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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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QUALITY OF LIFE AMONG YOUNG ADULT PATIENTS WITH CARDIOVASCULAR DISEASE

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Abstract.

Background: Cardiovascular diseases (CVD) remain a leading cause of premature mortality and disability globally, including in Kazakhstan. Recently, CVD has shown a concerning trend toward affecting younger populations.

Objective: To assess the health-related quality of life (HRQoL) of young adult patients (aged 25–44) with cardiovascular diseases.

Methods: This cross-sectional study involved 294 patients diagnosed with Arterial Hypertension (AH) as the primary cardiovascular condition, with a proportion presenting additional comorbid diagnoses (IHD or CHF). Data were collected using the Short-Form Health Survey (SF-36) and analyzed with SPSS 25.0. QoL scores were compared across gender, marital status, educational level, and employment status using appropriate statistical tests (Student's t-test, ANOVA, Mann–Whitney, and Kruskal–Wallis). Statistical significance was defined as $p < 0.05$.

Results: The average age of participants was 38.4±5.2 years; 64.3% were women. Men reported significantly higher QoL scores than women in most SF-36 domains, particularly physical functioning, bodily pain, vitality, and social functioning ($p < 0.05$). Employment status was significantly associated with QoL: workers and entrepreneurs had higher QoL scores, while retirees and the unemployed had the lowest ($p < 0.05$). As this is a cross-sectional study, causal direction cannot be confirmed. No significant differences were found based on marital or educational status. Physical health scores consistently exceeded mental health scores across all groups.

Conclusion: The study highlights gender and employment status as significant factors associated with QoL in young adults with CVD in Kazakhstan. The findings emphasize the need for targeted health and social interventions to improve QoL and reduce the burden of CVD in the working-age population.

Key words. Cardiovascular disease, quality of life, young adults, Kazakhstan.

Introduction.

Cardiovascular diseases (CVDs) remain a major global health burden, having earned the label of a "modern epidemic" starting in the 20th century and persisting into the present. For many years, they have been the primary cause of mortality in developed nations, including Kazakhstan.

As reported by the World Health Organization (WHO), CVDs were responsible for approximately 20.5 million deaths in 2021, representing 32% of all global fatalities. Ischemic heart disease alone accounted for over 9 million of these deaths. Notably, the majority (over 80%) of CVD-related deaths occurred in low- and middle-income countries [1].

Findings from the WHO multinational project MONICA confirmed gender-related differences in CVD risk factors. Men aged 35-64 have a 4-5 times higher risk of developing CVD compared to women of the same age. Among men aged 40-59, these diseases constitute 40% of all deaths, with 4.5 of them succumbing to coronary heart disease [2].

A.N. Britov noted that while some older individuals are willing to make efforts to improve their health, it often comes at the cost of significant psychological stress. Conversely, many young people are not concerned about cardiovascular diseases and adopt behavioral patterns that contribute to CVD development [3].

It is worth mentioning that in recent decades, CVD has seen a significant "rejuvenation." Coronary heart disease (CHD) becomes the primary cause of incidence and disability from the age of 30, leading to premature death from the age of 40 [4].

Every year, 17.1 million people die from heart attacks and strokes globally. CHD holds a prominent position in the incidence and mortality structure in Kazakhstan, with a 5–7-fold increase over the past decade. CVD risk factors significantly impact the working-age population [5].

In Kazakhstan, 2 million people are registered as suffering from chronic vascular heart diseases, comprising 12% of the country's working-age population [6].

The World Health Organization has established a new age classification system: young age (25-44 years), middle age (44-60 years), old age (60-75 years), elderly age (75-90 years), and centenarians (over 90 years) [7].

Changes in the lifestyle of young individuals, such as poor nutrition, reduced physical activity, chronic stress, and fatigue, are significant contributors to the rise of CVD among this demographic [8]. An essential criterion for assessing the effectiveness of medical care is the quality of life, a term that was first used in medicine in 1966 by Elkington in a publication related to transplant medicine [9]. Despite its widespread use in the medical field today, a universally accepted definition of quality of life remains elusive. According to the WHO, quality of life refers to an individual's perception of their overall well-being, encompassing physical, mental, and social aspects [10].

Health-related quality of life (HRQoL) is a complex concept that evaluates patients' health experiences and the outcomes of health interventions, including physical and mental health, symptoms, functional status, and overall health perception [11]. HRQoL serves as a clinical index of patient well-being,

reflecting perceived health, disease impact, and treatment consequences [12].

Currently, the most frequently used tool in research for measuring quality of life is the Medical Outcomes Study Short Form (SF-36), which is regarded as the "gold standard" among commonly accepted methods for assessing quality of life (QoL) [13]. This research methodology is grounded in the strict principles of evidence-based medicine, particularly important for evaluating subjective perspectives.

In recent years, the number of publications focused on quality of life has increased, with a growing trend toward this area of research [14]. Cardiovascular disease was one of the first areas in clinical medicine to see extensive quality of life research. This is due to the high prevalence of CVD and its importance as a criterion for assessing disease severity and the effectiveness of therapy in affected patients [15].

Cardiovascular diseases are often linked to premature death and significantly reduced quality of life. These conditions result not only in physical limitations and substantial financial costs, but also in chronic psychological stress due to the need for long-term therapy and lifestyle adjustments [16]. While clinical indicators such as the New York Heart Association (NYHA) classification, lipid profiles, blood pressure, ECG results, and cardiac function parameters like left ventricular ejection fraction are valuable in identifying disease severity and prognosis, they do not reflect the patient's own experience and perception of well-being [17].

Healthcare today aims not only to prolong life but also to enhance its quality. Modern treatment approaches focus on symptom relief and restoring patients' ability to function in everyday life. As a result, HRQoL has become an important endpoint in research evaluating interventions for cardiovascular diseases [18]. In this context, the present study investigates HRQoL among young adult patients with CVD.

Materials and Methods.

Study Design and Setting:

This cross-sectional, observational study was conducted in Semey, a city in the Abay region of the Republic of Kazakhstan, over a one-year period. The study aimed to assess health-related quality of life among young adults diagnosed with cardiovascular diseases.

Study Population:

Participants included adult patients aged 25 to 44 years who were registered at local medical institutions in Semey with one or more CVD diagnoses. The inclusion criteria were:

1. Age between 25 and 44 years;
2. Diagnosis of Arterial Hypertension (AH) as the primary condition, with or without the following comorbid cardiovascular diagnoses:
   - **Ischemic Heart Disease (IHD) (comorbid):** diagnosed based on clinical symptoms (e.g., angina), ECG changes, and/or positive findings on imaging, occurring alongside AH;
   - **Chronic Heart Failure (CHF) (comorbid):** based on clinical findings and echocardiographic evidence, occurring alongside AH.

Patients were excluded if they:

1. Had cognitive impairment or psychiatric illness interfering with questionnaire completion;
2. Were in late-stage or terminal disease unrelated to CVD;
3. Declined to participate or withdrew consent.

All participants were diagnosed with Arterial Hypertension (AH) as the primary cardiovascular condition. The majority presented with AH alone, while a smaller proportion had additional comorbid cardiovascular diagnoses — including Ischemic Heart Disease (IHD) or Chronic Heart Failure (CHF) – occurring alongside AH. This clinical picture reflects the real-world complexity of cardiovascular disease in young adults in Kazakhstan. The primary aim of this study was to examine sociodemographic factors associated with QoL in this population, rather than to compare outcomes across diagnostic subgroups.

Sampling and Sample Size:

Patients were selected using a random number table. The required sample size was calculated using the Sample XS program (http://www.brixtonhealth.com/samplexs.html) for cross-sectional studies, resulting in a final sample of 294 participants.

Data Collection Instruments:

The primary outcome quality of life was measured using the Short Form Health Survey (SF-36), a validated instrument widely used for assessing HRQoL. The SF-36 includes eight domains: Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE), and Mental Health (MH). Scores range from 0 to 100, with higher scores indicating better QoL. The questionnaire was administered in both Russian and Kazakh to ensure comprehension across the study population. Two summary scores were calculated: Physical Component Summary (PCS), Mental Component Summary (MCS)

Ethical Issues:

All research participants provided written consent after receiving detailed information about the study's aims and the confidentiality of their personal data. Each participant was assigned a unique code to protect their identity. The correspondence between this code and personal identification information is securely stored in a file accessible only to the database keeper. Others had access to a coded (secure) database.

The ethical committee of Semey Medical University (Semey, Kazakhstan) approved this research prior to its commencement (Protocol 2 dated October 18, 2019).

Statistical Analysis:

Descriptive statistics were used to analyze the data, with statistical criteria selected based on the type of variables analyzed. Sociodemographic characteristics were presented as frequencies and percentages for categorical variables and as mean ± standard deviation (SD) for continuous variables. Quantitative indicators were compared using Student's t-test, one-way ANOVA (for normally distributed data), and the nonparametric Mann–Whitney and Kruskal-Wallis tests (for non-normally distributed data).

The collected data were entered into Microsoft Excel and analyzed using SPSS software, version 25 for Windows. The statistical significance level was set at $p < 0.05$, and associated variables considered for analysis included gender, educational level, marital status, and employment status based on their statistical significance.

Results.

A total of 294 individuals participated in the study. The age of respondents ranged from 25 to 45 years, with a mean age of 38.4 ±5.2 years. The majority of participants were female, accounting for 64.3% (n=189). In terms of ethnicity, 74.5% (n=219) were Kazakh, 21.1% (n=62) were Russian, and 4.4% (n=13) belonged to other ethnic groups. Regarding marital status, 70.4% (n=207) were married, 12.6% (n=37) were single, 9.9% (n=29) were divorced, and 7.1% (n = 21) were in a civil partnership. Employment status distribution showed that 41.8% (n=123) were manual laborers, 24.1% (n=71) were office employees, 7.5% (n=22) were entrepreneurs, 8.2% (n=24) were retired due to disability, and 18.4% (n=54) were unemployed.

Significantly lower levels of quality of life were found in the female group in almost all scales of the questionnaire (Table 1). The Mann-Whitney U-test and Student t-test were used for analysis, and a statistically significant difference was found in variables such as physical functioning, bodily pain, vitality, and social functioning ($p<0.05$). The highest indicators of the quality-of-life scale in men and women were seen in physical function (PF) at 74.9±30.1 and 67.6±24.8 respectively. The second highest index of the scales was "social function" (SF) at 73.4±24.6 in males and 68.4±21.3 in females.

The results of a comparative analysis of the quality of life of patients by marital status are presented in Table 2. Statistically

Table 1. *The mean and SD of QoL indicators on gender.*

Variables		**Gender**		**p- value**
		male	**female**	
PF	Mean	74.9	67.6	**0.003***
	SD	30.1	24.8	
RP	Mean	66.3	55.4	0.074
	SD	39.4	40.7	
BP	Mean	68.4	60.4	**0.023***
	SD	28.5	25.0	
GH	Mean	56.5	55.8	0.762
	SD	21.9	18.3	
VT	Mean	59.4	52.8	**0.039***
	SD	22.7	18.5	
SF	Mean	73.4	68.4	**0.050***
	SD	24.6	21.3	
RE	Mean	63.4	55.6	0.192
	SD	41.6	41.3	
MH	Mean	65.3	59.0	0.017
	SD	20.9	18.4	

** Significant differences with group, p<0.05*

Table 2. *The mean and SD of QoL indicators on marital status.*

Variable		**Marital status:**				**p- value**
		married	**not married**	**divorced**	**in a civil marriage**	
PF	Mean	71.9	65.9	64.1	69.2	0.607
	SD	25.9	32.6	27.1	26.0	
RP	Mean	63.1	50.0	44.1	58.3	0.147
	SD	39,7	41.0	45.5	38.3	
BP	Mean	66.8	51.9	57.9	58.1	**0.020***
	SD	25.4	30.3	23.7	27.3	
GH	Mean	57.5	53.9	50.6	53.4	0.504
	SD	18.9	22.6	22.0	18.0	
VT	Mean	57.3	52.0	51.2	47.8	0.096
	SD	21.2	18.5	14.6	18.8	
SF	Mean	72.2	67.1	67.6	61.8	0.153
	SD	22.6	24.3	23.4	17.4	
RE	Mean	60.0	54.3	54.9	55.6	0.853
	SD	41.7	42.5	39.0	42.8	
MH	Mean	62.1	60.6	60.7	56.2	0.571
	SD	19.3	22.0	20.7	16.8	

** Significant differences with group, p<0.05.*

Table 3. *The mean and SD of QoL indicators on employment status.*

Variable		Employment status:					p- value
		workers	employees	entrepreneurs	retirees	unemployed	
PF	Mean	77.6	73.8	78.3	53.7	54.7	**0.000***
	SD	21.0	25.4	20.4	31.4	31.5	
RP	Mean	67.4	66.0	68.1	36.8	41.7	**0.000***
	SD	37.4	41.2	40.0	42.0	38.2	
BP	Mean	66.4	67.3	69.9	53.4	54.2	0.068
	SD	24.6	25.4	26.9	32,7	26.3	
GH	Mean	60.0	56.5	65.1	46.4	47.5	**0.002***
	SD	17.5	20.0	16.4	19.9	20.9	
VT	Mean	56.7	59.9	63.3	44.7	48.6	**0.005***
	SD	19.6	19.4	20.9	21.6	18.9	
SF	Mean	73.5	71.8	71.5	61.2	65.1	0.169
	SD	20.2	22.3	22.2	23.2	26.3	
RE	Mean	66.7	63.2	59.3	35.1	46.2	**0.010***
	SD	39.6	41.0	38.9	46.4	39.5	
MH	Mean	61.7	63.8	67.8	52.8	59.0	0.176
	SD	20.3	18.4	16.8	20.6	18.7	

** Significant differences with group, p<0.05.*

Table 4. *PCS and MCS indicators (mean, SD) by different variables.*

Variable					
		Mean	**SD**	**Mean**	**SD**
Sex:	male	46.0	10.8	39.4	21.3
	female	43.5	9.1	33.2	20.4
p- value		**0.023***		**0.034***	
Family status:	married	45.6	9.1	37.1	20.8
	not married	41.1	11.9	32.1	22.5
	divorced	40.5	12.0	30.4	20.5
	in a civil marriage	43.8	7.8	31.9	19.3
p- value		0.130		0.377	
Education:	lower secondary	41.3	1.8	30.4	15.5
	secondary education	41.4	10.5	34.1	18.8
	specialized secondary	45.8	9.5	35.8	21.7
	incomplete higher	39.4	8.3	17.4	17.3
	higher	44.8	9,7	36.9	21.2
p- value		0.135		0.247	
Employment status:	worker	47.0	7.9	38.7	20.0
	employees	45.8	8.9	38.9	21.9
	entrepreneurs	48.1	8.1	39.8	20.4
	retired	38.7	10.8	23.3	23.7
	unemployed	38.3	11.1	28.6	17.6
p- value		**0.000***		**0.008***	

** Significant differences with group, p<0.05.*

significant differences were almost not discovered, except for bodily pain (p = 0.02). The authors concluded that there is no difference in the quality of young patients' lives depending on their marital status.

The statistical significance of the difference in QoL indicators across employment status, calculated using the Kruskal-Wallis test and One-way ANOVA, is shown in Table 3. Statistically significant differences were revealed in indicators such as physical functioning, role-physical, general health, vitality, and role-emotional (p<0.05). According to this scale, employees and entrepreneurs had higher indicators, while disability retirees had lower indicators. No statistically significant differences were found on the other scales (p > 0.05).

The authors compared the physical component summary (PCS) and mental component summary (MCS) indicators of patients based on variables such as gender and employment status, as shown in Table 4. Statistically significant differences were found in gender and employment status, while no significant differences were found in educational level and marital status. The mean of PCS was higher than MCS across all associated factors. Detailed data on the PCS and MCS indicators by different variables are provided in Table 4.

Discussion.

Thus, the results of this study demonstrate the quality of life of young adult patients with cardiovascular diseases based

on gender, educational level, marital status, and employment status. The study found the largest number of statistically significant differences in quality of life depending on gender and employment status. The analysis of standardized quality of life indicators for patients with CVD revealed that the male population had better quality of life indicators across all scales of the SF-36 questionnaire compared to females ($p < 0.05$). Additionally, the research indicated that the average total quality of life score for retired and unemployed patients was lower than other patient statuses ($p < 0.001$). The study also highlighted that physical quality of life among young adults with CVD exceeded mental quality of life in most variables, with statistically significant differences observed only in gender and employment status ($p < 0.05$).

As reported by WHO, the age-standardized mortality rate from cardiovascular diseases in Kazakhstan is approximately twice as high as the average rate observed in European Region countries [19].

Quality of life is a subjective measure of an individual's well-being, encompassing physical and mental health, work capacity, and social engagement. It is assessed using international questionnaires that can be either general or disease-specific. While tools for assessing QoL in cardiovascular patients exist in international practice, such studies have yet to be conducted in Kazakhstan.

Predictors of Quality of Life in Other Research.

In a study by Najafi et al., male gender was identified as an independent factor positively associated with the physical component of quality of life, which may reflect social advantages that promote greater involvement of men in physical and social activities [20]. Our findings align with those of Najafi et al., as men in our sample consistently reported higher QoL scores across most SF-36 domains. In contrast, research by Nesbitt et al. indicated that men may report lower quality of life in some contexts, potentially due to increased family responsibilities and traditional gender expectations [21]. This discrepancy may reflect differences in study populations: Nesbitt et al. studied rural heart failure patients in the United States, whereas the present study examined a broader CVD population in an urban Kazakhstani setting.

AbuRuz highlighted that factors such as the severity of the disease, employment status, and the level of social support are significant predictors of elevated depression in patients with heart conditions, all contributing to a diminished quality of life [22]. This is consistent with our findings, where disability retirees showed the lowest PCS (38.7) and MCS (23.3) scores. This may reflect a dual burden: disease severity severe enough to cause early retirement, combined with the psychological and financial consequences of employment loss. Future research should examine whether the low QoL in this subgroup is primarily driven by disease severity, loss of income, or social isolation. Hawkes et al. noted younger age as a predictor of better QoL [23], while McBurney et al. found that being under 65 is associated with lower mental component summary (MCS) scores [24]. Similarly, both El-Baz et al. and Duenas et al. established that female gender strongly predicts lower mental health outcomes [25].

When comparing findings from the current study with other research, a study from Greece identified age and educational level as significant predictors of HRQoL [26]. Randomized trials involving patients with metabolic syndrome demonstrated that lifestyle improvements, such as a healthy diet and regular physical activity, positively influenced HRQoL [27]. Physical activity has multiple benefits, including stress reduction and enhanced life satisfaction, and has been shown to be a positive predictor of HRQoL for middle-aged and older adults in various studies [28].

C.R. McBurney et al. (USA) [29] investigated QoL indicators seven months post-myocardial infarction (MI) using the abbreviated SF-36, known as SF-12. Their study found that low QoL scores, in both physical and psychological aspects, were common among women and patients receiving inadequate treatment with angiotensin-converting enzyme inhibitors and hypolipidemic agents. These patients often suffered from transient cerebral circulatory disorders and kidney diseases. Notably, low QoL scores were also observed in individuals under 65 years, highlighting that younger patients often experience higher stress levels following an MI, leading to poorer psychological recovery as demonstrated in other studies.

Swedish researchers E. Brinck et al. [30] found that returning to work after an MI is heavily influenced by the patient's physical health. Their study on psychological and clinical prognostic factors indicated that 80% of patients who had been employed prior to hospitalization returned to work within 12-13 months. However, those who did not return often cited cardiological issues (such as congestive heart failure and arrhythmia), complications, and depression developed during their hospital stay as barriers.

This cross-sectional study has several limitations that should be considered when interpreting the results. First, the study population was heterogeneous in terms of cardiovascular disease severity, including patients with conditions ranging from arterial hypertension to acute heart failure. This variability may have introduced bias into the analysis of quality of life across different diagnostic groups. Second, the presence of comorbidities such as diabetes, obesity, or depression was not systematically recorded or controlled for, despite their known impact on health-related quality of life. Future studies should collect comorbidity data and apply multivariate regression analyses to isolate the independent effect of sociodemographic variables on QoL while adjusting for disease-related confounders. Third, the study sample was limited to a single city (Semey), which may affect the generalizability of the findings to other regions in Kazakhstan. Additionally, self-reported data are inherently subject to bias, including underreporting or misrepresentation. Fourth, although the SF-36 was administered in both Russian and Kazakh, potential differences in comprehension or cultural nuance between language versions may have introduced a degree of measurement bias. Future studies should formally validate the Kazakh version of the SF-36 in this population.

Despite these limitations, this study is the first to evaluate health-related quality of life in young adults with cardiovascular disease in the Republic of Kazakhstan. It provides important preliminary data that can inform future, more targeted research and healthcare interventions in this demographic.

Conclusion.

Given the high prevalence, associated disability, and mortality of CVD, evaluating quality of life among affected individuals remains critically important. This study revealed that male patients reported significantly higher QoL scores across all domains of the SF-36 compared to female patients. Additionally, employed individuals particularly workers and entrepreneurs demonstrated better QoL outcomes than retirees and the unemployed.

These findings underscore the significant association of gender and employment status with health-related quality of life in young adults with CVD. As this is a cross-sectional study, causal direction cannot be established; it is equally plausible that lower QoL results from disease severity leading to unemployment, rather than unemployment itself causing lower QoL. Future research should aim to develop targeted socio-economic and health education programs that enhance QoL, reduce risk factors, and support long-term well-being in this vulnerable population.

Conflicts of Interest.

The authors declare no conflicts of interest.

Author Contributions.

Conceptualization: G.M. and T.B.; Methodology: G.M. and T.B.; Data curation: G.M.; Supervision: T.B.; Writing – original draft: G.M. and T.B.; Writing – review & editing: I.S. and A.T.; M.M.

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Ethical Approval.

This study was approved by the Ethics Committee of Semey Medical University (Protocol 2 dated October 18, 2019).

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Data Availability.

The datasets generated and/or analyzed during the current study are not publicly available due to ethical restrictions but are available from the corresponding author upon reasonable request.

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Аннотация.

Введение: Сердечно-сосудистые заболевания (ССЗ) остаются ведущей причиной преждевременной смертности и инвалидности во всем мире, в том числе в Казахстане. В последнее время отмечается тенденция к омоложению пациентов с ССЗ. **Цель:** Оценить связанное со здоровьем качество жизни (КЖ) молодых взрослых пациентов (в возрасте 25–44 лет) с сердечно-сосудистыми заболеваниями. **Методы:** Проведено поперечное исследование с участием 294 пациентов с артериальной гипертензией (АГ) в качестве основного сердечно-сосудистого диагноза; у части пациентов имелись сопутствующие диагнозы (ИБС или ХСН). Данные собирались с помощью опросника SF-36 и анализировались в SPSS 25.0. Показатели КЖ сравнивались по полу, семейному положению, уровню образования и трудовому статусу с помощью соответствующих статистических методов (критерий Стьюдента, ANOVA, критерий Манна-Уитни и Краскела-Уоллиса). Уровень статистической значимости установлен на $p < 0,05$.

Результаты: Средний возраст участников составил 38,4±5,2 лет; 64,3% – женщины. Мужчины демонстрировали значительно более высокие показатели КЖ по большинству шкал опросника SF-36, особенно в отношении физического функционирования, болевых ощущений, жизненной активности и социального функционирования ($p < 0,05$). Трудовой статус был значимо связан с КЖ: работающие и предприниматели имели более высокие показатели КЖ, тогда как у пенсионеров по инвалидности и безработных они были наименьшими ($p < 0,05$). Поскольку данное исследование является поперечным, направление причинно-следственной связи не может быть подтверждено. Значимых различий по семейному положению и уровню образования выявлено не было. Показатели физического здоровья стабильно превышали показатели психического здоровья во всех группах. **Заключение:** Исследование выделяет пол и трудовой статус как значимые факторы, связанные с КЖ у молодых взрослых с ССЗ в Казахстане. Полученные данные подчёркивают необходимость целенаправленных медицинских и социальных вмешательств для повышения КЖ и снижения бремени ССЗ в трудоспособном населении.
Ключевые слова: сердечно-сосудистые заболевания, качество жизни, молодые взрослые, Казахстан.

ანოტაცია.

შესავალი: გულგან-სისხალურ დაავადებანი (სსდ) დღე რთავს დროის მ\u10e1ოფლიოში და ინვალიდობის წამყვანი მიზეზია, მატე ქართველშიაც ახალგაზრდელია. ბოლო დროს აგრეთდება მობილის პაციენტთა ასაკის გაიზრდასსდ-ისმიმართყარმახალგაზრებულთაობაზია. მიზანი: შევასვალოთ სიცოცხლებასთან დაკავშირებული სიცოცხლის ხარისხმევა (სხხ) 25–44 წლის ახალგაზრდა პაციენტებში გულგან-სისხალური დაავადებებით. მეთოდები: ჩატარდა კვეთგანაკვეთი კვლევა, რომელშიცაც მონაწილეობდა 294 პაციენტი არტერიული ჰიპერტენზიის (აჰ) დიაგნოზით, როგორც პირველადი გულ-სისხლძარღვთა დაავადებით; პაციენტთა ნაწილს ჰქონდა დამატებითი კომორბიდული დიაგნოზები (იბდ ან ქგუ). მონაცემები შეგროვდა SF-36 კითხვარის უანსადენოდ, განანალიზებული SPSS 25.0-ში. სხხ მაჩვენებლები შედარებდა სქესის, იოგიერური მდგომარეობის, განათლების დონის და დასაქმეთა სტატუსის მიხედვით ($p < 0,05$). შედეგები: მონაწილეების საშუალო ასაკი 38,4±5,2 წელი იყო; 64,3% ქალი იყო. მამაკაცების უმრავლესობაში მაღალი სხხ მაჩვენებლები SF-36-ის უმრავლესობი დომენის მიხედვით, განსაკუთრებით ფიზიკური ფუნქციონირების, ტკივის, სიცოცხლის აქტივობის და სოციალური ფუნქციონირების შკალებით ($p < 0,05$). დასაქმეთა სტატუსი მნიშვნელოვნად იყო დაკავშირებული სხხ-თან: მუშაკებსა და მეწარმეებს ჰქონდათ სხხ-ის უფრო მაღალი მაჩვენებლები, ხოლო ინვალიდობის პენსიონერებსა და უმუშავრებს — ყველაზე დაბალი ($p < 0,05$). ვინაიდან ეს კვეთგანაკვეთი კვლევაა, მიზეზ-შედეგობრივი კავშირის მიმართულება ვერ დასტურდება.

დასკვნა: კვლევა გამოყოფს სქესსა და დასაქმეთა სტატუსს, როგორც სხხ-თან მნიშვნელოვნად დაკავშირებულ ფაქტორებს სსდ-ის მქონე ახალგაზრდა პაციენტებში კაზახეთში. მიგებული მონაცემები ხაზღავს მიზნებაზე მიზნებული სამედიცინო და სოციალური ინტერვენციების აუცილებლობას.
საკვანძლო სიტყვები: გულგან-სისხალური დაავადებანი, სიცოცხლის ხარისხმევა, ახალგაზრდა მოზარდები, ქართველი.