

Female Medical Students and Interns Awareness about Diabetes, Hypertension, Stroke, Atherosclerosis and Myocardial infarction At Tabuk University

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ABSTRACT

Introduction: The metabolic syndrome is defined by the National Cholesterol Education Program (NCEP) as three or more of the following: fasting plasma glucose levels ≥ 6.1 mmol/liter, serum triglycerides ≥ 1.7 mmol/liter, serum HDL cholesterol < 1.0 mmol/liter, blood pressure $\geq 130/85$ mmHg, and waist girth > 102 cm. Use of waist circumference > 94 cm was suggested for some men who might be genetically susceptible to insulin resistance.

Methodology: A self-reported online questionnaire was administered to 71 female medical students and interns at Tabuk University. Questions were covered the following condition: diabetes, hypertension, high serum cholesterol, arteriosclerosis, stroke and myocardial infarction.

Results: A sample of 71 female medical interns and students, they showed a good knowledge regarding most of items addressed in this study.

Conclusion: Students and interns at Tabuk University show adequate level of knowledge in regard condition relevant to metabolic syndrome.

Keywords: Hypertension, Stroke, Saudi Arabia.

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INTRODUCTION

Metabolic syndrome is a clustering of at least three out of the five medical conditions abdominal (central) obesity, high blood pressure, high blood sugar, high serum triglycerides and low high-density lipoprotein (HDL) levels.

Metabolic syndrome is associated with the risk of developing cardiovascular disease and type 2 diabetes. In the USA, about a quarter of the adult population have metabolic syndrome, and the prevalence increases with age, with racial and ethnic minorities being particularly affected.¹

Insulin resistance, metabolic syndrome, and prediabetes are closely related to one another and have overlapping aspects. The syndrome is thought to be caused by an underlying disorder of energy utilization and storage.

Current literature indicates that metabolic syndrome is prevalent and it increasing over time.² Estimates from the 2003–2006 National Health and Nutrition Examination Survey (NHANES) suggest that 34% of U.S. adults aged 20 years and over have metabolic syndrome.³

The prevalence of metabolic syndrome is high in Saudi Arabia. Low HDL affects 81.8% of females and 74.8% of males with MS leading all other factors, and it continued to be consistent in all different age groups. Metabolic syndrome is a risk factor for CAD, as the prevalence of CAD was higher among patients with MS (6.7%) compared to subjects without MS (4.6%) ($p < 0.0001$).⁴

The US National Cholesterol Education Program Adult Treatment Panel III (2001) requires at least three of the following to diagnose metabolic syndrome⁵:

Central obesity: waist circumference ≥ 102 cm or 40 inches (male), ≥ 88 cm or 35 inches (female), Dyslipidemia: TG ≥ 1.7 mmol/L (150 mg/dl) Dyslipidemia: HDL-C < 40 mg/dL (male), < 50 mg/dL (female), Blood pressure $\geq 130/85$ mmHg (or treated for hypertension) and Fasting plasma glucose ≥ 6.1 mmol/L (110 mg/dl).

Various strategies have been proposed to prevent the development of metabolic syndrome. These include increased physical activity (such as walking 30 minutes every day)⁶ and a

healthy, reduced calorie diet.⁷ Many studies support the value of a healthy lifestyle as above. However, one study stated these potentially beneficial measures are effective in only a minority of people, primarily due to a lack of compliance with lifestyle and diet changes.⁸ The International Obesity Taskforce states that interventions on a sociopolitical level are required to reduce development of the metabolic syndrome in populations.⁹ Currently, there is very little information in the literature about studies examining students' knowledge of conditions relevant to metabolic syndrome. Current literature indicates that most college students are unaware of metabolic syndrome or CVD risk factors and that some students hold false beliefs about CVD complications.¹⁰ The purpose of this study was to assess medical student and interns level of awareness and knowledge about conditions relevant to metabolic syndrome.

METHODOLOGY

A self-reported online questionnaire was administered to 71 female medical interns and students at Tabuk University. Questions were covered the following condition: diabetes, hypertension, high serum cholesterol, arteriosclerosis, stroke, and myocardial infarction the questions about the outcome and treatment of these conditions, and a description of physical changes relevant to metabolic syndrome.

Ethical Considerations

Study was explained to participants and informed consent was taken from the participants.

Statistical Analysis

The collected Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) statistical program version 19.

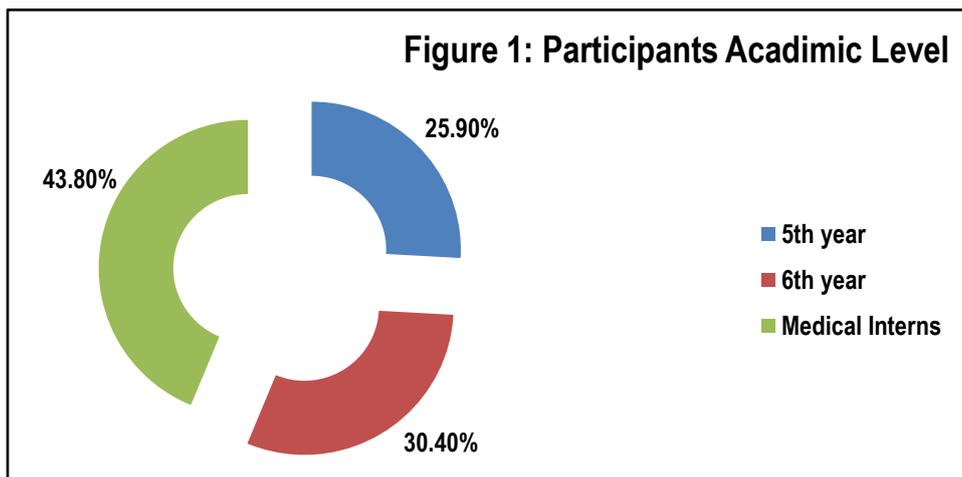


Table 1 : Diabetes Questions	Correct answer	(Total :71)	
		True	False
There are several different types of diabetes?	True	67	3
Pregnant women have a reduced risk of acquiring diabetes?	False	6	65
Eye disorders can be consequences of diabetes?	True	68	3
Hereditary factors play only a minor role in the development of diabetes?	False	18	53
For some individuals with diabetes it is not advisable to take insulin?	True	44	27
Poor appetite is a frequent symptom of diabetes?	False	61	10
With diabetes, too much sugar enters the cells?	False	14	19
Frequent urination is a classic symptom of diabetes?	True	65	5
Arteriosclerosis is one of the sequential of diabetes?	True	64	7
Individuals with diabetes must have insulin shots?	False	29	41

Table 2 : Hypertension Questions	Correct answer		
		True	False
Hypertension is associated with heredity?	True	57	14
Pregnant women are less likely to suffer from hypertension?	False	14	57
After medication has lowered hypertension, the medication can usually be discontinued?	False	20	51
Individuals with hypertension are less likely to suffer from arteriosclerosis?	False	10	61
Hypertension can be caused by disorders of the thyroid gland?	True	53	18
Hypertension can cause renal damage?	True	68	3
Hypertension can lead to eye disorders	True	61	9
Hypertension can be caused by cerebral tumors?	True	53	17

RESULTS

A sample of 71 female medical interns and students, participated in this study. A 36.6 % were 5th year medical students, 35.2 % were 6th medical students, 28.2% were medical interns. (Figure 1) As shown in Table 1, students showed good knowledge about diabetes in regard to diabetes symptoms, risk factor and complications. As 94.3% of female students and interns know that diabetic has several types, polyuria and polydipsia was identified by majority of participants as a common symptom of diabetes. Regarding diabetic risk factor and treatment, 74.6% of all participants identify that hereditary factor and pregnancy (91.5%) can increase the risk of developing diabetic and 40 % thought that all patients with diabetes must take insulin injections. In terms of hypertension (Table 2), 80.2% of students knew that pregnant women were more likely to suffer from hypertension than non-pregnant women. About 80.2% of students were aware that hereditary factors can contribute to hypertension. Out of 71 only 20 assumed that antihypertensive medications could be discontinued once blood pressure was under control. Complications of untreated hypertension, such as kidney and eye diseases, were identified by 95% of students. As shown in table 3, more than 94.3 % of students knew that

individuals with high serum cholesterol can be treated with diet and medications. 94.3 % of female students identify high cholesterol promotes arteriosclerosis. Arteriosclerosis was clear to many students in regard to disease characteristics, symptoms, and risk factors. For example, 81.6% of the students correctly identified leg pain as a symptom of arteriosclerosis, 94.3 % knew that arteriosclerosis increases the risk of suffering a stroke, 85.9 % of the students knew that there is a relationship between hypertension and arteriosclerosis.(Table 4) As for the stroke questions, most students indicated good knowledge about causes, symptoms and complications of stroke. For example, 87.3% of students knew that a permanent speech defect is a potential consequence of stroke. 83 % of the students were aware that a stroke is usually preceded by speech problems and 69 % of students knew that a stroke is often followed by a memory dysfunction. Table 5 Students indicated good knowledge about myocardial infarction in terms of causes, symptoms and treatment. 85.9 % of students knew that obstructive coronary artery disease may cause myocardial infarction. More 77.4% knew that shortness of breath may precede a myocardial infarction. 83% of the students were aware that anticoagulant medications are administered after a myocardial infarction. (Table 6)

Table 3: High cholesterol Questions	Correct answer	Female	
		True	False
High serum cholesterol promotes arteriosclerosis.	True	67	4
High serum cholesterol can be treated with medication.	True	67	4
High serum cholesterol is not associated with hereditary factors .	False	57	14

Table 4: Arteriosclerosis Questions	Correct answer	Female	
		True	False
Arteriosclerosis increases the risk of suffering a stroke.	True	67	3
Leg pains are a symptom of arteriosclerosis	True	58	12
Arteriosclerosis can be cured completely.	False	26	44
Arteriosclerosis can cause renal damage.	True	61	9
As a result of arteriosclerosis, blood pressure is likely to decline.	False	13	65
With arteriosclerosis, arteries become less elastic.	True	58	12
With arteriosclerosis, blood platelets accumulate on the arterial walls.	True	49	21
High blood pressure and arteriosclerosis are not linked with each other.	False	9	61
Medication can remove completely sediments from the arteries	False	23	47
With arteriosclerosis, fat accumulates on the arterial walls	True	60	9

Table 5: stroke Questions	Correct answer	Female	
		True	False
If a patient survives a stroke, there are usually no permanent consequences.	False	19	50
Permanent speech defects are possible consequences of a stroke.	True	62	8
A stroke is often followed by memory dysfunction	True	49	21
There are different types of strokes.	True	67	3
A stroke is preceded frequently by speech problems.	True	59	11
A stroke is caused by artery obstruction.	True	62	8
A stroke is caused when overexcited cells produce too much electricity.	False	17	53
Individuals with diabetes are more likely to suffer a stroke.	True	60	9
A stroke is preceded frequently by chest pains.	False	23	47

Table 6 : Myocardial infarction Questions	Correct answer	Female	
		True	False
Hereditary factors play a role in the risk of suffering a myocardial infarction.	True	52	18
After a myocardial infarction, anticoagulants are administered.	True	59	11
A myocardial infarction is often preceded by shortness of breath.	True	55	15
A myocardial infarction is caused by arterial obstruction.	True	61	9
After a myocardial infarction has occurred, parts of the cardiac muscle tissue can die.	True	58	12
With a myocardial infarction, cardiac muscle tissue dies.	True	25	8
A myocardial infarction must be treated surgically	False	24	45
A myocardial infarction is caused by malfunction of one or more heart valves.	False	34	36

DISCUSSION

Study's results show that students and interns were aware about most of condition relevant to metabolic syndrome.

There were some false beliefs held by participants. For example, 40% of the students falsely believed that all individuals with diabetes must take insulin injections. Majority of students correctly identified symptoms and complications of diabetes. Diabetes is a serious health problem and it is the seventh leading cause of death in the United States.¹¹ Thus, educating students about this disease as a first step in awareness and knowledge is important as a precursor to other health education efforts that could lead to actual behavior changes to reduce their personal risk of developing diabetes or metabolic syndrome later in life.

In this study, findings related to the hypertension questions indicated that the majority of students knew that hypertension is linked to the genetic makeup of an individual, and heredity is a risk factor for this condition. As for arteriosclerosis questions, 94.3 % of students were aware that arteriosclerosis can increase the risk of suffering a stroke, but 36.6% of the students falsely believed arteriosclerosis can be cured completely.

CONCLUSION

Given the increasing prevalence of metabolic syndrome among college-aged adults, raising awareness about metabolic syndrome among this age group is important to reduce the prevalence of this condition. Colleges and universities are ideal settings to educate students about health issues. In this study students and interns at Tabuk University show adequate level of knowledge in regard condition relevant to metabolic syndrome.

REFERENCES

1. Kaur J (2014). A comprehensive review on metabolic syndrome. *Cardiology Research and Practice*. 2014: 943162. doi:10.1155/2014/943162. PMC 3966331. PMID 24711954.
2. Mozumdar A, Liguori G. Persistent increase of prevalence of metabolic syndrome among U.S. adults: NHANES III to NHANES 1999–2006. *Diab Care*. 2011;34(1):216–219. doi: 10.2337/dc10-0879.
3. Ford ES, Giles WH, Mokdad AH. Increasing prevalence of the metabolic syndrome among U.S. adults. *Diabetes Care*. 2004;27(10):2444–2449. doi: 10.2337/diacare.27.10.2444
4. Al-Nozha M, Al-Khadra A et al. Metabolic syndrome in Saudi Arabia. *Saudi Med J*. 2005 Dec;26(12):1918-25.
5. Executive Summary of The Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, And Treatment of High Blood Cholesterol In Adults (Adult

Treatment Panel III). *Jama*. 285 (19): 2486–97. May 2001. doi:10.1001/jama.285.19.2486. PMID 11368702.

6. Lakka TA, Laaksonen DE (February 2007). Physical activity in prevention and treatment of the metabolic syndrome. *Applied Physiology, Nutrition, and Metabolism = Physiologie Appliquee, Nutrition Et Metabolisme*. 32 (1): 76–88. doi:10.1139/h06-113. PMID 17332786.

7. Feldeisen SE, Tucker KL (February 2007). Nutritional strategies in the prevention and treatment of metabolic syndrome. *Applied Physiology, Nutrition, and Metabolism = Physiologie Appliquee, Nutrition Et Metabolisme*. 32 (1): 46–60. doi:10.1139/h06-101. PMID 17332784.

8. Katzmarzyk PT, Leon AS, Wilmore JH, Skinner JS, Rao DC, Rankinen T, Bouchard C (October 2003). Targeting the metabolic syndrome with exercise: evidence from the HERITAGE Family Study. *Medicine and Science in Sports and Exercise*. 35 (10): 1703-9. doi:10.1249/01.MSS.0000089337.73244.9B. PMID 14523308.

9. James PT, Rigby N, Leach R (February 2004). The obesity epidemic, metabolic syndrome and future prevention strategies. *European Journal of Cardiovascular Prevention and Rehabilitation*. 11 (1): 3–8. doi:10.1097/01.hjr.0000114707.27531.48. PMID 15167200.

10. Collins KM, Dantico M, Shearer NB, Mossman KL. Heart disease awareness among college students. *J Community Health*. 2004;29(5):405–420. doi: 10.1023/B:JOHE.0000038655.19448.b2.

11. National Center for Chronic Disease Prevention and Health Promotion. Division of Diabetes Translation. *National Diabetes Fact Sheet*; 2011. www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf

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