La Prensa Medica Argentina

Research Article

Knowledge of Patients with Hypercholesterolemia in a Primary Health Care Center in the North of Saudi Arabia

Alenezy A[1], Joraied MA[2], Aldhafeeri OM[2], Wyse RK[3], Al-bukhari TAM[4], Alrabia MW[5] and Alenzi FQ[6]

[1]*Department of FAMCO, College of Medicine, Northern Borders University, Arar, Saudi Arabia*

[2]*Department of FAMCO, Military Medical Campus, Dhahran, Saudi Arabia*

[3]*Department of Surgery, Imperial College London, London, UK*

[4]*Department of Immunology, Faculty of Medicine.Umm Al-Qura University, Makkah, Saudi Arabia*

[5]*Department of Immunology, KAU, Jeddah, Saudi Arabia*

[6]*College of Applied Prince Sattam bin Abdulaziz University, Al-Kharj, Saudi Arabia*

***Corresponding author:** Faris Q Alenzi, Professor of Immunology, College of Applied Medical Sciences, Prince Sattam bin Abdulaziz University (PSAU), PO Box 422 Al-Kharj 11942, Saudi Arabia, Tel: Tel: 96615453817; E-mail: fqalenzi@ksu.edu.sa

Rec date: Nov 19, 2015 **Acc date:** Jan 08, 2016 **Pub date:** Jan 14, 2016

ABSTRACT:

Introduction: Hypercholesterolemia represents a public health problem in Saudi Arabia (SA), to be 15% in males and 19% in females. Many epidemiological studies since then have confirmed this association and have shown a several-fold increase in coronary deaths among diabetic subjects. Here, we investigated the level of knowledge regarding hypercholesterolemia on diabetic patients.

Methodology: This is a cross sectional study conducted on adult patients who attending primary health care diabetic clinics and which explored their knowledge about hypercholesterolemia. This study took place on July 2015 in primary health care diabetic clinics, Arar, SA. All ethical approvals and considerations from patients and relevant authorities were secured.

Results: This study demonstrated a considerable lack of information and knowledge about hypercholesterolemia among diabetic patients attending primary health care clinics. The findings contribute to the increase in coronary events among diabetic patients especially females and low educated people where there was great lack of knowledge among them. The lack of knowledge may be related to the cultural values of the community.

Conclusion: A huge effort should be delivered through primary health clinics, or any other opportunity to deliver instructions about patient illness, is crucial so they are knowledgeable about their condition and their risk factors.

Introduction

Cardiovascular diseases are leading cause of death, and its incidence has changed in recent years. Cardiovascular events are the ultimate result of interactions of several risk factors, such as hypertension, smoking, obesity, diabetes mellitus (DM), and hypercholesterolemia. Hypercholesterolemia represents a public health problem worldwide. It requires continual medical care to reduce the risk of complications. In Saudi Arabia (SA), a number of studies showed the prevalence of high levels of cholesterol (>5.2 mmol average) to be 15% in males and 19% in females [l].

DM is also a major health problem and represents a known risk factor for cardiovascular disease. The overall prevalence in of DM in adults in SA is 23.7% [2]. Patients' attitudes and their understanding about hypercholesterolemia are crucial in order to prevent complications. Dyslipidemia, which has a frequent occurrence among diabetics, has been shown to be the main contributor to the increased incidence of coronary events and deaths among diabetic subjects. The association between atherosclerosis, dyslipidemia and DM was recognized as early as 1927 when Joslin et al. [2] suggested that the cause of premature development of atherosclerosis among diabetic subjects was related to excess fat.

Previous local and regional studies linked the risk of hypertension and diabetes to lipid concentrations. Epidemiological studies since then have confirmed this association and have shown a several-fold increase in coronary deaths among diabetic subjects when compared with non-diabetics. The reported prevalence of diabetic dyslipidemia has varied from 25% to 60% [3-9].

There is growing evidence to suggest that patient education for people with a chronic disease such as DM is an essential component of effective disease management. Three comprehensive reviews of the patient education literature converge on 2 general findings. First, any education is better than none, i.e. education in any form (pamphlets, films, lectures, behavioral modification techniques) is more likely to produce improved regimen compliance and physiologic outcomes by comparison with routine chronic care without any formal patient education. The second general finding is that all types of patients' education programs are not equal [5].

The differential effectiveness of didactic and behaviorally-oriented patient education was also studied. They found behaviorally-oriented patient education to be 150-300% more potent than didactic programs. As such, there is a need to investigate the knowledge, attitudes of diabetic patients to be utilized in future development of programs and techniques for effective health education and health promotion. Therefore, the aim of this study is to evaluate the level of knowledge regarding hypercholesterolemia, of Saudi diabetic patients [5].

Methodology

A cross sectional study was conducted on adult patients who were attending primary health care diabetic clinics and which explored their knowledge about hypercholesterolemia.

The study was conducted on July 2015, PHC, Arar, SA, and used a questionnaire lickert-scale. All participants provided informed consent before enrollment in the study. The study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki and was approved by the ethics committees of MOH and Military Medical

Campus-Dhahran, KSA. All data were checked during the study for accuracy and then coded and analyzed using Statistical Package of Social Sciences (SPSS) Version 10. A 'p' value of less than 0.05 was considered significant.

The data was collected through an interviewer-administered questionnaire. Patients were interviewed by the investigator during the clinic time. Questions included demographic data and questions regarding patients' knowledge and attitudes. The questionnaires were conducted on daily basis.

Beside questions of demographic data, patients were asked about the duration of DM, history of admissions and the reason for these admissions, history of hypertension (and its duration) and whether they suffer any chronic illness or morbidity.

Results

A total of 141 patients were interviewed by the investigators from two primary diabetic clinics. The mean age of the population studied was 55.6 +/- 14 years. The average duration of DM was 9 years. The demographic profile of the patients is shown in Table 1.

Age	**No.**	**(%)**
30 - 39 Years	23	16.3
40 - 49 Years	24	17.0
50 - 59 Years	31	22.0
60 and above	63	44.7
(Mean Age 55.6)		
Sex	**No.**	**(%)**
Male	99	70.2
Female	42	29.8
Marital Status	No.	(%)
Single	3	2.1
Married	126	89.4
Widowed	12	8.5
Occupation	**No.**	**(%)**
Military	33	23.4
Employee	12	8.5
House Wife	33	23.4
Retired	45	31.4
Others	18	12.8
Education Level	**No.**	**(%)**
Illiterate	45	31.9
Read and Write	18	12.8
Elementary	45	31.9
High School	21	14.9
College and Higher	12	8.5

Table 1: Summary table showing demographic characteristic of study population

Patients knowledge about food and smoking and sport

70% of the patients agreed that eating chicken with skin would increase cholesterol levels. Similarly, about 32% of hypertension patients' didn't believe of any relationship between butter, palm oil and blood cholesterol levels. While, about 20% of the patients sill thought that palm oil is good for hypercholesterolemia. Additionally, about 70% of the patients agreed on a direct relationship between hypercholesterolemia and smoking. Approximately 55% of patients believed on the importance of exercise to their health in general, for more than 3 hours/per week. On the other hand, most of the smokers and ex-smokers thought that hypercholesterolemia increases the risk of DM, whilst about half of the non-smokers disagreed. Majority of the smokers in this study agreed to the need of being cautious about hypercholesterolemia.

Patients knowledge about the relationship between cholesterol, hypertension and DM

Table 2 shows what patients knew about high cholesterol levels, and hypertension.

Hypercholesterolemia and CHD	Duration of Hypertension				
	No Hypertension No. (%)	0-4 Yrs No. (%)	5-9 Yrs No. (%)	Above 9 Yrs No. (%)	Total No. (%)
Patients thought Hypercholesterolemia leads to CHD	48(76)	6(33)	21(100)	36(92)	111(79)
Patients did not think Hypercholesterolemia leads to CHD	15(24)	12(67)	-	3(8)	30(21)
Total	63(100)	18(100)	21(100)	39(100)	141(100)
X2 = 32.354 p<0.001					

Table 2: Patient understands of the relationship between hypercholesterolemia and Coronary Heart Disease, cut by duration of hypertension

Only 1% of hypertensive patients thought that coronary heart disease was not caused by hypercholesterolemia. All college and high school educated patients thought that high cholesterol levels lead to coronary heart disease, whilst almost all of the illiterate patients do not. Of those who have DM for more than 10 years, about 51% were unaware that hypercholesterolemia leads to CVA. All 12 patients who were college educated knew that CVA is a result of hypercholesterolemia. The majority of patients who were above 60 years, thought that hypercholesterolemia leads to hypertension, while this proportion was less in younger age groups. 64% of the patients indicated that hypercholesterolemia increased the risk of DM (%males greater than female). Majority of the patients who have had hypertension for more than 9 years, do not know that hypercholesterolemia leads to hypertension. However, only about one third know this fact.

Table 3 shows the knowledge of patients of the complications of hypercholesterolemia in relation to their reason of hospital admission. All patients who had been admitted to hospital due to cardiac problems, or uncontrolled DM, knew that high cholesterol levels increases the risk of DM, while the proportion was less in those with no history of admission.

Hypertension Complication	Reason for Hospital Admission					
	No Admission No. (%)	Uncontrolled DM No. (%)	Surgical No. (%)	Cardiac No. (%)	Others No. (%)	Total No. (%)
Patients thought hypercholesterolemia increases risk of DM	30(53)	15(100)	30(77)	9(100)	6(29)	90(64)
Patients did not think hypercholesterolemia increases risk of DM	27(47)	-	9(23)	-	15(71)	51(36)
Total	57(100)	15(100)	39(100)	9(100)	21(100)	141(100)
X2 = 30.899 p<0.001						

Table 3: Cholesterol and DM risk by reason of hospital admission

Discussion:

The present study has attempted to study the knowledge of Saudi diabetic patients toward hypercholesterolemia, in primary health care diabetic clinics, Arar, SA.

This study assessed the urgent need to study the underlying factors for national variations in respect of cholesterol related factors with the emphasis on; nutritional habits, food, obesity, glucose intolerance and smoking. Our survey has demonstrated that knowledge of hypercholesterolemia in patients is poor, with considerable confusion

and misbelief in their knowledge. The study also showed that education was a determining factor in the acquisition of knowledge. The fact that educated males had a better knowledge of CHD than educated females might be due to lack of access to health information for females. Poor knowledge also reflects inadequate health education given by primary health care services, and by the mass media. 83% of the patients considered hypercholesterolemia as a major health problem. In higher educated patients, there appeared to be more awareness of this problem than others. The fact that males have better knowledge than females came out clearly in the study. It also indicates that better education was given to patients who had been admitted to hospital. These results are in agreement with several local groups in SA [3-11].

About 70% of the patients indicated that eating chicken with skin increases cholesterol levels. It was found also that male patients were better in this information than female patients. This goes with the general fact that males have more knowledge about their illness than females probably because they are more able to discuss their problems more freely with the doctors and health personnel. It was not surprising, that most illiterate patients, did not know about using palm oil in food, and also all females did not know that the use of butter and palm oil is dangerous for with hypercholesterolemia patients, and should be avoided. It was also found that most of the patients with hypercholesterolemia have no link with smoking. Smoking is a well-known factor of CHD for both men and women. Smokers have twice risk as non-smokers; and if they also have hyperlipidemia, that's would it potentates the risk. A recent study found that current smokers sustained their first myocardial infarction more than 10 years earlier than non-smokers and those younger smokers have a higher mortality rate [12]. Although 88% of the patients indicated that hypercholesterolemia patients should take part in regular exercises, however, the older aged groups, the illiterate patients, and the female patients were less likely to have the same view. Nearly three quarters of patients thought that sport and diet is temporary. This finding was consistent with other aspects of knowledge where females tend to be less knowledgeable and those low educated level.

Most patients indicated that high cholesterol levels will lead to CHD. It was also interesting to note that those with longer duration of hypertension, or DM, were less knowledgeable than other younger patients. There was no gender difference in knowledge about this particular complication between males and females. New diabetic patients understood disease complications better than older patients as they indicated that CVA is caused by hypercholesterolemia. Patients who smoke need to receive more teaching about complications; however, there was no difference in knowledge between smokers and non-smokers when they were asked about the complications of hypercholesterolemia leading to CVA. When patients were asked about complications where by hypercholesterolemia increases the risk of DM, slightly more than half of them (64%) knew of the close link between. Those who were admitted to hospital, to any reason knew the complications, since they have been exposed to health education during their admission.

Several local investigators assessed the prevalence and knowledge of coronary CHD risk factors among primary health care centers, Arar, SA.

Ahmed et al. [11] found almost half of the patients had insufficient knowledge about DM. they found that males are more aware than the females, possibly due to the fact that males discuss their problems more readily with the doctors (who are predominantly non-Saudi) than females do. Another reason could be that females who are housewives have easier access to food compared with working males.

Alnuaim et al. [8] studied hyperlipidemia amongst Saudi diabetic patients. They found that there were a higher percentage of affected females compared with males. Amongst obese patients, dyslipidemia was significantly higher in females than males. Alnuiam et al. [8] also found that the incidence of hypercholesterolemia in SA was higher in females than males. They also found that hypercholesterolemia was higher in smokers compared to non-smokers, and also hypercholesterolemia was higher in diabetic patients. The increased prevalence of cholesterol related risk factors in the Eastern Province can be partially explained by the above cited factors.

Gnasso et al. [13] assessed the degree of awareness, treatment and control of hyperlipidemia compared with hypertension and DM in a selected population of southern Italy. Of the 742 participants, 327 were found to have hypertension, 73 had DM, 287 had mild hyperlipidemia and 322 had moderate-severe hyperlipidemia.

Nthangeani et al. [14] studied the blacks' dietary intake and barriers to dietary compliance in type 2 DM patients attending primary health-care services in urban and rural areas. In a cross-sectional survey, in-depth interviews were conducted with 25 of the patients to explore their underlying beliefs and feelings with respect to their disease. The majorities of black, type 2 DM patients were poor glycemic control, with dyslipidemia, and elevated blood pressure.

Jeffrey et al. [15] found an interesting association between patients' knowledge and site of residence. Ghelman et al. [16] explored health beliefs about DM. Interestingly; their beliefs were similar to those in the SA community. Their patients believed that their illness was result of worry, stress, sadness, imbalance of diet and less exercise.

A random sample of 227 male and female Saudi attendees aged 18 years was assessed. The prevalent risk factors were DM (28%), obesity (38%) and lack of physical exercise (68%). DM was the most prevalent risk factor among males (56%), while obesity was the main risk factor affecting females (42%). Less than half the patients knew about the risk factors and preventive measures. Knowledge of risk factors and prevention was significantly associated with educational level ($p < 0.001$) [17].

Conclusion

This study demonstrated a considerable lack of information and knowledge about hypercholesterolemia among diabetic patients attending primary health care clinics in KSA. This sizeable knowledge-attitude gap must be addressed in order to change that behavior; knowledge can shift attitude if used properly. Such findings contribute to the increase in coronary events among diabetic patients especially females and low educated people where there was great lack of knowledge among them. This lack of knowledge may be related to the cultural values of the community where females tend to be isolated, and they also tend not to be able to discuss their problems freely with physicians and health giving service providers. While most of the patients indicated that exercise is essential, at the same time most of them also indicated that they were not exercising.

Acknowledgement

This project was supported by a research grant from the deanship of scientific research at the PSAU (REF NO: RU-2015-101)

References

1. Al-Nuaim AR, al-Rubeaan K, al-Mazrou Y, al-Attas O, al-Daghari N (1996) Prevalence of hypercholesterolemia in Saudi Arabia, epidemiological study. Int J Cardiol 54: 41-49.
2. Joslin EP (1927) Atherosclerosis and diabetes. Ann Clin Med 5: 1061.
3. Alhyas L, McKay A, Balasanthiran A, Majeed A (2011) Prevalences of overweight, obesity, hyperglycaemia, hypertension and dyslipidaemia in the Gulf: systematic review. JRSM Short Rep 2: 55.
4. Al-Turki YA (2000) The prevalence of overweight and obesity amongst hypertensive and diabetic adult patients in primary health care. Saudi Med J 21: 340-343.
5. Al-Nozha MM, Abdullah M, Arafah MR, Khalil MZ, Khan NB, et al. (2007) Hypertension in Saudi Arabia. Saudi Med J 28: 77-84.
6. Al-Faris EA (1997) Guidelines for the management of diabetic patients in the health centers of saudi arabia. J Family Community Med 4: 12-23.
7. Al-Nozha MM, Al-Maatouq MA, Al-Mazrou YY, Al-Harthi SS, Arafah MR, et al. (2004) Diabetes mellitus in Saudi Arabia. Saudi Med J 25: 1603-1610.
8. Al-Nuaim AR, Famuyiwa O, Green W (1995) Hyperlipidemia among Saudi Diabetic Patients - Pattern and Clinical Characteristics. Ann Saudi Med 15: 240-243
9. Mazzuca SA, Moorman NH, Wheeler ML, Norton JA, Fineberg NS, et al. (1986) The diabetes education study: a controlled trial of the effects of diabetes patient education. Diabetes Care 9: 1-10.
10. Taha AZ, Bella H (1998) Heart Disease Risk Factors Prevalence and Knowledge in a Primary Care Setting, Saudi Arabia. Eastern Mediterranean Health Journal 4: 293-300.
11. Latif AK, Sarash AK (2000) Level of Knowledge and Self-Care in Diabetic Patients in Community Hospital in Najran. Saudi Medical Journal 17: 154-155
12. Centers of Disease Control and Prevention (2015) CDC Fact Book 2000/2001.
13. Gnass A, Calindro MC (1997) Awareness Treatment and Control of Hyperlipidaema, Hypertension and Diabetes Mellitus in a Selected Population of Southern Italy. Eur J Epidemiol 13: 421-428.
14. Nthangeni G (2002) Dietary Intake and Barriers to Dietary Compliance in Black Type2 Diabetic Patients Attending Primary Health Services. Public Health Nutr 5: 329-338.
15. Jafary FH, Aslam F, Mahmud H, Waheed A, Shakir M, et al. (2005) Cardiovascular health knowledge and behavior in patient attendants at four tertiary care hospitals in Pakistan--a cause for concern. BMC Public Health 5: 124.
16. Cecil Ghalman (2001) Health Beliefs about Diabetic Patients. West J Med 175: 321-313
17. Al-Nuaim AK, Al-Rubean Y, Mazarou A, Attas O (1997) Serum Cholesterol. Fractionated Cholesterone Concentration Disturbances and Prevalence of Hypercholesterolemia in Saudi Arabia. Regional Variations. Ann Saudi Medicine 17: 179-184