

CARDIOVASCULAR HEALTH EVALUATION: SURVEY STUDY IN THE REPUBLIC OF MOLDOVA

ELENA RAEVSCHI¹, DUMITRU TINTIUC²^{1,2}“Nicolae Testemițanu” State University of Medicine and Pharmacy, the Republic of Moldova

Keywords:
cardiovascular health,
cardiovascular disease
(CVD) occurrence, risk
factors survey system

Abstract: The purpose of this study is to estimate the prevalence of cardiovascular health metrics in relation to cardiovascular disease (CVD) occurrence. The American Heart Association (AHA) recently set a goal to improve the cardiovascular health encouraging the population to meet 7 cardiovascular health metrics: non-smoking, being physically active, eating a healthy diet, having normal blood pressure, blood glucose and total cholesterol level, and weight. The community prevalence study (pilot) of Cardiovascular Health Metrics by the American Heart Association definition has been held in the North region of Republic of Moldova. For this purpose, there has been selected a stratified cluster sample of adults 18+ years old ($n=445$, confidence level 0.95, $\alpha=0.05$, $deff=1.5$) adjusted to non-response rate (10%), using structured interviews. Equally individuals in the study were investigated to determine systolic and diastolic blood pressure, body mass index, blood cholesterol and glucose level. In this community-based sample, few adults had “ideal” cardiovascular health by the new AHA definition. Nevertheless, those who had the best levels of cardiovascular health experienced relatively few events of CVD occurrence: ischemic heart disease, cerebrovascular disease and hypertensive disease ($p=0.012$). To improve cardiovascular health in the Republic of Moldova, we will need to reinforce primordial prevention efforts at the population and individual levels developing a survey system of cardiovascular risk factors.

INTRODUCTION

Cardiovascular disease mortality is one of the most important health issues worldwide and in the Republic of Moldova.(1,2,3,4) Cardiovascular disease is consistently placed first among all death causes of the population, owning about 56% of total mortality over the last 10 years in Moldova. At the same time, the monitoring of cardiovascular risk factors in the Republic of Moldova is not sufficient.

The research problem frame is denoted by major cardiovascular diseases growing trend impact under the conditions of insufficient monitoring of cardiovascular risk factors in Moldova. There is incomplete information about a few cardiovascular health metrics in the Republic of Moldova from 7, proposed by the AHA (American Heart Association) to define and monitor the prevalence of “ideal” cardiovascular health.(5) This situation complicates decision making for cardiovascular prevention interventions at all levels and also causes a stately reserve to optimize cardiovascular prevention by reducing modifiable risk factors.(6)

In response to this problem, there has been proposed to assess the cardiovascular health study in the Republic of Moldova: to identify ways to optimize cardiovascular management prevention by reducing modifiable risk factors, determined by the complex and systematic monitoring, as well as to suggest the hypotheses for the future analytical studies.

MATERIALS AND METHODS

There is a transversal study of a community representative sample (North region of Republic of Moldova) of 445 adults, +18 years old. The Community prevalence study was performed in base of Cardiovascular Health Metrics established by the American Heart Association definition. For this purpose,

there has been selected a stratified cluster sample (confidence level 0.95, $\alpha=0.05$) adjusted to non-response rate (20%), using structured interviews: questions administrated to each subject in the same order, and no coaching is permitted. Equally individuals in the study were investigated to determine systolic and diastolic blood pressure, body mass index, blood cholesterol and glucose level.

RESULTS AND DISCUSSIONS

As shown in table no. 1, the proportions of participants in the study total sample who had ideal levels of individual cardiovascular health metrics were as follows: smoking – 49.2%, body mass index – 27.7%, physical activity – 28.5%, healthy diet – 41.8%, total cholesterol – 43.4 %, blood pressure – 23% and fasting plasma glucose – 78%. Almost baseline cardiovascular health metrics were met more often for the participants free of cardiovascular disease: smoking – 53.2% (vs. 23.4% of participants who had cardiovascular disease); body mass index – 27.3%, (vs. 23.4%), physical activity – 33.8% (vs. 25.8%), total cholesterol – 48.1 % (vs. 40.9%); blood pressure – 11.7% (vs.1.7%) and fasting plasma glucose – 85.1 (vs. 74.2%). Only the healthy diet score were poorly met by the participants free of cardiovascular (36.4%) than participants who had cardiovascular disease (44.7%).

As shown in table no. 2, only 0.2% of study participants had all 7 cardiovascular health metrics in the ideal range being free of cardiovascular disease. The prevalence of “intermediate” cardiovascular health (at least 1 of 7 at intermediate metrics and no poor metrics) was also relatively low 7% in total sample: poorly met by study participants with cardiovascular disease (3.4%) and more often met in case of study participants free of cardiovascular disease (13.6%).

¹Corresponding author: Elena Raevschi, B-dul. Dacia, Nr. 22/2, 2043, Chișinău, Republica Moldova, E-mail: elena.raevschi@usmf.md, Phone: +37369 233157

Article received on 02.06.2015 and accepted for publication on 17.08.2015
ACTA MEDICA TRANSILVANICA September 2015;20(3):7-9

PUBLIC HEALTH AND MANAGEMENT

Table no. 1. Distribution of individual baseline cardiovascular (CV) health metrics in the study participants, 2014

CV Health Metrics	Definition (American Heart Association)		Total Sample n=445		With Cardiovascular Disease n=291		Free of Cardiovascular Disease n=154	
			No	Prevalence, % (95%CI)				
Smoking	Ideal	Never or quit>12 months	219	49.2(44.5-54.0)	68	23.4(18.6-28.7)	82	53.2(45.0-61.3)
	Intermediate	Former ≤12 months	7	1.9(0.7-3.4)	121	41.6(35.9-47.5)	4	2.6(0.7-6.5)
	Poor	Current	219	49.2(44.5-54.0)	102	35.1(29.6-40.8)	68	44.2(36.2-52.4)
Body mass index	Ideal	<25kg/m ²	110	27.7(20.8-29.0)	68	23.4(18.6-28.7)	42	27.3(20.3-35.0)
	Intermediate	25-29.99 kg/m ²	195	43.8(39.2-48.6)	121	41.6(35.9-47.5)	74	48.1(39.9-56.2)
	Poor	≥30 kg/m ²	140	31.5(27.2-36.0)	102	35.1(29.6-40.8)	38	24.7(18.1-32.3)
Physical activity	Ideal	≥150min/week moderate or ≥75min/week vigorous or ≥150 min/week moderate + vigorous	127	28.5(24.4-33.0)	75	25.8(20.8-31.2)	52	33.8(26.4-41.8)
	Intermediate	1-149 min/week moderate or 1-74 min/week vigorous or 1-149 min/week moderate + vigorous	209	47.0(42.3-51.7)	147	50.5(44.6-56.4)	62	40.3(32.4-48.5)
	Poor	None	109	24.5(20.6-28.8)	69	23.7(18.9-29.0)	40	26.0(19.2-33.6)
Healthy diet score	Ideal	4-5 components	186	41.8(32.7-46.5)	130	44.7(38.9-50.6)	56	36.4(28.8-44)
	Intermediate	2-3 components	159	35.7(31.3-40.4)	98	33.7(28.3-39.4)	61	39.6(31.8-47.8)
	Poor	0-1 components	100	22.5(18.7-26.7)	63	21.6(17.1-26.8)	37	24(17.5-31.6)
Total Cholesterol	Ideal	<200mg/dl (5.2mmol/l) without medication	193	43.4(38.7-48.1)	119	40.9(35.2-46.8)	74	48.1(39.9-56.2)
	Intermediate	200-239 mg/dl (5.2-6.19 mmol/l) or treated to < 200mg/dl (<5.2mmol/l)	164	36.9(32.4-41.5)	109	37.5(31.9-43.3)	55	35.7(28.2-43.8)
	Poor	≥ 240 mg/dl (6.2 mmol/l)	88	19.8(16.2-23.8)	63	21.6(17.1-26.8)	25	16.2(10.8-23.0)
Blood pressure	Ideal	<120/<80 mmHg without medication	23	5.2(3.4-7.8)	5	1.7(0.6-4.0)	18	11.7(7.1-17.8)
	Intermediate	SPB120-139 or DBP 80-89 or treated to <120/<80 mmHg	131	29.4(25.3-34.0)	70	24.1(19.3-29.4)	61	39.6(31.8-47.8)
	Poor	SBP ≥140 or DBP ≥ 90	291	65.4(60.7-69.8)	216	74.2(68.8-79.2)	75	48.7(40.6-56.9)
Blood glucose	Ideal	<100 mg/dl (5.5 mmol/l) without medication	347	78(73.8-81.7)	216	74.2(68.8-79.2)	131	85.1(78.4-90.3)
	Intermediate	100-125 mg/dl (5.5-6.94 mmol/l) or treated to <100mg/dl	58	13(10.1-16.6)	42	14.4(10.6-19.0)	16	10.4(6.1-16.3)
	Poor	≥126 mg/dl (>6.94 mmol/l)	40	19(6.6-12.1)	33	11.3(7.9-15.6)	7	4.5(1.8-9.1)

Table no 2. Distribution of baseline cardiovascular health categories in the study participants by occurrence of cardiovascular disease, 2014

Cardiovascular Health Category	Number of Health Metrics			Total, % n=445		With Cardiovascular Disease n=291		Free of Cardiovascular Disease n=154	
	Poor	Intermediate	Ideal						
Ideal Health*	0	0	7	1	0.2 (0.0-1.4)	0	0(0-1.3)	1	0.6 (0.0-3.6)
Intermediate Health†	0	1-7	0-6	31	7(4.9-9.8)	10	3.4(1.7-6.2)	21	13.6(8.6-20.1)
Poor Health‡	1-7	Any	Any	413	92.8(4.9-9.8)	281	96.6(93.8-98.3)	132	85.7(79.2-90.8)
	(1)			93	20.9(17.3-25.0)	49	16.8(12.7-21.6)	44	28.6(21.6-36.4)
	(2)			151	33.9(29.6-38.6)	109	37.5(31.9-43.3)	42	27.3(20.4-35.0)
	(3)			107	24.0(20.2-28.3)	78	26.8(21.8-32.3)	29	18.8(13.0-25.9)
	(4-7)			62	13.8	45	15.4	17	11.0

* Ideal Health is all 7 health metrics at ideal levels. † Intermediate Health is at least 1 of 7 at intermediate levels but no poor health metrics. ‡ Poor Health is at least 1 of 7 health metrics at a poor level.

Table no. 3. Prevalence of “Ideal” cardiovascular health metrics in the study participants by occurrence of cardiovascular disease, 2014

No. of Ideal Health Metrics Present	Total Sample n=445		With Cardiovascular Disease n=291		Free of Cardiovascular Disease n=154	
	No	Prevalence, % (95%CI)	No	Prevalence, % (95%CI)	No	Prevalence, % (95%CI)
7	1	0.2 (0.0-1.4)	0	0.0 (0.0-1.3)	1	0.6(0.0-3.6)
6	7	1.6 (0.7-3.4)	1	0.3 (0.0-1.9)	6	3.9(1.4-8.3)
5	33	7.4 (5.2-10.4)	17	5.8 (3.4-9.2)	16	10.4(6.1-16.3)
4	68	15.3 (12.1-19.0)	41	14.1(10.3-18.6)	27	17.5(11.9-24.5)
3	132	29.7 (25.5-34.2)	87	29.9(24.7-35.5)	45	29.2(22.2-37.1)
2	134	30.1 (25.9-34.6)	99	34.0(28.6-39.8)	35	22.7(16.4-30.2)
1	55	12.4 (9.5-15.9)	36	12.4(8.8-16.7)	19	12.3(7.6-18.6)
0	15	3.4 (0.2-5.6)	10	3.4 (1.7-6.2)	5	3.2(1.1-7.4)
All	445	100	291	100	154	100

p value = 0.0120

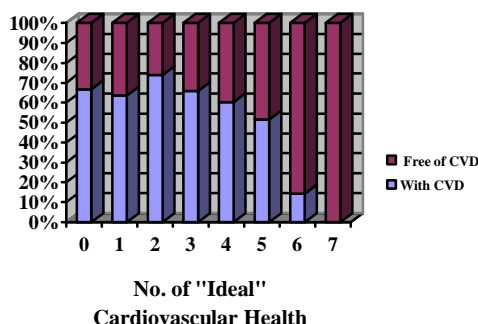
The prevalence of cardiovascular “Ideal” health categories in the study participants total sample were as follows: all 7 metrics – 0.2% (n=1), 5 to 7 metrics – 9 % (n=40), 3 to 5 metrics – 45% (n=200) and under 3 metrics – 45.9 % (n= 204) (table no. 3).

The higher number of present “ideal” health metrics was more often met by study participants free of cardiovascular

disease than those with cardiovascular disease: all 7 “ideal” metrics – 0.6% (vs. no one with cardiovascular disease), 5 to 7 metrics – 14.3 % (vs. 6.1%), 3 to 5 metrics – 46.7% (vs. 44%), and under 3 metrics – 38.2% (49.8%). There was a significant statistical difference (p value=0.0120) between study participants free of cardiovascular disease than those with cardiovascular disease.

The distribution of number of present "Ideal" health metrics in relation to occurrence of cardiovascular disease is displayed in figure no. 1.

Figure no. 1. Number of "ideal" cardiovascular health metrics in relation to cardiovascular disease occurrence



CONCLUSIONS

1. In this community-based sample (2014 year), few adults had ideal cardiovascular by the new AHA definition.
2. Those who had the best levels of cardiovascular health nevertheless experienced relatively few events of CVD occurrence ($p=0.012$).
3. To improve cardiovascular health in the Republic of Moldova, we will need to reinforce primordial prevention efforts at the population and individual levels developing a survey system of cardiovascular risk factors in the Republic of Moldova.

REFERENCES

1. European Society of Cardiology (ESC). Clinical Practice Guidelines. CVD Prevention in clinical practice. European Journal of Cardiovascular Prevention and Rehabilitation, September 2007,14, (sup. 2):E11-E40. Available at: <http://www.escardio.org/guidelines-surveys/esc-guidelines/Pages/cvd-prevention.aspx> downloaded April 9, 2012.
2. World Health Organization (WHO). Global status report on noncommunicable diseases 2010. World Health Organization (2011). Available at: http://www.who.int/nmh/publications/ncd_report2010/en/ downloaded 03/05/2012 p.1-31.
3. World Health Organization (WHO). Global Atlas on cardiovascular disease prevention and control. World Health Organization (2011). Available at: http://whqlibdoc.who.int/publications/2011/9789241564373_eng.pdf downloaded 03/20/2012
4. Centrul Național de Management în Sănătate. Available at: <http://www.cnms.md/ro/rapoarte>.
5. American Heart Association. Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction. The American Heart Association's Strategic Impact Goal through 2020 and Beyond. Available at: <http://www.circ.ahajournals.org> downloaded 02/20/2012
6. World Health Organization (WHO). 2008-2013 Action Plan for the Global Strategy for the Prevention and Control of the Noncommunicable diseases. Geneva, WHO 2008. Available at: <http://www.who.int/nmh/publications/9789241597418/en/> downloaded 03/20/2012.