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RESEARCH ARTICLE

AWARENESS OF METABOLIC SYNDROME, PREVENTION ACTIVITIES AND PERCEIVED BARRIERS  
IN REDUCING HEALTH RISK AMONG TEACHING STAFF OF AMBO UNIVERSITY, ETHIOPIA

\*<sup>1</sup>Dr. J. Paul Mansingh, <sup>1</sup>Debella Deressa Bayissa, <sup>1</sup>Fikadu Abdise Erena and <sup>2</sup>J. Nancy

<sup>1</sup>Department of Rural Development and Agricultural Extension, Ambo University, Ambo, Ethiopia

<sup>2</sup>Department of Nutrition, Sarah Tucker College, Thirunelveli, India

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CHD – Coronary Heart Disease,  
BMI – Body Mass Index

ABSTRACT

The coronary heart disease (CHD) is a leading cause of premature death and disability in developed countries. It has been projected to become a leading cause of death among developing nations by 2020. Most important modifiable risk factors of CHD are high cholesterol level, high blood pressure and cigarette smoking. Occurrence of high cholesterol and high blood pressure in a population is determined by diet, physical activity, body weight and their interplay. Metabolic syndrome is a disorder of energy utilisation and storage, diagnosed by co-occurrence of three out of five of the following medical conditions: abdominal (central) obesity, elevated blood pressure, elevated fasting plasma glucose, high serum triglycerides and low high-density cholesterol (HDL) levels. Metabolic syndrome increases the risk of developing cardiovascular disease, particularly heart failure and diabetes. There is scarcity of studies assessing diabetes and other cardiovascular risk factors in Sub Saharan Africa including Ethiopia. There is lack of data on metabolic syndrome among the Ethiopians. Therefore, a study was conducted to assess the awareness of metabolic syndrome, prevention activities and perceived barriers in reducing health risk among teaching staff of Ambo University, Ambo, Ethiopia. The study was conducted among the teaching staff of Ambo University, Ambo, Ethiopia. In order to give equal chance for all staff being included in the sample, the different colleges in the University are considered as different strata and proportionate random sampling technique was used. In this study, the response rate was 38% i.e. 81 respondents gave their response. It was found that majority (69.10%) were normal in the BMI category. It was found that most of them were aware of the metabolic syndrome. The reason might be the educational level of the respondents. It is clearly evident from the study that most of them were not having the metabolic syndrome. Smoking is very low among this study group. Only abdominal obesity was found to be significant at 0.01 level across BMI categories. 'Increasing physical activity' and 'eating more fruits and vegetables' were the major two preventive activities followed. 'Lack of personal motivation' was the major barrier to health improvement. Psychological factor like 'lack of motivation', acting as barrier to health improvement can be changed by providing exposure to various information sources.

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INTRODUCTION

Metabolic syndrome is a disorder of energy utilisation and storage, diagnosed by co-occurrence of three out of five of the following medical conditions: abdominal (central) obesity, elevated blood pressure, elevated fasting plasma glucose, high serum triglycerides and low high-density cholesterol (HDL) levels. Metabolic syndrome increases the risk of developing cardiovascular disease, particularly heart failure and diabetes

(<http://www.nlm.nih.gov/medlineplus/metabolicsyndrome.html>). The principal symptom of metabolic syndrome is central obesity. Other signs of metabolic syndrome include ; High blood pressure, decreasing fasting serum HDL cholesterol, elevated fasting serum triglyceride level, impaired fasting glucose, insulin resistance or pre-diabetes (<http://www.diabetes.co.uk/diabetes-and-metabolic-syndrome.html>). The exact mechanisms of the complex pathways of metabolic syndrome are under investigation. Stress can also be a contributing factor (Gohill, 2001). The most important factors are genetics, aging, diet, sedentary behaviour (Edwardson et al., 2012) and low physical activity (Katzmaryk et al., 2003 and He et al., 2013) and excessive alcohol use (Sun et al.,

\*Corresponding author: Dr. J. Paul Mansingh

Department of Rural Development and Agricultural Extension, Ambo University, Ambo, Ethiopia

2013). Various strategies have been proposed to prevent the development of metabolic syndrome. These include increased physical activity (such as walking 30 minutes every day) (Lakka and Laaksonen, 2007) and a healthy, reduced calorie diet (Feldeisen and Tucker 2007). The first line of treatment is change of life style.

The coronary heart disease (CHD) is a leading cause of premature death and disability in developed countries. It has been projected to become a leading cause of death among developing nations by 2020. Most important modifiable risk factors of CHD are high cholesterol level, high blood pressure and cigarette smoking. Occurrence of high cholesterol and high blood pressure in a population is determined by diet, physical activity, body weight and their interplay. On an average, cigarette smoking increases the risk of CHD death by 70 % compared with not smoking. Every 5 mm Hg change in usual diastolic blood pressure corresponds to a 21 % of change in CHD risk. Three risk factors accounts for 75-85% of CHD are tobacco use, reduced levels of physical activity and nutrition transition (increase fat, salt and sugar and depleted fruit and vegetables) (National Consultative Workshop on Chronic Diseases Risk Factors in Ethiopia, Woliso, Ethiopia, 2007).

There is scarcity of studies assessing diabetes and other cardio vascular risk factors in Sub Saharan Africa including Ethiopia. In 2007, a study conducted at the Black Lion Specialized Hospital in Ethiopia showed that cardio vascular disease is the leading cause of mortality among diabetic patients (Feleke *et al.*, 2007). There is lack of data on metabolic syndrome among the Ethiopians. Therefore, a study was conducted to assess the awareness of metabolic syndrome, prevention activities and perceived barriers in reducing health risk among teaching staff of Ambo University, Ambo, Ethiopia.

## MATERIALS AND METHODS

The study was conducted among the teaching staff of Ambo University, Ambo, Ethiopia. In order to give equal chance for all staff being included in the sample, the different colleges in the University viz., College of Business and Economics, College of Natural and Computational Science, College of Agriculture, Institute of Technology, College of Social Science and Humanities, Institute of Education and Professional Studies, School of Law and Institute of Co-operatives and Development Studies are considered as different strata and proportionate random sampling technique was used to select the respondents.

Expatriate staff were excluded from the study and only Ethiopians were considered. Out of the total of 466 teaching staff (excluded those who are on study leave and left for training), a sample of 211 was selected for this study based on the formula given by Kothari (2003).

As reported by Anol (2012) mostly 10-15% of the respondents return back the questionnaire after filling it. But in this study, the response rate was 38% i.e. 81 respondents gave their response. Simple descriptive statistics viz., percentage analysis and chi-square test were used to analyse the collected data using SPSS software version 20.

## FINDINGS AND DISCUSSION

The body mass index was assessed with the height and weight of the respondents studied and the details are presented in Table 1.

**Table 1. Distribution of respondents according to the body mass index (n=81)**

S.No.	BMI Category	Number	Percentage
1.	Under weight	9	11.10
2.	Normal	56	69.10
3.	Over weight	15	18.50
4.	Obesity	1	1.20

From Table 1, it was found that majority (69.10%) were normal in the BMI category. Only one respondent was found to be obese. This shows that most of the respondents studied are in good health and the reason might be the life style of the respondents. Motorcycle usage is not common among the staff members. Most of them walk in the ups and down terrain inside the campus.

From Table 2, it was found that most of them were aware of the metabolic syndrome. The reason might be the educational level of the respondents. It is clearly evident from the study that most of them were not having the metabolic syndrome. High cholesterol level was reported by nearly one-third of the respondents studied followed by high blood sugar level (28.40%), high blood pressure (21.00%) and abdominal obesity (19.80%).

The habit of smoking and drinking alcohol was studied and presented in Table 3.

**Table 2. Awareness of metabolic syndrome among the respondents**

Metabolic Syndrome	Awareness	Number	Percentage	Prevalence of metabolic syndrome	Number	Percentage
1.High Blood Pressure	Aware	76	93.80	Yes	5	6.20
	Unaware	5	6.20	No	59	72.80
				Do not know	17	21.00
2.High Cholesterol	Aware	80	98.70	Yes	1	1.20
	Unaware	1	1.20	No	53	65.40
				Do not know	27	33.30
3.High Blood Sugar	Aware	81	100.00	Yes	0	0
	Unaware	0	0	No	58	71.60
				Do not know	23	28.40
4.Abdominal Obesity	Aware	69	85.20	Yes	12	14.8
	Unaware	12	14.80	No	53	65.40
				Do not know	16	19.80
5.High Stress	Aware	70	86.40	Yes	11	13.60
	Unaware	10	13.60	No	64	79.0
				Do not know	6	7.4

**Table 3. Habits of smoking and drinking alcohol**

S.No.	Habits		Number	Percentage
1.	Smoking	Yes	2	97.50
		No	79	2.50
2.	Alcohol	Yes	24	29.60
		No	57	70.40

From Table 3, it was found that most of them (97.50%) were non-smokers and 70.40 per cent of them were not drinking alcohol. Smoking was very low among this study group. As most of them are educated they might be aware of the ill effects of smoking and alcohol. So, they would have avoided these habits. This is a good sign towards health point of view.

**Table 4. Distribution of respondents according to BMI categories on perceived metabolic syndrome**

Perceived Metabolic Syndrome	Under weight	Normal	Over weight	Obesity	Chi-square value
High Blood Pressure					
Do not know	2	12	3	0	0.883
No	7	41	10	1	
Yes	0	3	2	0	
High Blood Cholesterol					
Do not know	4	19	3	1	0.253
No	5	37	11	0	
Yes	0	0	1	0	
High Blood Sugar					
Do not know	5	14	4	0	0.261
No	4	42	11	1	
Yes	0	0	0	0	
Abdominal Obesity					
Do not know	1	12	2	1	0.003*
No	8	39	6	0	
Yes	0	5	7	0	
High Stress					
Do not know	2	3	1	0	0.341
No	7	46	10	1	
Yes	0	7	4	0	

From the table 4, it was evident that only abdominal obesity was found to be significant at 0.01 level of significance across BMI categories. This data clearly shows that abdominal obesity was more among over weight and obese people.

The preventive activities followed in reducing personal health risk were studied and the details are furnished in Table 5.

**Table 5. Preventive activities followed in reducing personal health risk**

S.No.	Preventive activities	Number	Percentage
1.	Increasing physical activity	53	65.40
2.	Eat more fruits and vegetables	52	64.20
3.	Eat only at set meals	27	33.30
4.	Cut down on fatty foods generally	24	29.60
5.	Choose foods low in saturated fat	35	43.20
6.	Cut down on sugars/ use sweeteners	32	39.50
7.	Reduce or stop smoking	37	45.70
8.	Choose slimming foods	18	22.20
9.	Eat less food	25	30.90
10.	Take medicine	19	23.50
11.	Drink less alcohol	31	38.30
12.	Eat less salt	37	45.70
13.	Start a specific dietary regimen	17	21.00
14.	Take nutrient supplements	26	32.10

From the responses obtained, it was clear that 'increasing physical activity' and 'eating more fruits and vegetables' were the major two preventive activities followed by 65.40% and 64.20% of the respondents respectively.

'Reduce or stop smoking', and 'eat less salt' were the other two preventive activities followed by 45.70 per cent of the respondents. 'Choosing slimming foods', 'take medicine' and 'start a specific dietary regimen' were not the popular preventive activities among the group studied (22.00%, 23.50% and 21% respectively). Lidia *et al.* (2009) in her study also reported that the respondents were ready to increase physical activity and stop smoking. Even though people are interested to maintain and improve the health status, something will act as a barrier to health improvement. These aspects were studied and presented in Table 6. 'Lack of personal motivation' was the major barrier to health improvement as reported by 66.70% of the respondents.

**Table 6. Barriers to health improvement**

S.No.	Barriers	Number	Percentage
1.	Lack of information	44	54.30
2.	Lack of belief that it will work	29	35.80
3.	Cost too much to take action	32	39.50
4.	Lack of knowledge	44	54.30
5.	Lack of personal motivation	54	66.70
6.	Lack of time	31	38.30
7.	Feeling that I am healthy enough already	45	55.60
8.	Lack of professional support	45	55.60
9.	Confusing information	34	42.00
10.	Scepticism about health claims	25	30.90
11.	Lack of support from friends/relatives	24	29.60
12.	Action would make no difference	17	21.00
13.	Don't know to make it part of my daily routine	33	40.70

'Feeling that I am already healthy enough', 'lack of professional support', 'Lack of information', and 'lack of knowledge' were the other major factors acting as barriers to health improvement (55.60%, 55.60%, 54.30% and 54.30% respectively). Psychological factors like lack of motivation and feeling that healthy already and information factors like lack of information and lack of knowledge, acting as barriers to health improvement can be changed by providing exposure to various information sources. Once the individual is knowledgeable on health risk and health improvement factors there will not be any barriers in improving his health status.

## Conclusion

Most of the respondents studied were in good health and the reason might be the life style of the respondents. It was found that most of them were aware of the metabolic syndrome and this could be due to the educational level of the respondents. It is clearly evident from the study that most of them were not having the metabolic syndrome. As most of them are educated they might be aware of the ill effects of smoking and alcohol. So, they would have avoided these habits. This is a good sign towards health point of view. Abdominal obesity was more among over weight and obese people. 'Increasing physical activity' and 'eating more fruits and vegetables' were the major two preventive activities followed. Psychological factors like lack of motivation and feeling that healthy already and information factors like lack of information and lack of knowledge, acting as barriers to health improvement can be changed by providing exposure to various information sources. Once the individual is knowledgeable on health risk and health improvement factors there will not be any barriers in improving his health status.

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