20.7
Females	238	79.3
Body Mass Index		
Underweight	27	9
Normal	118	39.4
Overweigh	94	31.3
Obese	61	20.3
Marital status		
Single	187	62.3
Married	106	53.3
Divorced	7	2.3
Educational level		
University/above	244	81.3
High school /below	56	18.7
Occupation		
Employed	71	23.7
Unemployed	178	59.3
Fee jobs	20	5.6
Others	31	10.3
General health status		
Excellent	153	51
Very good	94	31.3
Good	48	16
Poor	5	1.7
Smoking		
Yes	31	10.3
No	265	38.4
Ex-smoker	4	1.3

Table 1 Displayed the Participants' socio-demographic characteristics. A total of 300 Saudi adults were studied; they were predominantly (71.3%) in the age category of 18 to 30 years, with a mean age of 27.7± 9.5; more than sixty percent (62.6%) were single; 187 (81.3%) had a university degree or higher; slightly less than sixty percent (59.3%) were unemployed. About half of those surveyed (51%) reported having excellent health, current smokers (10.3%) and about one-fifth had obesity.

Table 2 showed the distribution of chronic diseases and the practice of physical exercise among the respondents. Hypertension and diabetes mellitus were reported equally by a minor percentage (5.3%) and less than two percent cited heart diseases (1.7%). Walking was mentioned in more than two-thirds (76.7%) while physical exercise was observed in only 11%.

Table 2 Pattern of chronic diseases among the studied population and practices of physical exercise

Chronic diseases & practice of physical exercise	No	%
Diabetes mellitus		
Yes	16	5.3
No	284	94.7
Hypertension		
Yes	16	5.3
No	284	94.7
Heart disease		
Yes	5	1.7
No	295	98.3
Practice physical exercise		
Yes	33	11.0
No	267	89.0
Walking		
Yes	230	76.7
No	70	23.3

Table 3 Knowledge's regarding risk factors for HL among the studied population

Item	No	%
Know HL		
Yes	146	48.7
No	154	51.3
Obesity increase the risk of HL		
Yes	255	85.0
No	45	15.0
A diet rich in sugars increase the risk HL		
Yes	245	81.7
No	55	18.3
Physical inactivity increase the risk HL		
Yes	223	74.3
No	77	25.7
Diabetes mellitus increase the risk of HL		
Yes	199	66.3
No	101	33.7
Smoking increase the risk HL		
Yes	156	52.0

No	144	48.0
HL is hereditary disease		
Yes	146	48.7
No	154	51.3

Table 3 highlighted the responses of participants' knowledge about the risk factors for HL. Obesity was reported most often risk factor (85%) followed by a diet rich in sugars (81%), physical inactivity (74.3%), diabetes mellitus (66.3%), smoking (52%) and hereditary (48.7%).

Table 4 Attitudes and practices related to HL among the studied respondents

Variable	No	%
Regular lipid profile screening is important		
Agree	281	93.7
Disagree	19	6.3
A healthy diet and physical exercise can protect against HL		
Agree	278	92.7
Disagree	22	7.3
HL negatively affect your health		
Agree	250	83.3
Disagree	50	16.7
Complete blood screening is important.		
Agree	217	72.3
Disagree	83	27.7
Ever screened for lipid profile		
Yes	91	30.3
No	209	69.7

Table 4 displayed the responses of participant's attitude and practices related to HL. Most of the participants (93.7%) agreed that regular lipid profile screening is important, healthy diet and physical exercise can protect against HL (92.7%), HL negatively affects their health (83.3%) and regular complete blood screening is important (72.3%). Less than one third of the participants had screened for their lipid profile (30.3%) of whom physician or hospital visit reported most often reason (59.3%) (Figure 1).

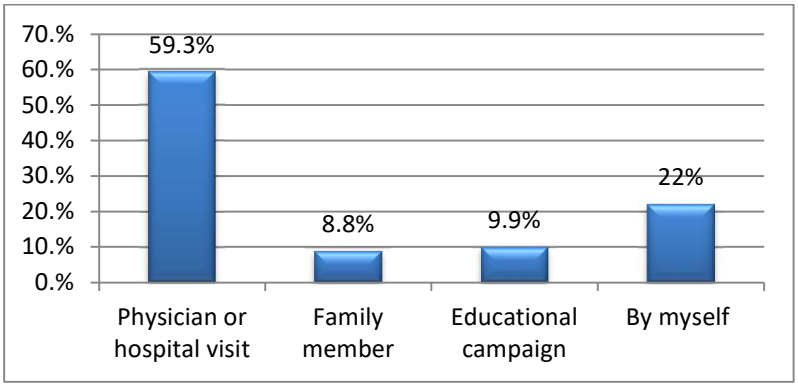

Figure 1 Reasons for lipid profile screening

Table 5 revealed that females are insignificantly more aware than males that a high-sugar diet, physical inactivity, smoking, inheritance increase the risk of HL, but diabetes mellitus is statistically significant as risk factor for HL. Males are more aware of the disease's association with obesity though the difference is statistically insignificant.

Table 5 Distribution of HL risk factors by gender

Do you know that	Male No (%)	Female No (%)		P-Value
Obesity increase the risk of HL				
Yes	54(87.1)	201(84.5)	0.26	0.6
No	8(12.9)	37(15.5)		
A diet rich in sugars increase the risk HL				
Yes	49(79)	196(82.4)	0.4	0.5
No	13(21)	42(17.6)		
Physical inactivity leads to HL				
Yes	45(72.6)	178(74.8)	0.12	0.7
No	17(27.4)	60(25.2)		
Smoking increase the risk HL				
Yes	29(46.8)	127(53.4)	0.8	0.3
No	33(53.2)	111(48.6)		
HL is hereditary disease				
Yes	28(45.2)	118(49.6)	0.4	0.5
No	34(54.8)	120(50.4)		
Diabetes mellitus increase the risk of HL				
Yes	32(51.6)	167(70.2)	7.5	.006
No	30(48.4)	71(29.8)		

Table 6 Distribution of attitudes and practices of HL by gender

Do you know that	Male No (%)	Female No (%)		P-Value
Regular lipid profile screening is important.				
Agree	43(69.4)	174(71.9)	0.34	0.5
Disagree	19(30.6)	64 (31.1)		
A healthy diet and physical exercise can protect against HL				
Agree	59(95.2)	219(92)	0.7	.4
Disagree	3(4.8)	19(8)		
HL negatively affect your health				
Agree	48(77.4)	202(84.9)	1.9	0.1
Disagree	14(22.6)	36(15.1)		
Complete blood screening is important.				
Yes	43(69.4)	174(73.1)	0.3	0.5
No	19(30.6)	64(26.9)		
Ever screened for lipid profile				
Yes	21(33.9)	70(29.4)	0.5	0.5
No	41(64.1)	168(70.6)		

Table 6 revealed that females agreed more than males that regular lipid profile screening is important, HL has a negative impact on their health and complete blood screening is important, but the differences are statistically insignificant. Males are more likely to

have had their lipid profile screened and to agree that healthy diet and physical exercise blood lipids level, but the difference is not statistically significant.

4. DISCUSSION

To our knowledge, this is the first study in Arar city to investigate KAP of HL in the general population. The current study included 300 participants to investigate the KAP of HL among them. Our findings shed light on the existing state of HL awareness among adults in Arar, Saudi Arabia.

According to the findings of this study, almost one-fifth of the respondents were obese. In agreement with a comparable study which reported that obesity prevalence in northern Saudi Arabia is 21.1% (Althumiri et al., 2021). In contrast, another Saudi Arabian study found that the prevalence of obesity was 35.4%. This discrepancy could be attributed to a different methodological approach (Alluhidan et al., 2022).

The current study found that 5.3% of people have diabetes and a similar proportion have hypertension. These findings are lower than those published by previous studies, which indicated that in Saudi adults, the prevalence of diabetes mellitus is 8.5% (Alqahtani et al., 2022) and for hypertension 10% (Mohamed and Mohamed, 2022). This disparity could be attributed to different study designs. Only 11% of individuals reported engaged in physical exercise. In contrast to a similar study, this found that nearly half of respondents (48%) engaged in physical activity (Alahmari et al., 2016).

Regarding the knowledge of HL risk factors, obesity was cited more frequently, followed by a diet rich in sugar, physical inactivity, smoking, diabetes and inherited factors. According to Alahmari et al., (2019), low physical activity was reported by 75.6% of Saudis, along with diabetes mellitus (62.5%) and obesity (79.2%), as risk factors for HL. In the United States, obesity was reported as the most often risk factor for dyslipidemia by over 75% of the respondents (Wartak et al., 2011).

Earlier research in Saudi Arabia found that 67% of individuals believed smoking (67%) and physical inactivity (83.5%) were related to HL (Alrashoud et al., 2021). Additionally, in research done among physicians in Saudi Arabia, smoking was the much more commonly chosen lifestyle option (69%) that can raise the risk of hyperlipidemia (Batais et al., 2017).

Family history was investigated as a risk factor for HL among Saudi medical students and it was observed that more than half of them (54.5%) were aware that HL is a hereditary condition (Alrashoud et al., 2021). This finding is inconsistent with the finding of our study (48.7%) with the difference related to the fact that medical students are expected to be more aware than the general population. Most participants reported HL as having a negative impact on their health. A comparable study in Saudi Arabia revealed a negative relationship between HL and health (Alzahrani et al., 2020).

The majority of participants agreed that routine regular lipid profile monitoring is important. This shows that most of the population is willing to adopt a better lifestyle and activities because of healthcare providers' initiatives. This is consistent with a similar study in Saudi Arabia, which found that 79% of respondents noted the same finding (Bahakim et al., 2019).

Regarding the practice of lipid profile screening, thirty percent of the respondents had screened for their lipid profile (30.3%); this shows that the public is not sufficiently aware of the value of routine serum lipid screening. Consistent with similar research conducted in Riyadh, Saudi Arabia by Bahakim et al., (2019) mentioned that nearly one-third (34.6%%) had screened for their lipid profiles, Alahmari et al., (2016) in Abha who reported nearly similar finding (34.3%) and Alrashoud et al., (2021) (34%). However, this finding is greater than that reported by Bahakim et al., (2019) in Saudi Arabia (18.7%).

The vast majority of participants believed that physical exercise is a measure to prevent HL. In line with the findings of a Saudi study in which most participants (86.7%) believed physical exercise is an effective method of preventing dyslipidemia (Alahmari et al., 2016). Also, an Egyptian study revealed that participants' awareness of the roles of physical exercise in lowering high cholesterol topped 80% (Amin et al., 2017). In industrialized countries, Taylor et al., (2012) observed that (75%) of their sample of Asians in the United States were aware of the significance of physical activity in the prevention of HL. In a comparable study in Saudi Arabia, most participants (86.3%) stated that regular physical activity and a healthy diet (60%) can help avoid HL (Alrashoud et al., 2021).

5. CONCLUSION AND RECOMMENDATION

Although the majority participants are aware of HL risk factors, only one-third have ever had their lipid profile checked. More research on lipid profiles should be conducted, involving a wide range of community groups. Implementation of critical policies, such as routine lipid profile screening at the primary health care for anyone over the age of 40 or who has a risk factor. Initiatives to educate the general public about lipid profile screening.

Study limitation

The study had three limitations. First, the self-administered questionnaire could lead to self-reporting error; second, no standard questionnaire was available. Third one is the selection bias caused by illiterate individual's incapacity to complete the electronic self-reported questionnaire.

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Authors Contributions

Mohamed M Abd El-Mawgod, responsible for the research design, prepared the proposal, data analysis, reviewed the findings and wrote the manuscript. Yahia Abdelgawad Elsayed Elboraei participated in designing the study, was responsible for ethical approval and wrote the introduction. Abdulrahman Obaid Adi Alanazi, Faisal Saud M Alenezi, Fai Nidaa H Alshammari, Shahad Hameed D Alanazi carried out data collection, data coding, data cleaning and shared in results interpretation of the final manuscript was read and approved by all investigators.

Informed consent

All study participants supplied written informed consent.

Ethical consideration

The study was approved by the local bioethics committee (HAP-09-A043) at Northern Border University (NBU), decision number (24-43-H), on 7/02/2022 during its 14th meeting for the academic year 2021–2022 dated 01-02-2022.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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