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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 ВИНТИ 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 ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

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. Корректур авторам не высылаются, 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 computer-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 საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ 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 შედეგის 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 ფხიხლებში 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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COMPARATIVE EVALUATION OF THE EFFECTIVENESS OF INNOVATIVE HIGH-TECH CARDIAC SURGERY IN PATIENTS WHO HAVE SUFFERED AN ACUTE MYOCARDIAL INFARCTION

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Abstract.

Introduction: The proposed scientific article discusses the results of evaluating the medical and social effectiveness of innovative high-tech cardiac surgery for patients who have suffered an acute myocardial infarction. It was established that the inpatient mortality rate of patients who did not receive innovative high-tech cardiac surgery is significantly higher than in those patients who received it. These differences are particularly noticeable when comparing data among the elderly.

Material and Methods: A comprehensive assessment of the effectiveness of implementing high-tech medical services in the field of cardiovascular system includes an analysis of medical and statistical, sociological methods, financial and economic, organizational and managerial methods, as well as an assessment of the level of application of relevant regulations.

Results: The results of a study using a logarithmic test showed that stenting of coronary vessels and aorta-coronary bypass surgery significantly reduce hospital mortality in patients with myocardial infarction in all age groups. The hospital mortality rate among patients of the main (who have received HTMC) age group was 0.96%, and among patients of the control (who haven't received HTMC) group - 11.84% ($p = 0.002$). There was no significant reduction in mortality among the group of old patients ($p = 0.779$). Thus, the largest difference in hospital mortality between the main and control groups was found only in elderly patients, $p = 0.002$.

Conclusion: the effectiveness of the achieved success depends not only on the introduction of innovative technology, but also on the availability of highly qualified cardiac surgeons and basic medical material and technical resources.

Key words. Myocardial infarction, innovative high-tech cardiac surgery, hospital mortality, reliability of effectiveness.

Introduction.

According to official medical statistics from the Regional Health Department, over the past 25 years, up to 57% of the population's deaths were caused by diseases of the cardiovascular system, including coronary heart disease, which is known to be the cause of death in 49% of the population [1,2]. This medical aid not only reduces the number of deaths from myocardial infarction, but also increases the average life expectancy of the population [3-5]. According to international medical practice, more than 8,000 high-tech operations are required for 1 million people suffering from chronic non-epidemic diseases. 6,000 of them are associated with complications of myocardial infarction [6]. In this regard, it is required to perform 24 thousand surgeries a year

only for the residents of Turkestan region and Shymkent city. In accordance with the National program for the development of the healthcare system for 2010-2019, innovative medical care has been introduced into practical healthcare [1,2,7].

Due to the need to organize highly specialized medical services, the Ministry of Healthcare of the Republic of Kazakhstan adopted the Resolution 1112 "On approval of types of high-tech medical services (HTMC)" on December 28, 2016.

Analysis of patient treatment results and assessment of the effectiveness of innovative high-tech medical aid is one of the most important scientific, practical and socio-medical problems of our time.

Currently, there are very few scientific papers published in the country on the provision of such medical care. Therefore, the relevance of this scientific work is very high.

Goal of research. Assessment of the effectiveness of high-tech medical services for the population with cardiovascular diseases in South Kazakhstan region (since 2020 Turkestan region) and in Shymkent city.

Materials and Methods.

To ensure the reliability of the research results, we used socio-hygienic, clinical and statistical, variant, correlation and multivariate analysis of variance, correlation indices and methods for determining the degree of relative risk. To ensure the reliability of the obtained research results, we used a general or sample statistical set to ensure its representativeness. We used the Student's test to clearly show the deviation of indicators from the average and relative values, as well as to establish differences between the compared indicators. Each nosology identified in the study of diseases of the circulatory system was designated as a unit of statistical observation. A system of extensive and intensive indicators was used to analyze the morbidity and disability of the population.

To compare health indicators in each administrative territory, we used empirical data on the level of morbidity and disability indicators, which were calculated for 10,000 and 100,000 people. To determine the main risk factors for the increase in inpatient mortality, a multiple analysis was performed using the method of logistic regression. The quality of the model was determined using ROC analysis. To compare the mortality rate of the two groups compared, the ratio indicator and its confidence interval were used. Qualitative assessment of long-term viability curves was performed using the Cox regression model and the Kaplan-Meier method. The Log-rank test was used to evaluate the accuracy of the difference between survival curves. For all

analyses, it was considered correct when the difference between the two levels was $p < 0.05$. Relative risk indicators (OR) were used to determine differences in the levels of indicators formed in different social groups of patients.

Results.

The results of many studies have shown that almost all cases of myocardial infarction occur among middle-aged and older people of working age, as well as among elderly and old people.

Analysis of changes in demographic indicators of the population of South Kazakhstan region over the past 10 years (1999-2019) shows that the number of middle-aged and older people of working age decreased from 58.42% to 57.20%, while the share of elderly and old people increased from 9.72% to 12.94%. The percentage of children aged 0-14 years in the demographic indicators of the population taken into account by the birth rate decreased by 2.0% (Figure 1).

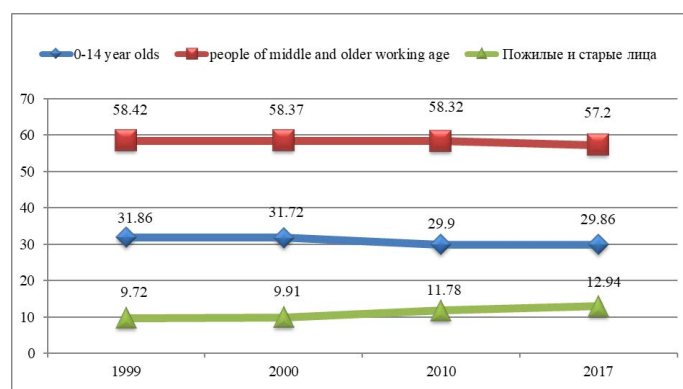


Figure 1. Dynamics of changes in the share of people belonging to various social groups in South Kazakhstan region (in %).

During the study of the obtained results an increase in the dynamics of primary and general morbidity in the population was revealed due to an increase in the incidence of diseases of the cardiovascular system. If in 2013-2014 the level of primary morbidity of the population with diseases of the circulatory system was 26268.9–26269.6 $\%_{0000}$, in 2015-2017 it increased to 27782.3–2849.9 $\%_{0000}$. Thus, economic and social stagnation led to a sharp increase in the incidence of diseases of the circulatory system in 2015-2017. The same situation is observed with the levels of other nosological diseases. The average incidence of hypertension in 2013-2014 increased from 8611.8 $\%_{0000}$ to 8748.4 $\%_{0000}$. The greatest concern is caused by the incidence of coronary heart disease, the level of which in the studied years increased from 3127.4 $\%_{0000}$ to 3372.8 $\%_{0000}$.

As a result, the incidence of acute myocardial infarction (3.4%) and stroke (15.9%) has significantly increased, which leads to disability or causes premature death in the population.

The increase in the level of primary morbidity affected the level of general morbidity of the population (Table 1).

If in 2013 the total incidence of diseases of the circulatory system was 43349.3 $\%_{0000}$, in 2017 its level increased to 44987.1 $\%_{0000}$. In 2016, the level of development of these pathologies becomes even higher (45,379.7 $\%_{0000}$). Hypertension has a significant impact on the development of myocardial

infarction and stroke. During the years of study, the level of this pathology also increased from 14358.8 $\%_{0000}$ to 14892.7 $\%_{0000}$. Coronary heart disease among the population of Turkestan region has increased from 5323.5 $\%_{0000}$ to 5849.4 $\%_{0000}$ over these years. This circumstance is reflected in the formation of acute myocardial infarction among the population (from 298.4 $\%_{0000}$ to 311.9 $\%_{0000}$) and stroke (from 379.7 $\%_{0000}$ to 452.8 $\%_{0000}$). The obtained statistics show that the prevalence of diseases of the cardiovascular system and coronary heart disease among the population of Shymkent and South Kazakhstan region is constantly increasing.

The reliability of the decrease in the inpatient mortality rate among the groups of middle-aged and older people of working age who have undergone high-tech cardiac surgery has not been established, compared to the mortality rate reduction among patients in the control group who haven't undergone high-tech medical care. There was no statistically significant link between coronary artery stenting in myocardial infarction and hospital mortality among patients of working age. Also, the association of high-tech medical care with hospital mortality caused by myocardial infarction among older people is not statistically significant if patients had chronic kidney disease and blood fraction levels $< 40\%$ in the development of acute myocardial infarction (Table 2).

The hospital mortality rate among patients of the main (who have received HTMC) age group was 0.96%, and among patients of the control (who haven't received HTMC) group - 11.84% ($p = 0.002$). There was no significant reduction in mortality among the group of old patients ($p = 0.779$). Thus, the largest difference in hospital mortality between the main and control groups was found only in elderly patients, $p = 0.002$ (Chi-square).

Also, the level of mortality in hospital from myocardial infarction in the main group increases with the age of patients.

The rate of inpatient mortality in elderly patients was 11.92% ($p = 0.000$), which is four times higher than in patients of average working age. In contrast, hospital mortality in older patients was twice as high as among older patients ($p = 0.026$). We found that the degree of correlation between the age of patients in the control group and the level of hospital mortality ($r = 0.997$, $p = 0.045$) was very high.

There was no significant correlation between the mortality rate among patients in the control group with the increase of age and HTMC. Thus, the level of hospital mortality among middle-aged and older people of working age is 0.74%, among the elderly-0.96%, and among senile patients-11.1%, $p = 0.717$ and 0.424. The difference in the death rate of middle-aged and elderly patients was $p = 0.205$, and the correlation coefficient - $g = 0.866$, $p = 0.333$. The results can be explained by the relatively low mortality rate among elderly patients and senile patients who have received HTMC. To reduce mortality from these diseases, the Republic of Kazakhstan has implemented the state program "Densaulyk" for 2016-2019. This program defines a model for improving medical care aimed at preventing 5 socially significant diseases that have a particularly strong impact on the demographic situation in the country. Since 2010, a high-tech cardiac surgery service has been launched to prevent deaths from coronary heart disease. These patients have undergone

Table 1. The increase in the level of primary morbidity affected the level of general morbidity of the population.

q/r	The name of nosology	Primary morbidity					General morbidity				
		2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
1	Diseases of the circulatory system	26268,92	26269,64	27782,36	28432,97	27736,64	43349,31	42908,34	43621,46	45379,72	44987,16
2	Hypertension (all types)	8611,84	8592,05	8738,62	8749,34	8748,48	14358,82	13951,87	14799,83	15326,55	14892,74
3	Coronary heart disease	3127,41	3149,28	3312,53	3438,32	3372,87	5323,59	5082,57	5647,92	5973,84	5849,46
4	Acute myocardial infarction	248,72	252,93	260,35	257,42	258,37	298,44	301,76	312,38	309,71	311,94
5	Cerebrovascular diseases	2671,35	2649,93	2718,54	2685,38	2692,15	4901,38	4835,36	4912,64	4894,82	4874,39
6	Strokes (all types)	350,19	348,78	452,24	459,71	457,43	379,74	365,39	499,79	443,75	452,83
7	Rheumatism	310,62	315,27	325,41	348,36	336,27	529,91	528,98	579,16	629,36	598,72
8	Other diseases of the circulatory system	10969,08	10967,74	11968,34	12490,51	11984,37	17567,06	17843,62	16870,09	17704,52	17582,53

Table 2. Comparative assessment of the level of hospital mortality among patients with myocardial infarction who have received high-tech medical care (HTMC) and those who haven't.

Experimental group	workingage, n=556			P	Elderly people n=467			P	Old people, n=244		
	Absolutenumber	Number of deaths	Inpatient mortality, %		Absolutenumber	Number of deaths	Inpatient mortality, %		Absolutenumber	Number of deaths	Inpatient mortality, %
Experimentalgroup	284	8	2,82	0,000	363	43	11,84	0,026	235	44	18,72
Maingroup	272	2	0,74	0,717	104	1	0,96	0,424	9	1	11,1
r,Chi -square	0,127				0,002				0,779		

vascular stenting and coronary artery bypass grafting to restore patency of thrombosed coronary vessels. Consequently, the risk of hospital mortality (-QR-) has started to decrease. As a result, the overall risk of mortality also decreased (the lower limit of the confidence interval decreased from 0.63 to 0.48 points, and the upper limit-from 0.78 to 0.61 points). And the relative risk (-QR -) reduced from 0.92 to 0.63 points. As can be seen from the table, the provision of high-tech medical care is very effective from the medical, demographic and social points of view.

Reconstructive operations on heart valves were also performed in the Cardiac Surgery Department of Shymkent city. However, its volume is significantly smaller than stenting and coronary artery bypass grafting, and they are performed regularly. The effectiveness of measures taken to prevent death from myocardial infarction shows that these innovative operations should be widely performed in district hospitals. Currently, cardiovascular centers are being opened in all districts of the region, and cardiac surgeons are being trained in cardiac research centers of the Russian Federation, Germany and Israel.

Discussion.

It is well known that diseases of the cardiovascular system, including coronary heart disease, are more common among

middle-aged and older people of working age, as well as among the elderly and old people. In the last decade, the share of elderly and senile people in the total population of southern Kazakhstan has increased from 9.72% to 12.94% [1,]. It goes without saying that in these social groups, myocardial infarction is the main cause of death and a threat that significantly reduces their life expectancy [1,8,9-14].

It is known that the average life expectancy of the population is taken into account by experts of the World Health Organization when compiling the development index of each country. Therefore, in order to reduce mortality in our country, the National Program "Densaulyk" for 2016-2019 was developed. In this program, the most important direction is the development of high-tech cardiac surgery[15-19].

The level of primary morbidity in cardiovascular diseases in 2013-2017 ranged from 26268.92 $\frac{\%}{0000}$ to 28432.97 $\frac{\%}{0000}$, and coronary heart disease - from 3127.41 $\frac{\%}{0000}$ increased by 3372.87 $\frac{\%}{0000}$. During this period, the total incidence of coronary heart disease increased from 43349.31 $\frac{\%}{0000}$ to 44987.16 $\frac{\%}{0000}$, and for coronary heart disease increased from 5323.59 $\frac{\%}{0000}$ to 5849.46 $\frac{\%}{0000}$. This was reflected in the formation of the incidence rate of acute myocardial infarction, which increased from 298.4 $\frac{\%}{0000}$ to 311.9 $\frac{\%}{0000}$ over the years studied [20-25].

In accordance with the National Program for reducing

mortality, we monitored the effectiveness of innovative high-tech heart surgeries introduced in Shymkent and southern Kazakhstan in 2010-2019, and assessed their impact on the death rate in each age and social group [26-30]. The results of the study showed that HTMC significantly reduces hospital mortality among patients with myocardial infarction in all age groups [30-36]. The rate of hospital mortality among the elderly (patients who have received HTM it was 0.96%, and among patients of the control group (who have not received innovative cardiac surgery) - 11.84% ($p = 0.002$). There was no significant reduction in mortality in the group of old patients ($p = 0.779$) [37].

Thus, a significant difference in hospital mortality between patients who received HTMC and a group of patients who have not undergone such high-tech heart surgery was found only in elderly patients (65-74 years), $p = 0.002$ (Chi-square). The number of hospital deaths from myocardial infarction in the main group increases with age [38].

Hospital mortality among people of working age was 0.74%, among the elderly-0.96%, and among senile people -11.1%, $p = 0.717$ and 0.424. The difference in the death rate of middle-aged and elderly patients was $p = 0.205$, the correlation coefficient- $g = 0.866$, $p = 0.333$. The results obtained can be explained by a clear decrease in the mortality rate among elderly patients and senile patients who have received HTMC. In connection with the development and implementation of the National Program to reduce mortality from myocardial infarction, the risk of death (-QR-) among the population due to cardiovascular and ischemic heart diseases began to decrease in South Kazakhstan region from 2010 to 2019. In particular, there is a strong belief that the number of deaths from coronary heart disease has decreased significantly (the lower limit of the confidence interval has decreased from 0.63 to 0.48 points, and the upper limit - from 0.78 to 0.61 points). And the relative risk point(-QR-) dropped from 0.92 to 0.63 [40].

It turned out that the most useful medical and rehabilitation results can be achieved only as a result of general strengthening of the personnel reserves of specialists and material and technical bases of the cardiology service. Mathematical modeling of the results of the implementation of the national prevention program showed that if the number of cardiologists increases by $0.2\%_{0000}$ the number of beds, equipped with special medical equipment, will increase by $2.0\%_{0000}$ as well, the share of cardiologists in the highest category will reach up to 50% of the total number of cardiologists, the risk of deaths from myocardial infarction will be reduced by 31% and the number of deaths from diseases of the circulatory system will decrease by 22%. If the availability of cardiologists increases by $0.3\%_{0000}$, the number of special beds will increase by $5.0\%_{0000}$, and the proportion of doctors with the highest category in the total number of cardiologists will increase by 70%, then the reduction of the risk of death from myocardial infarction will be 43% [41].

Conclusion.

Thus, the obtained scientific results show the effectiveness of the introduction of high-tech cardiac surgery, which significantly reduces the death rate of the population from myocardial infarction. At the same time, the effectiveness of the achieved success depends not only on the introduction of

innovative technology, but also on the availability of highly qualified cardiac surgeons and basic medical material and technical resources.

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РЕЗЮМЕ

СРАВНИТЕЛЬНАЯ ОЦЕНКА ЭФФЕКТИВНОСТИ ИННОВАЦИОННЫХ ВЫСОКОТЕХНОЛОГИЧНЫХ КАРДИОХИРУРГИЧЕСКИХ ВМЕШАТЕЛЬСТВ У ПАЦИЕНТОВ, ПЕРЕНЕСШИХ ОСТРЫЙ ИНФАРКТ МИОКАРДА

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В предлагаемой научной статье рассматриваются результаты оценки медицинской и социальной

ეფექტურობის ინოვაციური მაღალტექნოლოგიური კარდიოქირურგიული მداخلეობის შედეგები იმპაციენტებისთვის, რომლებმაც მიოკარდიუმის მწვავე ინფარქტი განიცადეს. დადგინდა, რომ პაციენტების სტაციონარული სიკვდილიანობის მაჩვენებელი, რომლებმაც არ მიიღეს ინოვაციური მაღალტექნოლოგიური კარდიოქირურგია, მნიშვნელოვნად მაღალია, ვიდრე იმ პაციენტებში, რომლებმაც მიიღეს იგი. ეს განსხვავებები განსაკუთრებით შესამჩნევია ხანდაზმულთა შორის მონაცემების შედარებისას.

Материалы и методы: Комплексная оценка эффективности внедрения высокотехнологичных медицинских услуг в области сердечно-сосудистой системы включает анализ медико-статистических, социологических методов, финансово-экономических, организационных и управленческих методов, а также оценку уровня применения соответствующих нормативных актов.

Результаты: Результаты исследования с использованием логарифмического теста показали, что стентирование коронарных сосудов и аорто-коронарное шунтирование значительно снижают госпитальную смертность у пациентов с инфарктом миокарда во всех возрастных группах. Госпитальная летальность среди пациентов основной (получавших НТМС) возрастной группы составила 0,96%, а среди пациентов контрольной (не получавших НТМС) группы - 11,84% ($p = 0,002$). В группе пожилых пациентов не наблюдалось существенного снижения смертности ($p = 0,779$). Таким образом, наибольшая разница в госпитальной смертности между основной и контрольной группами была выявлена только у пожилых пациентов, $p = 0,002$.

Вывод: эффективность достигнутого успеха зависит не только от внедрения инновационных технологий, но и от наличия высококвалифицированных кардиохирургов и базовых медицинских материально-технических ресурсов.

Ключевые слова: инфаркт миокарда, инновационная высокотехнологичная кардиохирургия, госпитальная смертность, надежность эффективности

რეზიუმე
ინოვაციური მაღალტექნოლოგიური კარდიოქირურგიის ეფექტურობის შედარებითი შეფასება პაციენტებში, რომლებმაც მიოკარდიუმის მწვავე ინფარქტი განიცადეს

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შემოთავაზებულ სამეცნიერო სტატიაში განხილულია ინოვაციური მაღალტექნოლოგიური კარდიოქირურგიის სამედიცინო და სოციალური ეფექტურობის შეფასების შედეგები იმ პაციენტებისთვის, რომლებმაც მიოკარდიუმის მწვავე ინფარქტი განიცადეს. დადგინდა, რომ პაციენტების სტაციონარული სიკვდილიანობის მაჩვენებელი, რომლებმაც არ მიიღეს ინოვაციური მაღალტექნოლოგიური კარდიოქირურგია, მნიშვნელოვნად მაღალია, ვიდრე იმ პაციენტებში, რომლებმაც მიიღეს იგი. ეს განსხვავებები განსაკუთრებით შესამჩნევია ხანდაზმულთა შორის მონაცემების შედარებისას.

მასალა და მეთოდები: გულ-სისხლძარღვთა სისტემის სფეროში მაღალტექნოლოგიური სამედიცინო მომსახურების განხორციელების ეფექტურობის ყოვლისმომცველი შეფასება მოიცავს სამედიცინო და სტატისტიკური, სოციოლოგიური მეთოდების, ფინანსური და ეკონომიკური, ორგანიზაციული და მენეჯერული მეთოდების ანალიზს, ასევე შესაბამისი რეგულაციების გამოყენების დონის შეფასებას.

შედეგები: ლოგარითმული ტესტის გამოყენებით ჩატარებული კვლევის შედეგებმა აჩვენა, რომ კორონარული გემების სტენტირება და აორტა-კორონარული შემოვლითი ოპერაცია მნიშვნელოვნად ამცირებს საავადმყოფოს სიკვდილიანობას მიოკარდიუმის ინფარქტის მქონე პაციენტებში ყველა ასაკობრივ ჯგუფში. საავადმყოფოს მორტალიტირაცი ძირითადი (რომლებმაც მიიღეს НТМС) ასაკობრივი ჯგუფის პაციენტებს შორის იყო 0,96%, ხოლო საკონტროლო (რომლებმაც არ მიიღეს НТМС) ჯგუფის პაციენტებს შორის - 11,84% ($p = 0,002$). სიკვდილიანობის მნიშვნელოვანი შემცირება არ მომხდარა ძველი პაციენტების ჯგუფში ($p = 0,779$). ამრიგად, საავადმყოფოების სიკვდილიანობის ყველაზე დიდი განსხვავება ძირითად და საკონტროლო ჯგუფებს შორის მხოლოდ ხანდაზმულ პაციენტებში აღმოჩნდა, $p = 0.002$.

დასკვნა: მიღწეული წარმატების ეფექტურობა დამოკიდებულია არა მხოლოდ ინოვაციური ტექნოლოგიის დანერგვაზე, არამედ მაღალკვალიფიციური კარდიოქირურგების და ძირითადი სამედიცინო მატერიალურ-ტექნიკური რესურსების ხელმისაწვდომობაზე.

საკვანძო სიტყვები: მიოკარდიუმის ინფარქტი, ინოვაციური მაღალტექნოლოგიური კარდიოქირურგია, საავადმყოფოს სიკვდილიანობა, ეფექტურობის საიმედოობა