

Table 4. Logistic Regression Analysis of Metabolic Syndrome as a Function of Associated Risk Factors

Predictor	B	S.E.	Wald	df	P value	OR	OR (95% C.I.)	
							Lower	Upper
Age groups								
< 60 years ^a								
≥ 60 years	0.050	0.280	0.032	1	0.858	1.051	0.607	1.820
Sex								
Male ^a								
Female	1.879	0.300	39.255	1	<0.001*	6.545	3.637	11.78
Residence								
Rural ^a								
Urban	2.742	0.370	54.862	1	<0.001*	15.515	7.510	32.051
Abdominal obesity								
Non-Obese ^a								
Obese	1.703	0.293	33.845	1	<0.001*	5.492	3.094	9.749
Lifestyle								
No sedentary lifestyle ^a								
Sedentary lifestyle	2.542	0.334	57.930	1	<0.001*	12.707	6.603	24.453
Triglyceride								
Normal ^a								
High	6.567	0.704	87.026	1	<0.001*	71.19	17.93	282.78
HDL								
Normal ^a								
Low	20.834	3684	0.001	1	0.995	0.001	0.001	0.005
Blood pressure								
Non-Hypertension ^a								
Hypertension	1.903	0.296	41.435	1	<0.001*	6.704	3.756	11.967
Constant	0.712	1.944	0.134	1	0.714	2.038		

^aReference category,

**p* significant when *p* ≤ 0.05

Nagelkerke R²=0.483,

Binary Logistic Regression: Enter

Meanwhile, a multinational study from 65 centers in six Middle Eastern countries (Bahrain, Kuwait, Qatar, Oman, United Arab Emirates, and Yemen) evaluated the prevalence and effect of MS based on IDF diagnostic criteria. MS was highly prevalent among patients presenting with acute coronary syndrome⁽¹⁹⁾. Furthermore, in a nationwide study in Egypt, central obesity was estimated in the study to be 29% with a more prevalence in women⁽²⁰⁾. In addition Turkey survey according to ATP III guideline reported a prevalence of 33.9% for MS, with a higher prevalence in women (39.6%) than in men (28%)⁽²¹⁾. The present study had been carried out to determine the presence as well as the components of MS for patients with type 2 DM at diabetic outpatient clinic in Merjan Teaching Hospital Al-Hilla City.

According to NECP and ATP III criteria that had been depended in this study, the proportion of MS was 75.3% among type 2 DM patients, however, there are differences between this finding and other findings by western countries attributed to the societies, lifestyles and races differences. In this study, women were more than men to developing MS, however, majority of women in the current study were obese (Figure 4) as well as adapted lower level of physical activities and higher calories food. Furthermore, these findings were in agreement with other local, regional as well as global studies⁽¹²⁻²⁴⁾. , this study was not in agreement with Finish study which reported that the prevalence of MS was higher among men than women due to higher men waist to hip ratio than women⁽²⁵⁾. Patients from urban area were 15 times

more likely to develop MS, however, these finding have been attributed to adaptation sedentary lifestyle, physical inactivity as well as unhealthy food habits of people from urban area as reported in regional studies of Turkey, Iran and other studies^(24, 26 and 27). Majority (69.9%) of diabetic patients with MS in current study were obese, and they were five times more likely to have MS. These finding were in agreement with Singaporean cohort study on central obesity in 2007, which revealed that central obesity could be as optional component of MS according to International Diabetes Federation (IDF), and these patients with central obesity were at a higher risk to develop Ischemic Heart Diseases (IHD)^(12-19 and 28). Although hypertension is one of components that may be involved in diagnosis of MS, diabetic patients with hypertension in this study were six times more likely to have MS. However, adapting poor lifestyle and food habit as well as highly elevated fasting triglyceride by those patients lead to poorly controlled blood pressure⁽²⁸⁾.

Patients with highly triglyceride level were the strongest predictor to develop MS in this study, patients with high triglyceride were 71 times more likely to develop MS than patients with normal triglyceride. Hypertriglyceridemia commonly occurs along with other components of the metabolic syndrome⁽²⁹⁾. An elevated triglyceride is the most available laboratory marker to uncover the coexistence of multiple risk factors, including non-lipid risk factors, such as hypertension^(29 and 30), elevated plasma glucose, and a prothrombotic state⁽²⁹⁾. Hypertriglyceridemic patients thus must be carefully evaluated for the other metabolic risk factors that occur with the metabolic syndrome. Any patient whose triglyceride concentrations exceed 150 mg/dL is suspect for the metabolic syndrome⁽²⁹⁻³¹⁾. Elevated serum triglycerides commonly associate with insulin resistance and represent a valuable clinical marker of the metabolic syndrome. The connections

between insulin resistance and atherogenic dyslipidemia, hypertension, a prothrombotic state, and glucose intolerance are complex and may be mediated through multiple metabolic pathways.

Conclusion

Developing countries are undergoing an epidemiologic transition accompanied by increasing burden of CVD linked to urbanization and lifestyle modifications. MS is a cluster of CVD risk factors whose extent remains unknown. Among all the patients with type 2 DM have been received at outpatients diabetic clinic in Merjan Teaching Hospital from December 2011 to December 2012, the proportion of MS was (75.3%). Diabetic patients with high triglyceride were 71 more likely to develop MS, followed by patients from urban area, sedentary lifestyle, female patients and patients with hypertension as well as abdominal obesity. However, there were no significant association between MS and age. This study has been provided appropriate data for MS in Al-Hilla City as well as a proper prediction of the main risk factors that highly associated with development of MS.

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