

Comparison between Metabolic Syndrome and Framingham Risk Score as Predictor of Cardiovascular Diseases among Kazakhs in Xinjiang

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SUPPLEMENTAL MATERIAL

Calculation of Framingham risk score: The risk score was calculated for each subject using the risk score of Wilson et al¹. In this algorithm, subjects receive a point score based on categorical values of age, total cholesterol, high-density lipoprotein cholesterol, blood pressure, and smoking. The scoring sheet is available in the study by Wilson et al¹. We calculated the risk score of each subjects.

Supplemental Table S1: Framingham Risk Score

Framingham risk score for male		Framingham risk score for female	
age	score	age	score
20-34	-9	20-34	-7
35-39	-4	35-39	-3
40-44	0	40-44	0
45-49	3	45-49	3

50-54	6
55-59	8
60-64	10
65-69	11
70-74	12
75-79	13

score
age range

TC	20-39	40-49	50-59	60-69	70-79
<160	0	0	0	0	0
160-199	4	3	2	1	0
200-239	7	5	3	1	0
240-279	9	6	4	2	1
≥280	11	8	5	3	1

score
age range

	20-39	40-49	50-59	60-69	70-79
nonsmoker	0	0	0	0	0
smoker	8	5	3	1	1

HDL-C(mg/dL)	score
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50-54	6
55-59	8
60-64	10
65-69	12
70-74	14
75-79	16

score
age range

TC	20-39	40-49	50-59	60-69	70-79
<160	0	0	0	0	0
160-199	4	3	2	1	1
200-239	8	6	4	2	1
240-279	11	8	5	3	2
≥280	13	10	7	4	2

score
age range

	20-39	40-49	50-59	60-69	70-79
nonsmoker	0	0	0	0	0
smoker	9	7	4	2	1

HDL-C(mg/dL)	score
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≥60	-1
50-59	0
40-49	1
<40	2

≥60	-1
50-59	0
40-49	1
<40	2

SBP(mm Hg)	untreated	treated
<120	0	0
120-129	0	1
130-139	1	2
140-159	1	2
≥160	2	3

SBP(mm Hg)	untreated	treated
<120	0	0
120-129	1	3
130-139	2	4
140-159	3	5
≥160	4	6

total points	FRS 10-year risk
<0	<1
0	1
1	1
2	1
3	1
4	1
5	2
6	2

total points	FRS 10-year risk
<9	<1
9	1
10	1
11	1
12	1
13	2
14	2
15	3

7	3	16	4
8	4	17	5
9	5	18	6
10	6	19	8
11	8	20	11
12	10	21	14
13	12	22	17
14	16	23	22
15	20	24	27
16	25	>25	>30
>17	>30		

Calculation of Metabolic Syndrome(MS) risk score: Referring to the FRS² and other established guidelines^{3,4}, we assigned a value to each component of MS to establish MS scoring system.

Supplemental Table S2: Metabolic Syndrome Risk Score

Metabolic syndrome risk score for male

age	score	WC(cm)	score					SBP(mmHg)	untreat	treat	DBP(mmHg)	untreat	treat
			20 ~	40~	50~	60~	≥70						
20~	-9							<120	0	0	<80	0	0
35~	-4	<90	0	0	0	0	0	120~129	0	1	80~84	0	1
40~	0	90~	4	3	2	1	0	130~139	1	2	85~89	1	2
45~	3	95~	7	5	3	1	0	140~159	1	2	90~99	1	2
50~	6	100~	9	6	4	2	1	≥160	2	3	≥100	2	3

55～	8
60～	10
65～	11
70～	12
>75	13

≥105	11	8	5	3	1
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HDL-C(mg/dl)	score
≥60	-1
50～59	0
40～49	1
<40	2

TG(mg/dl)	score
<150	-1
150～199	0
200～499	1
≥500	2

FPG(mg/dl)	score
<100	-1
100～109	0
110～125	1
≥126	2

Metabolic syndrome risk score for female

age	score
20～	-7

WC(cm)	score				
	20	40～	50	60～	≥70

SBP(mmHg)	untreat	treat
<120	0	0

DBP(mmHg)	untreat	treat
<80	0	0

35～	-3
40～	0
45～	3
50～	6
55～	8
60～	10
65～	12
70～	14
>75	16

	～		～		
<80	0	0	0	0	0
80～	4	3	2	1	1
85～	8	6	4	2	1
90～	11	8	5	3	2
≥95	13	10	7	4	2

HDL-C(mg/dl)	score
≥60	-1
50～59	0
40～49	1
<40	2

120～129	0	3
130～139	2	4
140～159	3	5
≥160	4	6

TG(mg/dl)	score
<150	-1
150～199	0
200～499	1
≥500	2

80～84	1	3
85～89	2	4
90～99	3	5
≥100	4	6

FPG(mg/dl)	score
<100	-1
100～109	0
110～125	1
≥126	2

Supplemental Table S3: The result of adjusting the MS and FRS components

items	AUC	Sensitivity (%)	<i>P</i>
MS score	0.65(0.61,0.68)	0.78	<0.001
+TC	0.65(0.62,0.68)	0.75	<0.001
+Smoking	0.64(0.61,0.67)	0.76	<0.001
+Age	0.76(0.73,0.78)	0.91	<0.001
-WC	0.64(0.61,0.68)	0.73	<0.001
-TG	0.65(0.61,0.68)	0.78	<0.001
-FPG	0.65(0.61,0.68)	0.77	<0.001
FRS	0.73(0.70,0.76)	0.84	<0.001
-TC	0.73(0.70,0.76)	0.85	<0.001
-Smoking	0.75(0.72,0.78)	0.86	<0.001
-Age	0.58(0.55,0.62)	0.67	<0.001
+WC	0.74(0.72,0.77)	0.88	<0.001
+TG	0.74(0.71,0.77)	0.87	<0.001
+FPG	0.73(0.70,0.76)	0.84	<0.001

Note: Specificity remained at 46.8%².

Supplemental Table S4. AUC of MS and its components for predicting the development of CVD

Characteristics	AUC	95%CI	<i>P</i>
WC	0.60	(0.56,0.63)	<0.001
TG	0.56	(0.52,0.59)	0.002

SBP	0.62	(0.59,0.66)	<0.001
DBP	0.64	(0.60,0.68)	<0.001
HDL-C	0.48	(0.45,0.52)	0.393
FPG	0.56	(0.53,0.60)	0.001
MS	0.59	(0.55,0.62)	<0.001

References

- 1 Wilson, P. W. *et al.* Prediction of coronary heart disease using risk factor categories. *Circulation* **97**, 1837-1847 (1998).
- 2 Yu, H., Guo, Z. R., Hu, X. S., Zhou, Z. Y. & Wu, M. [A comparison between the metabolic syndrome score and the Framingham risk score in the prediction of cardiovascular disease]. *Zhonghua Liu Xing Bing Xue Za Zhi* **31**, 208-212 (2010).
- 3 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**, 2486-2497 (2001).
- 4 Grundy, S. M. *et al.* Diagnosis and management of the metabolic syndrome: an American Heart Association/National Heart, Lung, and Blood Institute Scientific Statement. *Circulation* **112**, 2735-2752, doi:10.1161/circulationaha.105.169404 (2005).