

Relationship between Cardiovascular Health Status and Attitudes towards Responsibility for Health

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Abstract

Introduction: Current concerns of medical scientific research show an increasing interest in the field of individual and community level health promotion based on health responsibility approaches. Achieving and maintaining cardiovascular health of individuals has a significant impact on reducing the burden of cardiovascular disease at population level.

Aim: The objective of the study was to assess the cardiovascular health from a forward-looking perspective on health responsibility in order to improve attitudes approaches.

Materials and methods: The study is a cross-sectional community survey with multistage sampling. A validated questionnaire was used and filled up by the participating physicians. Cardiovascular health was measured using the cardiovascular health metrics categories according the definition of the American Heart Association.

Results: A total of 2,612 respondents (mean age 56.83 ± 13.8 years, range 18 to 92 years, 34.8% male) were included into the study. The scores of cardiovascular health and its subscales of participants free of cardiovascular disease were found to be significantly higher ($p < 0.001$), with the exception of health behaviours subscale scores ($p = 0.922$). However, health behaviour subscale scores for personal attitudes approaches towards responsibility for health were found to be significantly higher in comparison to social ($p < 0.001$) and undecided approaches ($p < 0.001$).

Conclusions: Our data suggest that a population free of cardiovascular disease is not likely to engage in health behaviours to prevent the onset of the disease, appearing willing to improve their behaviours after acquiring the disease. Further studies are needed to account for the efficacy interventions focusing on individual's motivation to assume personal responsibility for behaviours affecting their health.

Keywords

cardiovascular disease prevention, health behaviours, health responsibility

INTRODUCTION

Cardiovascular disease as the most common cause of death is considered the main global public health challenge of the

21st century.^[1-4] Achieving and maintaining the cardiovascular health of individuals has a significant impact on reducing the burden of cardiovascular disease at population level.^[5,6]

The promotion of responsible health behaviours constitutes a major effort of health care policies in Europe and the United States.^[7,8] Understanding the responsibility for population health as a shared responsibility of individuals and state agents is crucial in creating a healthy society.^[9] Primary healthcare is the first line health service; it is considered as the main setting to provide individual and community health promotion forming the responsibility approaches accordingly.^[10] Prevention interventions are essential in reducing the burden of cardiovascular disease and contribute to improving the cardiovascular health at population level.^[11]

AIM

The aim of the study was to assess the cardiovascular health from a forward-looking perspective on health responsibility in order to improve attitudes approaches.

MATERIALS AND METHODS

Study design

The present study is a cross-sectional community survey conducted in the Republic of Moldova. The purpose of the study was to estimate the relationship between the cardiovascular health status (CVH) and the attitudes towards responsibility for health in adult population.

The sample size of 2,612 adult respondents was determined according to the requirements for a descriptive observational study, considering the nonresponse rate of 20%. The random sampling was performed in order to identify the districts to be included in the study from overall country. The participants were selected from identified districts within the Primary Care Units through convenience sampling by including the persons who visited the physicians during the study period, and agreed to participate.

The inclusion criteria were as follow: age 18+ years and residence in the Republic of Moldova.

The exclusion criteria included pregnancy, acute disease, and verbally not agreeing to participate.

Each participant signed an informed consent form before being entered into the study. The study was approved by the Research Ethics Committee of Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova (No. 32/38/07.04.2015).

A validated questionnaire was used to collect data and filled up by the participating physicians. Socio-demographics characteristics (age, sex, education level, and occupation) were recorded. We used structured interviews and direct measurements of systolic and diastolic blood pressure, body mass index, total serum cholesterol, and fasting serum glucose.

Cardiovascular health measurement (dependent variables)

The cardiovascular health was measured using cardiovascular health metrics categories (ideal, intermediate, and poor) according to the definition of the American Heart Association.^[12,13]

As shown in **Table 1**, based on the identified categories, it was counted a cardiovascular health score by recoding the 7 cardiovascular health metrics into dichotomous variables. Assessment of cardiovascular health was performed by total and by its two subscales: (1) health behaviours (HB): smoking status, physical activity, and healthy diet; (2) health conditions (HC): body mass index, blood pressure, total serum cholesterol, and fasting serum glucose. All participants were classified starting from 0 to 7 cardiovascular health metrics score as total, from 0 to 3 for the health behaviours score subscale, and from 0 to 4 for health conditions subscale. For these scores, we excluded participants missing even 1 cardiovascular health metrics. The cardiovascular health metrics scores and its subscales were used in relation to cardiovascular disease diagnosed and health responsibility attitudes approaches.

Health responsibility attitudes approaches measurement (independent variables)

Responsibility for health was measured through the single choice item: “Who in your opinion is responsible for maintaining and improving your health?” Five response categories were given: (1) “Public authorities”, (2) “Health professionals”, (3) “Family”, (4) “Yourself” and (5) “Not sure”

We grouped the response categories into recoded variables as follows:

- (1) to (3) – Social health responsibility attitudes approaches;
- (4) – Personal health responsibility attitudes approaches;
- (5) – Undecided.

Statistical analysis

Data were expressed as median and interquartile range (IQR). Normality checking was analysed by Kolmogorov-Smirnov and Shapiro-Wilk tests. The collected data were analysed by MAC PSPP (version 1.4.1) using independent samples Mann-Whitney U-test and Kruskal-Wallis test with pairwise comparisons at the significance level of 0.05.

RESULTS

Socio-demographic characteristics of study participants are shown in **Table 2**. Questionnaires were distributed to a total of 2,612 respondents. In case of an occupation variable,

Table 1. Methodology of cardiovascular health scoring based on defined categories

Cardiovascular health metrics		Cardiovascular health categories definition	Scoring
Health behaviour subscale			
1. Smoking	Ideal	Never or quit >12 months	1
	Intermediate	Former ≤12 months	1
	Poor	Current	0
2. Physical activity	Ideal	≥150 minutes/week moderate or ≥75 min/week vigorous or ≥150 minutes/week moderate and vigorous	1
	Intermediate	5-149 minutes/week moderate or 5-74 minutes/week vigorous	0
	Poor	<5 minutes/week moderate	0
3. Healthy diet	Ideal	4-5 components	1
	Intermediate	2-3 components	1
	Poor	0-1 components	0
Health conditions subscale			
4. Body mass index, kg/m ²	Ideal	<25	1
	Intermediate	25-29	0
	Poor	≥30	0
5. Blood pressure, mmHg	Ideal	<120 /<80	1
	Intermediate	SBP = 120-139 or DBP = 80-89	0
	Poor	SBP ≥140 or DBP ≥90	0
6. Total serum cholesterol, mol/L	Ideal	<5.0	1
	Intermediate	5.0-6.19	0
	Poor	≥6.2	0
7. Fasting serum glucose, mmol/L	Ideal	<5.6	1
	Intermediate	5.6-6.09	0
	Poor	≥6.1	0

SPB: systolic blood pressure; DBP: diastolic blood pressure

Table 2. Baseline characteristics

Total sample, n=2612	n (%)
Age groups, years	
18-65	1955 (74.8%)
>65	657 (25.2%)
Sex	
Male	910 (34.8%)
Female	1702 (65.2%)
Education level	
Middle school	821 (31.4%)
High school	1232 (47.2%)
University	559 (21.4%)
Occupation	
Cadre	680 (26.0%)
Worker	654 (25.1%)
Farmer	180 (6.9%)
Retired	1025 (39.2%)
Non response	73 (2.8%)
Cardiovascular disease diagnosed	
Yes	1539 (58.9%)
No	1073 (41.1%)

the non-response rate resulted in 2.8%. The mean (SD) age of these participants was 56.83 (13.8) years, ranging from 18 to 92 years. Of all participants, 34.8% were male, 78.6% graduated school or higher, 58% were employed, and 58.9% had cardiovascular diseases.

The median (IQR) of total CVH scores and its subscales are shown in **Table 3**. Our results showed that cardiovascular health of primary care patients in the community easily exceeded the middle level having the total scores of 4.0 (IQR; 3.0 to 4.0). The study participants were found to have higher scores than the middle scores of health behaviours subscale (3.0; IQR; 2.0 to 3.0) and shifted to lower than middle scores of health conditions subscale (2.0; IQR; 1.0 to 2.0).

The distribution of cardiovascular health and its subscales scores by socio-demographic variables taken into the study are reported in **Table 4**. The total score of cardiovascular health and its subscales was lower for males, individuals aged more than 65 years, and those with a lower education level.

As shown in **Table 5**, the median scores of cardiovascular health and its subscales of participants free of cardiovascular disease were found to be significantly higher ($p<0.001$), with the exception of health behaviour subscale scores. No significant difference was found for health

Table 3. Scores of cardiovascular health and its subscales of study participants

	Score		IQR		
	min	max	Median	Q ₁	Q ₃
Total CVH	0	7	4.0	3.0	5.0
Health behaviours	0	3	3.0	2.0	3.0
Health conditions	0	4	2.0	1.0	2.0

CVH: cardiovascular health

Table 4. Results of single factor analyses for cardiovascular health and its subscales scores among the participants

	Score, median (IQR)		
	CVH	HB	HC
Age			
18-65	4.0 (3-5)	3.0 (2-3)	2.0 (1-2)
>65	4.0 (3-5)	2.0 (2-3)	1.0 (1-2)
U [†]	-5.16	-4.63	-3.65
p [†]	<0.001	<0.001	<0.001
Sex			
Male	4.0 (3-4)	2.0 (2-3)	1.0 (1-2)
Female	4.0 (3-5)	3.0 (2-3)	2.0 (1-2)
U [†]	8.921	12.906	2.113
p [†]	<0.001	<0.001	0.035
Education level			
Middle school	4.0 (3-5)	2.0 (2-3)	1.0 (1-2)
High school	4.0 (3-5)	3.0 (2-3)	1.0 (1-2)
University	4.0 (3-5)	3.0 (2-3)	2.0 (1-2)
H [‡]	11.254	6.388	7.709
p [‡]	0.004	0.041	0.021

CVH: cardiovascular health; HB: health behaviours; HC: health conditions; †: independent sample Mann-Whitney U test; ‡: Kruskal-Wallis H test

Table 5. Cardiovascular health status and attitudes approaches to responsibility for health

Score, Median (IQR)	CVD diagnosed		U Statistics [†] , p-value [†]	Health responsibility attitudes approaches			H Statistics [‡] , p-value [‡]
	Yes	No		Social	Personal	Non decided	
CVH	4.0 (3.0-4.0)	4.0 (3.0-5.0)	9.045 <0.001	4.0 (3.0-4.0)	4.0 (3.0-5.0)	3.0 (2.0-4.25)	49.969 <0.001
HB	2.0 (2.0-3.0)	3.0 (2.0-3.0)	0.098 0.922	2.0 (2.0-3.0)	3.0 (2.0-3.0)	2.0 (1.0-3.0)	71.112 <0.001
HC	1.0 (1.0-2.0)	2.0 (1.0-2.0)	12.570 <0.001	1.0 (1.0-2.0)	2.0 (1.0-2.0)	1.0 (1.0-2.0)	8.155 0.021

CVH: cardiovascular health; HB: health behaviours; HC: health conditions; CVD: cardiovascular disease; †: independent sample Mann-Whitney U test; ‡: Kruskal-Wallis H test

behaviour subscale scores comparing the subjects diagnosed with cardiovascular disease and subjects free from cardiovascular disease ($p=0.922$). After Kruskal-Wallis test with pairwise comparisons, health behaviour subscale scores for personal attitudes approaches were significantly higher than the social ($p<0.001$) and undecided approaches ($p<0.001$), while no significant difference was found between social and undecided attitudes approaches of health responsibility ($p=0.668$).

The respondents with social and undecided health responsibility attitudes approach achieved lower scores of cardiovascular health and its subscales.

DISCUSSION

In the present study, we found that meeting a greater score of cardiovascular health metrics and its subscales was related to personal health responsibility attitudes approaches. In addition, those diagnosed with cardiovascular disease appear willing to improve their behaviours when their health condition worsens. Taken together, our results suggest that increasing individual's motivation for personal responsibility in addressing their own health would imply improvement of the community health. Acceptance of this leads to strengthen the strategies for health promotion focusing more on an individual's motivation to assume personal responsibility for behaviours affecting their health.

It is evident from our results that male cardiovascular health total score was significantly lower than the female CVH score. These results are in line with well-known data that the cardiovascular mortality is higher for male than female suggesting that along with biological component, the behaviour component is implied in sex differences of cardiovascular disease impact.

In the content in which we are underlining the importance of health responsibility attitude approaches, the theme of this paper integrates into the current concerns of medical scientific research, which shows an increasing interest in the field of individual and community level health promotion based on health responsibility approaches.^[6-8,10,11,13-16] There is greater awareness of the person-centred approach significance in order to improve the society health.^[9,11,13]

The present study assessed the cardiovascular health measured by the American Health Association definition and health responsibility of individuals, representing a unique attempt of this kind, such approaches being absent in the literature.

CONCLUSIONS

A better cardiovascular health status was related to personal health responsibility attitude approaches. The population free of cardiovascular disease is not likely to engage in health behaviours to prevent the onset of the disease, appearing

willing to improve their behaviours after acquiring the disease. Further studies are needed to account for efficacy interventions focusing on individual's motivation to assume personal responsibility for behaviours affecting their health.

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Взаимосвязь между состоянием сердечно-сосудистой системы и отношением к ответственности за здоровье

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Резюме

Введение: Текущие проблемы медицинских научных исследований свидетельствуют о растущем интересе к укреплению здоровья на индивидуальном и общественном уровне на основе подходов, основанных на ответственности за здоровье. Достижение и поддержание сердечно-сосудистого здоровья у отдельных лиц оказывает значительное влияние на снижение бремени сердечно-сосудистых заболеваний на уровне населения.

Цель: Цель исследования состояла в том, чтобы оценить сердечно-сосудистое здоровье с перспективной точки зрения на ответственность за здоровье, чтобы улучшить подходы отношения.

Материалы и методы: Исследование представляет собой перекрёстный опрос населения с многоступенчатой выборкой. Утверждённая анкета использовалась и заполнялась участвующими врачами. Здоровье сердечно-сосудистой системы измеряли с использованием категорий показателей здоровья сердечно-сосудистой системы в соответствии с определением Американской кардиологической ассоциации.

Результаты: Всего в исследование было включено 2612 респондентов (средний возраст 56.83 ± 13.8 года, диапазон от 18 до 92 лет, 34.8% мужчин). Было обнаружено, что показатели сердечно-сосудистого здоровья и его подшкал у участников, не страдающих сердечно-сосудистыми заболеваниями, были значительно выше ($p < 0.001$), за исключением подшкал поведения в отношении здоровья ($p = 0.922$). Однако было обнаружено, что баллы подшкалы поведения в отношении здоровья для подходов личного отношения к ответственности за здоровье значительно выше по сравнению с социальным ($p < 0.001$) и неопределёвшимся подходом ($p < 0.001$).

Заключение: Наши данные свидетельствуют о том, что население, свободное от сердечно-сосудистых заболеваний, не расположено вести здоровый образ жизни, чтобы предотвратить начало заболевания, и, похоже, будет готово улучшить свое поведение после начала заболевания. Необходимы дальнейшие исследования для учёта эффективности вмешательств, сосредоточенных на мотивации человека брать на себя личную ответственность за поведение, влияющее на его здоровье.

Ключевые слова

профилактика сердечно-сосудистых заболеваний, поведение в отношении здоровья, ответственность за здоровье
