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SELF-REPORTED HEALTHCARE SYSTEM FACTORS AND QUALITY OF LIFE IN ELDERLY PATIENTS WITH ISCHEMIC HEART DISEASE: A PILOT STUDY IN ALMATY AND ALMATY REGION OF KAZAKHSTAN

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Abstract

Introduction. Ischemic heart disease (IHD) remains a leading cause of mortality and disability among the elderly. Beyond clinical characteristics, self-reported healthcare system factors may be associated with quality of life, but Kazakhstan evidence is limited.

Aim. To assess the relationship of self-reported healthcare system factors and quality of life in elderly patients with IHD in Almaty and Almaty Region.

Materials and methods. The cross-sectional pilot study included 75 elderly patients with a verified IHD from four facilities. Data were collected via questionnaires and medical records. Healthcare system factors and quality of life were self-assessed using a 5-point Likert scale, angina functional class by CCS (Canadian Cardiovascular Society). Spearman's correlation, multiple linear regression (unadjusted/adjusted for sex, age, CCS class) were used; significance – $p<0.05$ (SPSS 26.0).

Results. Mean age was 66.6 years, 53.3% were female, and 54.7% had CCS class III. Mean body mass index – 30.1 ± 5.4 kg/m², total cholesterol – 5.86 ± 1.48 mmol/L. Among self-reported healthcare system factors, screening participation (64.0%) and healthcare accessibility (61.3%) were most often rated as high. Self-reported medication availability was more often rated as low (40.0%). Quality of life correlated with several self-reported healthcare system factors, including screening participation ($\rho=0.496$; $p<0.001$), cardiovascular risk-factor awareness ($\rho=0.464$; $p<0.001$), treatment adherence ($\rho=0.355$; $p=0.002$), and healthcare accessibility ($\rho=0.338$; $p=0.003$). However, self-reported risk-factor awareness was the only independently associated factor ($B=1.655$; $p=0.012$), remaining significant after adjustment ($B=1.395$; $p=0.035$).

Conclusion. In elderly IHD patients, quality of life was associated with self-reported healthcare system factors. Self-reported risk-factor awareness was the only independently associated factor, remaining significant after adjustment. Prospective studies exploring the implications of findings for patient education are warranted.

Key words: aged, myocardial ischemia, quality of life, health services accessibility, self report, secondary prevention.

Introduction. Ischemic heart disease (IHD) remains one of the leading causes of mortality, disability, and diminished quality of life worldwide, particularly among elderly individuals. According to the Global Burden of Disease study, cardiovascular diseases account for the largest proportion of premature mortality globally, while IHD contributes markedly to disability-adjusted life years (DALYs) in the elderly population [1]. Population aging has substantially increased the burden of chronic cardiovascular diseases, making preservation of functional status and quality of life a critical public health priority [2].

In recent years, quality of life has become an important outcome measure in patients with chronic coronary syndromes. In addition to traditional clinical outcomes such as mortality,

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hospitalization, and recurrent myocardial infarction, self-reported outcomes are increasingly used to reflect the effectiveness of healthcare systems and long-term disease management strategies [3]. Elderly patients with IHD often experience limitations in physical activity, emotional well-being, and social participation, which have been linked to treatment adherence and overall prognosis [4,5].

Recent evidence highlights the importance of self-reported healthcare system factors – including healthcare accessibility, medication availability, screening participation, and awareness of cardiovascular risk factors – in studies of cardiovascular care [6]. Health literacy and patient education have been identified as particularly important factors of self-management, treatment adherence, and secondary prevention effectiveness [7].

Kazakhstan continues to face a persistently high burden of cardiovascular diseases despite ongoing healthcare reforms. National initiatives, including the implementation of mandatory social health insurance, expansion of primary healthcare services, and digitalization of healthcare delivery, aim to improve accessibility and continuity of care for patients with chronic conditions [8]. Nevertheless, evidence on the relationship between self-reported healthcare system factors and quality of life in older IHD patients in Kazakhstan remains limited. Most available studies focus on epidemiological trends and clinical outcomes, whereas the relationship between healthcare delivery and patient-reported quality of life remains insufficiently explored [6,9].

Therefore, this pilot study aimed to examine the relationship between self-reported healthcare system factors and quality of life among elderly IHD patients in Almaty and Almaty Region, Kazakhstan.

Materials and methods.

Ethical issues

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and the principles of biomedical research ethics. Participation was voluntary, and all participants provided written informed consent before enrollment.

The research protocol was reviewed and approved by the Ethics Committee of Kazakhstan's Medical University "KSPH" (Protocol No. IRB-566-2026 dated 15.05.2026). Patient enrollment and data collection commenced only after receiving this approval (from 16 May 2026 to 1 June 2026). Anonymity and confidentiality were strictly observed throughout data collection and analysis.

A cross-sectional analytical study was conducted to examine the association between self-reported healthcare system factors and quality of life in elderly IHD patients. The study sample was drawn from four primary and outpatient healthcare organizations: Urban Polyclinic No. 19, Urban Polyclinic No. 8, Asmed Medical Center (Almaty), and the Polyclinic of the Central District Hospital of Ili District (Otegen Batyr village, Almaty Region). Data were collected using structured questionnaires, while clinical information was extracted from the Medical Information System (MIS). Patient interviews were conducted directly at the healthcare facilities alongside clinical assessment. Under the cross-sectional study design, patient enrollment, self-reported healthcare system assessment, and quality of life data collection were conducted concurrently, and no follow-up was included.

Study participants

The study included 75 elderly patients (aged ≥60 years, mean age 66.6 years), consecutively recruited from the outpatient clinical flow at the aforementioned healthcare facilities. No formal sample size calculation was performed due to the pilot nature of the study; the sample size (n=75) was determined based on the available patient enrollment period and resource constraints.

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Inclusion criteria

Patients were eligible for inclusion if they were aged 60 years or older, had a verified IHD diagnosis, had been registered in the MIS for at least 6 months prior to study initiation, and were in stable clinical condition at the time of assessment. Only patients capable of independently completing the questionnaire or adequately responding during interviews were included.

Exclusion criteria

Patients were excluded if they had acute coronary syndrome within the previous three months, severe cognitive impairment or dementia limiting their ability to complete questionnaires, severe psychiatric disorders, terminal conditions, or decompensated chronic diseases. Patients who declined participation were also excluded from the final analysis.

Data collection and assessment methods

Data collection included sociodemographic and clinical characteristics extracted from medical records, as well as self-reported healthcare system factors and quality of life obtained through structured patient interviews. Information was collected regarding age, sex, place of residence, marital status, education level, employment status, history of myocardial infarction, presence of type 2 diabetes mellitus, body mass index, total cholesterol level, and left ventricular ejection fraction. Functional status was assessed according to the Canadian Cardiovascular Society (CCS) functional classification [10].

Quality of life was assessed cross-sectionally using an instrument specifically developed for this pilot study. Its structure was conceptually based on the SF-36 framework and included domains of physical, psychological, and social functioning [11]. However, the wording, number of items, and scoring system were independently developed by the research team and do not replicate the SF-36 instrument itself.

The questionnaire comprised six single-item domains, each assessed with one self-assessment statement rated on a 5-point agreement scale (1 = completely disagree; 2 = somewhat disagree; 3 = neutral; 4 = somewhat agree; 5 = completely agree): overall life satisfaction (“Overall, I am satisfied with the quality of my life”); interest in life (“Despite my illness, I have maintained interest in life”); social functioning (“Despite my illness, I maintain my social relationships”); vitality (“I have enough energy to carry out my daily activities”); physical activity (“My health does not limit my ability to perform physical activities, e.g., walking, climbing stairs”); and emotional stability (“I feel emotionally calm”). The total quality-of-life score was calculated as the unweighted sum of the six item scores (range 6–30), with higher scores indicating better perceived quality of life.

Internal consistency of the questionnaire, assessed post hoc using Cronbach’s alpha, was α=0.87, indicating good reliability in this sample. Formal psychometric validation of the questionnaire (construct validity, test-retest reliability) was beyond the scope of this pilot study and is planned for future work.

To assess healthcare system factors, a self-developed questionnaire was used, as no existing validated instrument was identified that would comprehensively cover self-reported healthcare system factors relevant to elderly IHD patients in the context of primary care in Kazakhstan. Domains were conceptually structured around key WHO health system components, with specific items formulated through a literature review [12].

The questionnaire comprised seven single-item domains, each assessed with one self-assessment statement rated on a 5-point agreement scale (1 = completely disagree; 2 = somewhat disagree; 3 = neutral; 4 = somewhat agree; 5 = completely agree): screening participation (“I regularly undergo preventive check-ups/screening”); healthcare accessibility (“Healthcare facilities are located within an accessible distance from my place of residence”); treatment adherence (“I regularly take the medications prescribed by my physician”); awareness

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of cardiovascular risk factors ("I receive information regarding the prevention of cardiovascular disease"); timeliness of medical care ("When I feel unwell, I am able to obtain a doctor's appointment on the same day I seek care"); medication availability ("My prescribed medications are available to me under my medical insurance coverage"); and quality of medical services ("I am satisfied with the quality of medical care I receive"). Because these seven domains represent conceptually independent aspects of the healthcare system rather than a single latent construct, items were not reverse-scored and item scores were analyzed individually rather than summed into a composite index.

Formal psychometric validation of the questionnaire (construct validity, test-retest reliability) was not conducted within this pilot study and is planned for future work.

For descriptive presentation, item-level scores were grouped into three categories: Low (scores 1–2), Moderate (score 3), and High (scores 4–5). Accordingly, the percentages reported for each factor (e.g., "64.0% for screening participation") represent the proportion of participants who rated that domain in the High category on the 5-point scale, and should not be interpreted as an objective administrative indicator of service coverage or utilization.

To further enhance content validity, preliminary pretesting of both questionnaires was conducted with 15 respondents (not included in the main sample); item wording was subsequently refined based on feedback from these respondents and consultations with cardiologists. Participants could choose the survey language (Kazakh or Russian).

Measurement error was reduced through a standardized interview protocol and supplementation of survey data with objective information from the MIS. Identical scales and uniform interview conditions were applied across all four healthcare organizations.

Statistical analysis

Statistical analysis was performed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were presented as means and standard deviations (M ± SD) for continuous variables and as absolute numbers and percentages for categorical variables.

The primary outcome was health-related quality of life (cumulative score, range 6–30). Independent variables included seven patient self-reported factors: healthcare accessibility, screening participation, medication availability, treatment adherence, timeliness of medical care, quality of medical services, and awareness of cardiovascular risk factors. All ordinal variables were treated as continuous variables in the analysis. Potential confounders included age, sex, and CCS angina functional class (dichotomized into two categories: I–II vs III–IV due to small numbers in extreme groups).

Spearman's rank correlation coefficient was used to assess relationships between self-reported healthcare system factors and quality of life.

Multiple linear regression analysis was conducted to evaluate the independent contribution of each of the seven self-reported healthcare system factors to quality of life. Model 1 included only the seven specified factors. Model 2 additionally controlled for sociodemographic and clinical characteristics to assess the robustness of associations. Due to the limited sample size, the number of covariates was restricted to avoid model overfitting. Model comparison was performed using the F-test for change in R^2 (ΔR^2). Assumptions of linear regression (linearity, normality of residuals, absence of multicollinearity) were checked and satisfied. Given the pilot nature of the study and limited sample size, subgroup and sensitivity analyses were not performed; adjustment for complex survey design was not applied.

Statistical significance was set at $p<0.05$.

This study is reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for cross-sectional studies [13].

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Results.

A total of 80 patients meeting the inclusion criteria were invited to participate. Of these, 5 declined participation for personal reasons, resulting in a final sample of 75 patients (participation rate 93.8%). No missing data were present for the primary variables. A participant flow diagram is not provided due to the absence of multiple screening stages and the cross-sectional nature of enrollment.

Sociodemographic characteristics

The study included 75 elderly IHD patients. The mean age of participants was 66.6 years. Women comprised 53.3% of the study population, while men accounted for 46.7%.

Analysis of place of residence revealed that 46.7% of participants were urban residents, 40.0% lived in rural areas, and 13.3% in suburban areas. Most patients were married (78.7%), while 13.3% were widowed, 1.3% single, and 6.7% divorced. Regarding education level, nearly half of participants (49.3%) had higher education. The majority of respondents were retirees (66.7%). Detailed sociodemographic characteristics of the study population are presented in Table 1.

Table 1. Sociodemographic characteristics of the study population.

Variable	N	%
Sex		
Female	40	53.3
Male	35	46.7
Place of residence		
Urban	35	46.7
Rural	30	40.0
Suburban	10	13.3
Marital status		
Married	59	78.7
Divorced	5	6.7
Single	1	1.3
Widowed	10	13.3
Education level		
Secondary education	20	26.7
Vocational education	18	24.0
Higher education	37	49.3
Employment status		
Retired	50	66.7
Employed	15	20.0
Unemployed/other	10	13.3

Clinical characteristics

The majority of participants experienced moderate to severe functional limitations. According to the CCS classification, 54.7% of patients were class III, while 41.3% were class II. Previous myocardial infarction was identified in 40.0% of patients, while type 2 diabetes mellitus was present in 33.3% of the study population.

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Mean body mass index was 30.1 ± 5.4 kg/m², corresponding to class I obesity. Mean total cholesterol reached 5.86 ± 1.48 mmol/L, while mean left ventricular ejection fraction was 54.8 ± 7.15%. Detailed clinical characteristics are presented in Table 2.

Table 2. Clinical characteristics of elderly IHD patients.

Variable	N	%
CCS functional class		
Class I	2	2.7
Class II	31	41.3
Class III	41	54.7
Class IV	1	1.3
Clinical conditions		
Previous myocardial infarction	30	40.0
Type 2 diabetes mellitus	25	33.3
MI + type 2 diabetes	13	17.3
Continuous variables	**M ± SD**	
Body mass index (kg/m²)	30.1 ± 5.4	
Total cholesterol (mmol/L)	5.86 ± 1.48	
Left ventricular ejection fraction (%)	54.8 ± 7.15	

Note: "MI + type 2 diabetes" indicates a subgroup of patients presenting with both conditions concurrently; it is not a mutually exclusive category, and together with the individual rows for previous myocardial infarction and type 2 diabetes mellitus, percentages are not intended to sum to 100.

Self-reported healthcare system factors

Among the assessed self-reported factors, screening participation (64.0%) and healthcare accessibility (61.3%) were most frequently rated as high by the participants. High self-reported treatment adherence was reported by 58.7% of respondents. The domain rated least favorably, according to patient assessments, was medication availability: 40.0% of participants rated their medication availability as low. Furthermore, only 48.0% of patients rated their awareness of cardiovascular risk factors as high. Detailed results are presented in Table 3 and Figure 1.

Table 3. Self-reported healthcare system factors.

Variable	M ± SD	Low n (%)	Moderate n (%)	High n (%)
Self-reported screening participation	3.76 ± 1.39	13 (17.3)	14 (18.7)	48 (64.0)
Self-reported healthcare accessibility	3.79 ± 1.13	8 (10.7)	21 (28.0)	46 (61.3)
Self-reported treatment adherence	3.81 ± 1.25	10 (13.3)	21 (28.0)	44 (58.7)
Self-reported awareness of CV risk factors	3.39 ± 1.28	19 (25.3)	20 (26.7)	36 (48.0)
Self-reported timeliness of care	3.05 ± 1.30	23 (30.7)	24 (32.0)	28 (37.3)
Self-reported medication availability	2.89 ± 1.19	30 (40.0)	24 (32.0)	21 (28.0)
Self-reported quality of medical services	3.52 ± 1.09	12 (16.0)	26 (34.7)	37 (49.3)

Note: Percentages represent the proportion of participants who rated each domain in the High category (scores 4–5) on the 5-point self-assessment scale and should not be interpreted as objective administrative indicators of service coverage or utilization.

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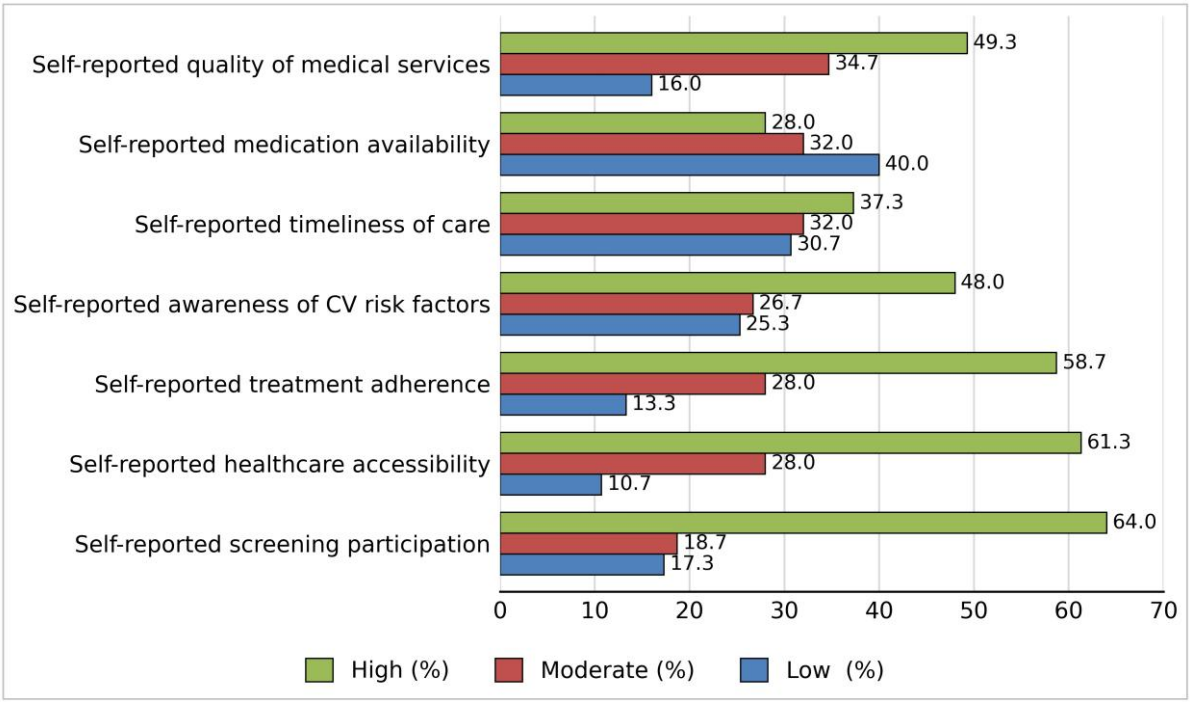


Figure 1. Distribution of self-reported healthcare system factors.

Quality of life assessment

The total quality of life score among elderly IHD patients was 20.27 ± 5.00 points. The highest scores were observed for interest in life (3.73 ± 0.87), satisfaction with social relationships (3.59 ± 0.89), and overall life satisfaction (3.48 ± 0.91).

The lowest mean scores were observed for vitality and energy level (3.01 ± 0.94) and physical activity (3.18 ± 0.92). Detailed quality-of-life component scores are presented in Table 4.

Table 4. Quality of life component scores in elderly IHD patients.

Quality of life component	**M ± SD**
Overall life satisfaction	3.48 ± 0.91
Interest in life	3.73 ± 0.87
Satisfaction with social relationships	3.59 ± 0.89
Vitality and energy level	3.01 ± 0.94
Emotional stability	3.28 ± 0.96
Physical activity	3.18 ± 0.92
Total quality of life score	20.27 ± 5.00

Correlation analysis

Spearman's correlation analysis showed significant correlations between quality of life and self-reported healthcare system factors. Self-reported screening participation showed the strongest positive correlation with quality of life ($\rho=0.496$; $p<0.001$). Significant positive correlations were also identified for the following self-reported factors: awareness of cardiovascular risk factors ($\rho=0.464$; $p<0.001$), treatment adherence ($\rho=0.355$; $p=0.002$), healthcare service accessibility ($\rho=0.338$; $p=0.003$), timeliness of medical care ($\rho=0.278$; $p=0.016$), and quality of medical services ($\rho=0.259$; $p=0.025$).

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Medication availability showed no significant correlation with quality of life, although a marginal trend was observed (p=0.071). Detailed correlation coefficients are presented in Table 5.

Table 5. Correlation between self-reported healthcare system factors and quality of life.

Variable	Spearman's ρ	p
Self-reported screening participation	0.496	<0.001
Self-reported healthcare accessibility	0.338	0.003
Self-reported treatment adherence	0.355	0.002
Self-reported awareness of CV risk factors	0.464	<0.001
Self-reported timeliness of care	0.278	0.016
Self-reported medication availability	0.221	0.071
Self-reported quality of medical services	0.259	0.025

Multiple regression analysis

To assess the independent association between self-reported healthcare system factors and quality of life, multiple linear regression analysis was conducted. Two regression models were fitted.

Model 1 included the self-reported factors: screening participation, healthcare service accessibility, treatment adherence, awareness of cardiovascular risk factors, timeliness of medical care, medication availability, and quality of medical services. The model was statistically significant (R^2=0.303; F(7, 67)=4.16; p<0.001), explaining 30.3% of the variance in quality of life. In this model, self-reported awareness of cardiovascular risk factors was the only variable reaching statistical significance (B=1.655; p=0.012).

Other variables did not reach statistical significance in the multivariable model. Regression analysis results are presented in Table 6.

Table 6. Multiple linear regression analysis of factors independently associated with quality of life (Model 1).

Variable	B	t	p	95% CI
Constant	9.315	4.328	<0.001	5.018 to 13.613
Self-reported screening participation	0.758	1.441	0.154	−0.292 to 1.808
Self-reported healthcare accessibility	1.047	1.864	0.067	−0.074 to 2.168
Self-reported treatment adherence	−0.389	−0.624	0.535	−1.635 to 0.856
Self-reported awareness of CV risk factors	1.655	2.597	0.012	0.383 to 2.928
Self-reported timeliness of care	−0.601	−1.169	0.247	−1.628 to 0.426
Self-reported medication availability	0.102	0.192	0.848	−0.935 to 1.139
Self-reported quality of medical services	0.416	0.696	0.489	−0.777 to 1.609

To assess the association after adjustment for potential confounders, Model 2 was constructed, additionally including sociodemographic (age, sex) and clinical (angina functional class) characteristics. The overall model was statistically significant (R^2=0.359; F(10, 64)=3.58; p<0.001), explaining 35.9% of the variance in quality of life (Table 7).

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Table 7. Multiple linear regression analysis of factors independently associated with quality of life after confounder adjustment (Model 2).

Variable	B	t	p	95% CI
Constant	8.04	2.079	0.042	0.31 to 15.76
Age	0.024	0.490	0.626	−0.072 to 0.119
Sex (female vs male)	0.820	0.760	0.450	−1.337 to 2.977
Self-reported screening participation	0.853	1.582	0.119	−0.224 to 1.931
Self-reported healthcare accessibility	0.945	1.606	0.113	−0.230 to 2.120
Self-reported treatment adherence	−0.300	−0.459	0.648	−1.609 to 1.008
Self-reported awareness of CV risk factors	1.395	2.160	0.035	0.105 to 2.685
Self-reported timeliness of care	−0.564	−1.044	0.301	−1.643 to 0.515
Self-reported medication availability	0.249	0.465	0.643	−0.819 to 1.316
Self-reported quality of medical services	0.315	0.505	0.615	−0.930 to 1.560
CCS functional class (III–IV vs I–II)	−0.270	−0.236	0.814	−2.555 to 2.015

After controlling for sociodemographic and clinical characteristics, self-reported awareness of cardiovascular risk factors remained a statistically significant factor, independently associated with quality of life (B=1.395; 95% CI 0.105 to 2.685; p=0.035). Control variables (age, sex, angina functional class) did not reach statistical significance. The nested model comparison test showed that the addition of control variables did not significantly improve the model (ΔR^2=0.056; $\Delta F(3, 64)$=1.86; p=0.145).

Discussion. This pilot study explored the associations between seven self-reported healthcare system factors and quality of life among patients with IHD in Almaty and Almaty Region. The only independent statistical association found between self-reported awareness of cardiovascular risk factors and quality of life is consistent with existing literature. However, given the design of our study, this association should be interpreted as correlational, not causal. Any discussion of the underlying mechanisms is tentative in nature and is intended to generate hypotheses for future research. In an international study of over 8,700 coronary patients, the same measure – self-reported awareness of one's own cardiovascular risk-factor levels – was also independently associated with quality of life [14]. One plausible hypothetical explanation that could underlie this observed association – though not directly tested in our study – is that greater awareness may facilitate better symptom recognition and self-management [15].

Separately, fewer than half of participants rated their own awareness as high, which may be consistent with a lack of adequate informational resources for disease self-management in this elderly IHD population. In this context, awareness may be understood as patients' capacity to successfully obtain and retain information about their own condition – one component of health literacy [16]. This potential gap in informational resources, if confirmed in larger studies, could inform the development of patient-education programs within primary care. The persistence of the observed association after adjustment for age, sex, and functional class likely suggests that these variables are not substantial confounders in this sample.

The remaining associations that were significant only at the bivariate level are likely indirect in nature. The attenuation of such self-reported factors as timeliness of medical care, quality of medical services, and treatment adherence may reflect their potential link to quality of life through awareness [17]. A similar pattern has been observed in a separate study of patients with multimorbidity: illness perceptions and personal resources – including health literacy – were not directly associated with healthcare utilization, yet retained a strong, independent association with quality of life [18]. In addition, health-related behavior change

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may also be one of the pathways through which this association is realized [19,20]. However, these mechanistic interpretations were not tested directly, and confirming a mediation model is beyond this pilot's scope. We also cannot exclude the possibility that the small sample size contributed to the loss of significance for these factors.

Among other measures, self-reported screening participation and healthcare accessibility were the most favorably rated domains overall and showed the strongest bivariate correlations with quality of life. One hypothesis is that, at stable disease stages, quality of life is more closely associated with cognitive self-care capacity than with sporadic healthcare contacts [18,21]. Notably, this self-reported measure is distinct from verified screening coverage, which systematic reviews show may not reduce mortality [22].

In contrast, medication availability, the lowest-rated self-reported factor, was the only one not significantly correlated with quality of life at the bivariate level. It is also possible that it is associated with other self-reported factors in our sample, one of which is treatment adherence. This may still point to a genuine structural barrier: limited availability of essential cardiovascular medication in healthcare facilities has been linked to worse cardiovascular outcomes in low- and middle-income settings [23].

Beyond these subjective factors, the clinical profile offers an objective complement. The predominance of CCS functional class III indicates a substantial burden of physical activity limitation in this elderly IHD population, consistent with prior evidence linking higher CCS class to reduced quality of life and greater healthcare utilization [24,25]. The high proportion of obesity and type 2 diabetes further underscores multimorbidity as a contributor to adverse outcomes in aging populations – burdens that plausibly compound the reduced quality of life reported here, although these variables were not entered into the regression model [26]. The component scores observed here point in the same direction: vitality/energy and physical activity received the lowest ratings.

Taken together, these findings suggest that self-reported awareness of cardiovascular risk factors may be a modifiable target for primary care strategies. This is consistent with the growing use of patient-reported outcome measures (PROMs) alongside traditional clinical endpoints in modern cardiology, including disease-specific quality-of-life tools developed for IHD patients [27,28].

Study strengths

Strengths include a high participation rate among invited patients, which reduces the risk of non-response bias, together with a broad assessment of clinical and self-reported healthcare factors spanning multiple domains. Data were collected across four facilities in Almaty and Almaty Region, including both urban and rural healthcare settings, with two multivariable models used to assess robustness.

Study limitations

Using patient-reported questionnaires to assess quality of life and healthcare factors is a limitation due to the subjective nature of respondent perceptions. All analyzed indicators – accessibility, screening participation, and timeliness – rely on personal assessments rather than verified data from official healthcare statistics. Furthermore, the self-developed questionnaires used did not undergo formal psychometric validation, which should also be considered when interpreting the results.

The relatively small sample size (n=75) may limit the generalizability of the results. The cross-sectional design does not allow determination of the direction of the associations between the studied factors. The study was conducted at healthcare facilities in the city of Almaty and the surrounding Almaty Region, including one rural site. This limits extrapolation of these findings to the national level, given the geographic, socioeconomic, and infrastructural heterogeneity of Kazakhstan's regions. Further prospective, multicenter studies conducted

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across Kazakhstan's regions are needed to explore the implications of these findings for patient education within primary healthcare.

Conclusion. In this pilot study, quality of life among elderly IHD patients in Almaty and Almaty Region showed significant unadjusted correlations with several self-reported healthcare system factors; however, after multivariable adjustment, only self-reported awareness of cardiovascular risk factors remained independently associated. Given that fewer than half of participants rated awareness of cardiovascular risk factors as high, these findings generate a hypothesis regarding the potential value of patient education, to be examined in future prospective studies.

As an exploratory cross-sectional pilot study with a modest sample size and non-validated single-item measures, these associations should not be interpreted as causal. Larger, multicenter, longitudinal studies using validated instruments are needed to confirm these findings across Kazakhstan.

Conflict of interest. The authors declare no conflict of interest.

Authors' contribution. Conceptualization, B.T. and A.M.; methodology, M.B.; software, M.B.; validation, B.T.; formal analysis, B.T. and A.M.; investigation, M.B.; data curation, B.T.; writing – original draft preparation, B.T., A.M. and M.B.; writing – review and editing, B.T., A.M. and M.B.; visualization, B.T.; supervision, B.T.; project administration, B.T. All authors have read and agreed to the published version of the manuscript. The authors declare that this material has not been previously published and is not under consideration by other publishers.

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Data availability statement. The datasets used and/or analyzed during this study are available from the corresponding author upon reasonable request.

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LIST OF REFERENCES

1. GBD 2021 Causes of Death Collaborators. Global burden of 288 causes of death and life expectancy decomposition in 204 countries and territories and 811 subnational locations, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021. Lancet. 2024;403(10440):2100–32. https://doi.org/10.1016/S0140-6736(24)00367-2
2. Townsend N, Timmis A, Erglis A, Miličić D, Perrone-Filardi P, Weidinger F, et al. Challenges in the prevention, treatment and management of cardiovascular disease among older adults. Lancet Reg Health Eur. 2025;56:101372. https://doi.org/10.1016/j.lanepe.2025.101372
3. Virani SS, Newby LK, Arnold SV, Bittner V, Brewer LC, Demeter SH, et al.; Peer Review Committee Members. 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA guideline for the management of patients with chronic coronary disease: a report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. Circulation. 2023;148(9):e9–e119. https://doi.org/10.1161/CIR.0000000000001168
4. Prince MJ, Wu F, Guo Y, Gutierrez Robledo LM, O'Donnell M, Sullivan R, et al. The burden of disease in older people and implications for health policy and practice. Lancet. 2015;385(9967):549–62. https://doi.org/10.1016/S0140-6736(14)61347-7
5. Pedersen M, Overgaard D, Boateng T, Bennich B, Beck AM, Andersen I, et al. The effect of peer-mentor support for older vulnerable patients with ischemic heart disease – a 24-week randomized controlled trial. J Cardiovasc Nurs. 2025;40(5):486–97. https://doi.org/10.1097/JCN.0000000000001158
6. Steiner B, Neumann A, Schwertfeger M, Verket M, Romero I, Hurtado C, et al. Patient reported outcome and experience measures in cardiovascular disease: a scoping review as part of iCARE4CVD. J Patient Rep Outcomes. 2025;9(1):141. https://doi.org/10.1186/s41687-025-00980-4

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7. Magnani JW, Mujahid MS, Aronow HD, Cené CW, Dickson VV, Havranek E, et al.; American Heart Association Council on Epidemiology and Prevention; Council on Cardiovascular Disease in the Young; Council on Cardiovascular and Stroke Nursing; Council on Peripheral Vascular Disease; Council on Quality of Care and Outcomes Research; and Stroke Council. Health literacy and cardiovascular disease: fundamental relevance to primary and secondary prevention: a scientific statement from the American Heart Association. Circulation. 2018;138(2):e48–e74. https://doi.org/10.1161/CIR.0000000000000579
8. World Health Organization. Primary health care transformation in Kazakhstan: progress and challenges [Internet]. Geneva: World Health Organization; 2023 [cited 2026 May 19]. Available from: https://www.who.int/europe/publications/i/item/WHO-EURO-2023-8269-48041-71196
9. Berdeshova G, Musina A, Orakbay L, Tolegenova A, Zhorabek S, Amanova A, et al. Trend of cardiovascular diseases in northern regions of the Republic of Kazakhstan at the outpatient level. Iran J Public Health. 2024;53(2):425–32. https://doi.org/10.18502/ijph.v53i2.14927
10. Campeau L. Grading of angina pectoris. Circulation. 1976;54(3):522–3. https://doi.org/10.1161/circ.54.3.947585
11. Ware JE Jr, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36). I. Conceptual framework and item selection. Med Care. 1992;30(6):473–83. https://doi.org/10.1097/00005650-199206000-00002
12. World Health Organization. Everybody's business: strengthening health systems to improve health outcomes: WHO's framework for action [Internet]. Geneva: World Health Organization; 2007 [cited 2026 May 16]. Available from: https://iris.who.int/handle/10665/43918
13. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet. 2007;370(9596):1453–7. https://doi.org/10.1016/S0140-6736(07)61602-0
14. De Smedt D, Clays E, Annemans L, Pardaens S, Kotseva K, De Bacquer D. Risk factor awareness in a coronary population and the association with health-related quality of life outcomes. Int J Public Health. 2014;59(3):475–83. https://doi.org/10.1007/s00038-014-0551-0
15. Chen S, Wang Y, Liu W, Zhang D, Zhu J, Liu G. Mechanism of health literacy impact on self-management behaviors in patients with chronic disease: a self-efficacy mediated model moderated by disease duration. Front Public Health. 2025;13:1673723. https://doi.org/10.3389/fpubh.2025.1673723
16. Davey J, Holden CA, Smith BJ. The correlates of chronic disease-related health literacy and its components among men: a systematic review. BMC Public Health. 2015;15:589. https://doi.org/10.1186/s12889-015-1900-5
17. Jennings C, Astin F, Prescott E, Hansen T, Gale CP, De Bacquer D. Illness perceptions and health literacy are strongly associated with health-related quality of life, anxiety and depression in patients with coronary heart disease: results from the EUROASPIRE V cross sectional survey. Eur J Cardiovasc Nurs. 2023;22(7):719–29. https://doi.org/10.1093/eurjcn/zvac105
18. Rijken M, Valderas JM, Heins M, Schellevis F, Korevaar J. Identifying high-need patients with multimorbidity from their illness perceptions and personal resources to manage their health and care: a longitudinal study. BMC Fam Pract. 2020;21:75. https://doi.org/10.1186/s12875-020-01148-3

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19. Jung MJ, Roh YS. Healthcare providers' support and outcomes in hemodialysis patients: the mediating effect of health literacy. Patient Educ Couns. 2023;111:107714. https://doi.org/10.1016/j.pec.2023.107714
20. Suhail M, Saeed H, Saleem Z, Younas S, Hashmi FK, Rasool F, et al. Association of health literacy and medication adherence with health-related quality of life (HRQoL) in patients with ischemic heart disease. Health Qual Life Outcomes. 2021;19(1):118. https://doi.org/10.1186/s12955-021-01761-5
21. Santillan-Garcia A, Gea-Caballero V, Frutos-Bernal E, Juárez-Vela R, Martínez-Sabater A, Castro-Sánchez E; ALFABETIC Collaborative Working Group; Cabellos-Garcia AC. Health literacy and self-care in patients with heart failure: a cross-sectional study. Front Public Health. 2026;13:1657807. https://doi.org/10.3389/fpubh.2025.1657807
22. Si S, Moss JR, Sullivan TR, Newton SS, Stocks NP. Effectiveness of general practice based health checks: a systematic review and meta-analysis. Br J Gen Pract. 2014;64(618):e47–53. https://doi.org/10.3399/bjgp14X676456
23. Chow CK, Nguyen TN, Marschner S, Diaz R, Rahman O, Avezum A, et al. Availability and affordability of medicines and cardiovascular outcomes in 21 high-income, middle income and low-income countries. BMJ Glob Health. 2020;5(11):e002640. https://doi.org/10.1136/bmjgh-2020-002640
24. Kotajärvi J, Tolppanen AM, Hartikainen J, Miettinen H, Viljakainen M, Martikainen J, et al. Correlation of the disease-specific Canadian Cardiovascular Society (CCS) classification and health-related quality of life (15D) in coronary artery disease patients. PLoS One. 2022;17(4):e0266101. https://doi.org/10.1371/journal.pone.0266101
25. Owlia M, Dodson JA, King JB, Derington CG, Herrick JS, Sedlis SP, et al. Angina severity, mortality, and healthcare utilization among veterans with stable angina. J Am Heart Assoc. 2019;8(15):e012811. https://doi.org/10.1161/JAHA.119.012811
26. Rodrigues LP, Rezende ATO, Delpino FM, Mendonça CR, Noll M, Nunes BP, et al. Association between multimorbidity and hospitalization in older adults: systematic review and meta-analysis. Age Ageing. 2022;51(7):afac155. https://doi.org/10.1093/ageing/afac155
27. Reed SD, Gouda P. Expanding the use and interpretation of patient-centric cardiovascular clinical trial endpoints. J Clin Transl Sci. 2025;9(1):e151. https://doi.org/10.1017/cts.2025.10054
28. Oldridge N, Höfer S, McGee H, Conroy R, Doyle F, Saner H. The HeartQoL: Part I. Development of a new core health-related quality of life questionnaire for patients with ischemic heart disease. Eur J Prev Cardiol. 2014;21(1):90–7. https://doi.org/10.1177/2047487312450544

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ҚАЗАҚСТАННЫҢ АЛМАТЫ ҚАЛАСЫ МЕН АЛМАТЫ ОБЛЫСЫНДАҒЫ ЖҮРЕКТІҢ ИШЕМИЯЛЫҚ АУРУЫ БАР ЕГДЕ ЖАСТАҒЫ ПАЦИЕНТТЕРДІҢ ДЕНСАУЛЫҚ САҚТАУ ЖҮЙЕСІ ФАКТОРЛАРЫН ӨЗДІГІНЕН БАҒАЛАУЫ ЖӘНЕ ӨМІР СҮРУ САПАСЫ: ПИЛОТТЫҚ ЗЕРТТЕУ

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Түйіндеме

Кіріспе. Жүректің ишемиялық ауруы (ЖИА) егде жастағыларда өлім-жітім мен мүгедектіктің негізгі себебі. Клиникалық сипаттамалардан бөлек, денсаулық сақтау жүйесі факторларын өздігінен бағалау өмір сүру сапасымен байланысты болуы мүмкін, алайда Қазақстан бойынша деректер шектеулі.

Мақсаты. Алматы қаласы мен Алматы облысындағы егде жастағы ЖИА пациенттерінде денсаулық сақтау жүйесі факторларын өздігінен бағалау мен өмір сүру сапасының байланысын бағалау.

Материалдар мен әдістер. Көлденең-кесінділік пилоттық зерттеуге төрт медициналық мекемеден ЖИА расталған диагнозымен 75 егде пациент енгізілді. Деректер сауалнамалар мен медициналық карталардан жиналды. Денсаулық сақтау жүйесі факторлары және өмір сүру сапасы 5-балдық Лайкерт шкаласымен өздігінен, стенокардияның функционалдық класы – CCS (Канада жүрек-қантамыр қоғамы) бойынша анықталды. Спирмен корреляциялық талдауы, көптік сызықтық регрессия (жынысы, жасы, CCS класына түзетілмеген және түзетілген) қолданылды; маңыздылығы – $p<0,05$ (SPSS 26.0).

Нәтижелер. Орташа жасы 66,6 жас, 53,3%-ы – әйелдер, 54,7%-ы CCS III класында болды. Дене салмағының индексі – 30,1 ± 5,4 кг/м^2, жалпы холестерин – 5,86 ± 1,48 ммоль/л. Пациенттер өздігінен бағалаған денсаулық сақтау жүйесі факторлары арасында скринингке қатысу (64,0%) мен медициналық көмектің қолжетімділігі (61,3%) жиі «жоғары» бағаланды. Дәрі-дәрмектің қолжетімділігін өздігінен бағалау жиі «төмен» (40,0%) болды. Өмір сүру сапасы денсаулық сақтау жүйесі факторларын өздігінен бағалаумен корреляцияланды, соның ішінде скринингке қатысу ($\rho=0,496$; $p<0,001$), жүрек-қантамыр қауіп факторлары туралы хабардарлық ($\rho=0,464$; $p<0,001$), емге адалдық ($\rho=0,355$; $p=0,002$), медициналық көмектің қолжетімділігі ($\rho=0,338$; $p=0,003$). Бірақ қауіп факторлары туралы хабардарлықты өздігінен бағалау тәуелсіз байланыс танытқан жалғыз фактор болды ($B=1,655$; $p=0,012$), түзетуден кейін де маңыздылығын сақтады ($B=1,395$; $p=0,035$).

Қорытынды. Егде жастағы ЖИА пациенттерінде өмір сүру сапасы денсаулық сақтау жүйесі факторларын өздігінен бағалаумен байланысты болды. Қауіп факторлары туралы хабардарлықты өздігінен бағалау түзетуден кейін маңыздылығын сақтай отырып, тәуелсіз байланыс танытқан жалғыз фактор болды. Нәтижелердің пациенттерді оқыту үшін маңызын зерттейтін проспективті зерттеулер қажет.

Түйінді сөздер: егде жастағы адамдар, жүректің ишемиялық ауруы, өмір сүру сапасы, медициналық көмектің қолжетімділігі, өздігінен бағалау, екіншілік алдын алу.

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САМООЦЕНКА ФАКТОРОВ СИСТЕМЫ ЗДРАВООХРАНЕНИЯ И КАЧЕСТВО ЖИЗНИ ПОЖИЛЫХ ПАЦИЕНТОВ С ИШЕМИЧЕСКОЙ БОЛЕЗНЬЮ СЕРДЦА В Г. АЛМАТЫ И АЛМАТИНСКОЙ ОБЛАСТИ КАЗАХСТАНА: ПИЛОТНОЕ ИССЛЕДОВАНИЕ

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Аннотация

Введение. Ишемическая болезнь сердца (ИБС) остается ведущей причиной смертности и инвалидизации среди пожилых. Помимо клинических характеристик, самооценка факторов системы здравоохранения может быть связана с качеством жизни, однако данные по Казахстану ограничены.

Цель. Оценить взаимосвязь самооценки факторов системы здравоохранения и качества жизни у пожилых пациентов с ИБС в г. Алматы и Алматинской области.

Материалы и методы. В данное поперечное пилотное исследование было включено 75 пожилых пациентов с подтвержденным диагнозом ИБС из четырех медицинских учреждений. Данные собраны через опросники и медицинские карты. Факторы системы здравоохранения и качество жизни оценивались самостоятельно по 5-балльной шкале Лайкерта, функциональный класс стенокардии – по CCS (Канадское сердечно-сосудистое общество). Использовались корреляционный анализ Спирмена и множественная линейная регрессия (нескорректированная и скорректированная по полу, возрасту, классу CCS); значимость – $p<0,05$ (SPSS 26.0).

Результаты. Средний возраст участников составил 66,6 года, 53,3% – женщины, 54,7% имели функциональный класс III по CCS. Средний индекс массы тела – 30,1 ± 5,4 кг/м², общий холестерин – 5,86 ± 1,48 ммоль/л. При самооценке факторов системы здравоохранения наибольшая доля пациентов считала высокими участие в скрининге (64,0%) и доступность медицинской помощи (61,3%). Самооценка доступности лекарств чаще указывалась как низкая (40,0%). Качество жизни коррелировало с самооценкой нескольких факторов системы здравоохранения, включая участие в скрининге ($\rho=0,496$; $p<0,001$), осведомленность о сердечно-сосудистых факторах риска ($\rho=0,464$; $p<0,001$), приверженность лечению ($\rho=0,355$; $p=0,002$) и доступность медицинской помощи ($\rho=0,338$; $p=0,003$). Однако самооценка осведомленности о факторах риска оказалась единственным независимо связанным фактором ($B=1,655$; $p=0,012$), оставаясь значимой после корректировки ($B=1,395$; $p=0,035$).

Заключение. У пожилых пациентов с ИБС качество жизни было связано с самооценкой факторов системы здравоохранения. Самооценка осведомленности о факторах риска оказалась единственным независимо связанным фактором, сохраняя значимость после корректировки. Необходимы проспективные исследования значения этих данных в обучении пациентов.

Ключевые слова: пожилые люди, ишемическая болезнь сердца, качество жизни, доступность медицинской помощи, самоотчет, вторичная профилактика.

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