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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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CLINICAL AND GENETIC FEATURES OF PERSONALIZED ANTIPSYCHOTIC THERAPY OF PATIENTS WITH PARANOID SCHIZOPHRENIA OF THE KAZAKH ETHNIC GROUP IN THE REPUBLIC OF KAZAKHSTAN

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Abstract.

The problems of schizophrenia therapy occupy a leading place in both foreign and domestic clinical psychiatry. The paper presents the results of a study to identify reliable biomarkers for predicting antipsychotic therapy of patients with paranoid schizophrenia of the Kazakh ethnic group in the Republic of Kazakhstan, conducted within the framework of the project: "National program for the introduction of personalized and preventive medicine in the Republic of Kazakhstan" IRN OP12165486.

The effectiveness and tolerability of antipsychotic drugs used in the treatment of paranoid schizophrenia in the Republic of Kazakhstan according to clinical treatment protocols are analyzed. Gender and age-specific dynamics in the clinic of paranoid schizophrenia in antipsychotic therapy in persons of Kazakh ethnicity are described. Certain genetic features of representatives of the Kazakh ethnic group have been identified, which can influence the effectiveness and tolerability of antipsychotic drugs, which determines the basis of an innovative approach to personalized therapy of paranoid schizophrenia in patients of the Kazakh ethnic group in the Republic of Kazakhstan.

Key words. Paranoid schizophrenia, Kazakh ethnic, antipsychotic therapy, biomarkers, genetics, Kazakhstan.

Introduction.

The state of mental health is one of the basic values of both an individual and society as a whole, since, on the one hand, it determines the physical and social wellbeing of a person, and on the other hand, it affects the intellectual potential of the nation, the development of production forces and labor resources, the moral atmosphere in society as a whole. According to WHO forecasts, taking into account the aggravation of social and economic problems, the number of people suffering from mental and behavioral disorders will increase in the future. An unfavorable trend towards an increase in the number of people with mental and behavioral disorders is also observed in the Republic of Kazakhstan (RK). If the most vigorous and effective measures are not taken to stop the trends towards a decrease in the level of mental health in the world, then economic, social, and medical problems are likely to increase with a high degree of probability. Their ever-increasing burden will be incredibly costly, in terms of human suffering, disability, crime and economic losses.

Schizophrenia is a severe mental illness associated with significant social and economic losses [1]. Schizophrenia affects about 1% of the world's population [2,3]. The initial manifestations of the disease often occur in childhood, adolescence or adolescence and can lead to early disability, causing significant family and social problems, as well as increasing health care costs [4,5].

Modern international epidemiological studies indicate that 40-46% of patients with schizophrenia have an unfavorable course and outcome of the disease with disability [6,7]. According to a study by the World Health Organization, which was aimed at assessing the global burden of disease in the world, schizophrenia is among the 10 most common causes of persistent disability in the population of young people (15 years - 44 years) [8].

One of the important aspects of the mental health problem is the study of the quality of life in people with mental and behavioral disorders, since it is in this area that the main threatening signs of destructiveness and scarcity are concentrated [9,10]. In modern psychiatry, the concept of quality of life is perceived as a humanistic addition to medical practice [11-14]. Indicators of quality of life and social functioning, along with clinical data, are increasingly being considered as diagnostic criteria, are included in official classifications of mental illnesses, which is evidence of the importance of their assessment throughout the mental illness and the degree of recovery as a result of treatment [15-18].

Thus, the overall goal of therapeutic and rehabilitative effects is not just to eliminate the symptoms of the disease and functional deficiency, but to achieve the highest possible level of quality of life for the patient. But, despite the successes of modern psychopharmacotherapy, to date, the "recovery coefficients in schizophrenia" according to the results of epidemiological studies range from 53 to 68%, which determines the need to develop and introduce into clinical practice new, pathogenetically sound and personalized methods of therapy for patients with schizophrenia [19-20].

The study was carried out within the framework of the project: "National program for the introduction of personalized and preventive medicine in the Republic of Kazakhstan" IRN OR12165486.

The purpose of this project was to study and comparative analysis of individual methods of biological therapy used in the Republic of Kazakhstan for the treatment of patients with paranoid schizophrenia of the Kazakh ethnic group to identify the dependencies of the influence of genetic factors on their effectiveness and safety (tolerability) in this ethnic group.

Materials and Methods.

The study included 1200 patients of the Kazakh population with a clinically verified diagnosis: "Paranoid schizophrenia", corresponding to the criteria of the category ICD-10 F20.0 at the age of 18 to 65 years. When collecting data on the objects

of the study, clinical research methods were used: clinical-psychopathological and psychometric using the PANSS scale and a variant of the UKU international scale for assessing the severity of side effects adapted for the purposes of this study to objectify the dynamics of the severity of mental disorders and undesirable side effects against the background of antipsychotic therapy using certain types of psychotropic drugs, followed by a comparative analysis of their efficiency and safety. The DNA source for genotyping was the blood samples of the examined patients, which were obtained during the collection of research materials in full compliance with the bioethical norms of clinical trials (signing of the patient's informed consent to participate in this study).

The statistical method was applied at all stages of the study and included the use of descriptive and comparative statistics operations. To describe qualitative data, the calculation of fractions (%) was used, for quantitative data, the calculation of averages and their standard deviation or standard error was used. Nonparametric statistical criteria were used to compare quantitative data: the Mann-Whitney criterion when comparing two independent samples, the Kruskal-Wallace criterion when comparing three or more groups. To assess the statistical significance of the criteria and refute the null hypothesis, a threshold of $p<0.05$ was used. Statistical data processing was performed using the IBM SPSS Statistics program (version 22.0).

Results.

The frequency of the use of certain types of antipsychotics in Kazakhstan in the treatment of paranoid schizophrenia in people of the Kazakh ethnic group is shown in Table 1.

The data presented in Figure 1 show that the most commonly used antipsychotics in the treatment of paranoid schizophrenia in people of the Kazakh ethnic group are: haloperidol (31.8%), paliperidone (18.4%), risperidone (18.3%) and clozapine (12.5%). This allows us to conclude that of the classical antipsychotics, Haloperidol is used more often than all other antipsychotics with a confidence of $P< 0.05$. Of the modern antipsychotic drugs (atypical antipsychotics) in the Republic of Kazakhstan, Paliperidone and risperidone are most often used in the treatment of paranoid schizophrenia, which are statistically significantly more often used than Trifluoperazine, Amisulpird, Olanzapine, Aripiprazole and Cariprazine ($P = 0.01$).

The frequency of the use of certain types of antipsychotics in the Republic of Kazakhstan in the gender aspect in the treatment of paranoid schizophrenia in people of the Kazakh ethnic group, as well as their effectiveness are presented in Table 2, 3, 4.

Tables 3-4 and Figures 1-2 present a comparative analysis of the effectiveness of antipsychotic drugs (neuroleptics) included in the clinical protocol for the diagnosis and treatment of schizophrenia approved in the Republic of Kazakhstan based on the materials of this study.

The analysis of the data presented in Table 3 and in Figure 1 showed:

1. Priority effectiveness of individual antipsychotics in the appropriate age groups in men of the Kazakh ethnic group suffering from schizophrenia:

- Paliperidone – priority effectiveness for the age over 30 years.
- Risperidone – sufficiently effective without significant differences in all age groups, with some predominance in the age group of 31-50 years.
- Olanzapine – priority efficacy in age groups over 50 years.
- Clozapine – priority efficacy in age groups over 50 years.
- Trifluoperazine – priority efficacy in age groups up to 50 years.
- Haloperidol – priority effectiveness in age groups over 50 years.

2. Priority effectiveness of individual antipsychotics for the appropriate age groups in men of the Kazakh ethnic group suffering from schizophrenia:

- 18-30 years – trifluoperazine.
- 31-50 years – clozapine and trifluoperazine.
- 51 and older – clozapine and haloperidol.

In general, according to the results of this study, clozapine (by 40.55 points) and trifluoperazine (by 37.49 points) demonstrated the greatest effectiveness in the treatment of paranoid schizophrenia in men of the Kazakh ethnic group in reducing PANSS scores over 6 months.

The analysis of the data presented in Table 4 and Figure 2 showed:

1. Priority effectiveness of individual antipsychotics in the appropriate age groups in women of the Kazakh ethnic group suffering from schizophrenia:

- Paliperidone – sufficient effectiveness without significant differences in all age groups.
- Risperidone – priority efficacy in age groups over 50 years.
- Olanzapine – priority efficacy in age groups over 50 years.
- Clozapine – high efficacy in all age groups.
- Trifluoprazine - priority effectiveness in age groups up to 50 years.
- Haloperidol – a priority efficacy in the age group of 18-30 years.

2. Priority effectiveness of individual antipsychotics for the appropriate age groups in women of the Kazakh ethnic group suffering from schizophrenia:

- 18-30 years – clozapine and haloperidol.
- 31-50 years – clozapine and haloperidol.
- 51 years and older – clozapine and risperidone.

In general, according to the results of this study, clozapine (by 45.14 points) and haloperidol (by 37.56 points) demonstrated the greatest effectiveness in the treatment of paranoid schizophrenia in women of the Kazakh ethnic group in reducing PANSS scores over 6 months.

Summarizing the data obtained in this study on the analysis of the effectiveness of certain antipsychotic drugs in the treatment of paranoid schizophrenia in patients of the Kazakh ethnic group, it was possible to clarify their priority effectiveness in the corresponding sex and age groups, which can be used in methodological recommendations:

- Paliperidone – a priority efficacy for men over the age of 30, and for women it can be recommended for all age groups of the adult population.
- Risperidone – quite effective for men in all age groups, and

Table 1. *Frequency of use of certain types of antibiotics used in the treatment of paranoid schizophrenia in Kazakh ethnic groups in the Republic of Kazakhstan.*

Антипсихотический препарат		**Age - three groups**			**Total**
		up to 30 years	**from 31 to 50 years**	**51+ years old**	
Paliperidone (Invega, Xeplion, Trevikta)	Count	50	124	47	221
	% within	24,6%	18,6%	14,2%	18,4%
Kariprazine (Reagil)	Count	3	4	3	10
	% within	1,5%	0,6%	0,9%	0,8%
Risperidone (Rispolept, Rispolept Consta)	Count	36	126	58	220
	% within	17,7%	18,9%	17,6%	18,3%
Aripiprazole (Aripegis)	Count	1	3	1	5
	% within	0,5%	0,4%	0,3%	0,4%
Olanzapine (Ziprexa, Ferzapine, Olfrex)	Count	21	41	24	86
	% within	10,3%	6,1%	7,3%	7,2%
Amisulpride (Solian, Soleron)	Count	8	24	15	47
	% within	3,9%	3,6%	4,5%	3,9%
Clozapine (Azaleptin)	Count	22	70	58	150
	% within	10,8%	10,5%	17,6%	12,5%
Trifluoperazine (Triftazine)	Count	8	42	30	80
	% within	3,9%	6,3%	9,1%	6,7%
Haloperidol (Galopril)	Count	54	233	94	381
	% within	26,6%	34,9%	28,5%	31,8%
Total	Count	203	667	330	1200
	% within	100,0%	100,0%	100,0%	100,0%

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33,240[a]	16	,007
Likelihood Ratio	32,195	16	,009
Linear-by-Linear Association	7,505	1	,006
N of Valid Cases	1200		

a. 5 cells (18,5%) have expected count less than 5. The minimum expected count is ,85.

Table 2. *Frequency of use of certain types of antipsychotics in the Republic of Kazakhstan in the gender aspect in the treatment of paranoid schizophrenia in people of the Kazakh ethnic group.*

Crosstab				
Antipsychotic drug		gender		Total
		male	female	
Paliperidone (Invega, Xeplion, Trevikta)	Count	115	106	221
	% within	18,3%	18,5%	18,4%
Kariprazine (Reagil)	Count	5	5	10
	% within	0,8%	0,9%	0,8%
Risperidone (Rispolept, Rispolept Consta)	Count	126	94	220
	% within	20,1%	16,4%	18,3%
Aripiprazole (Aripegis)	Count	3	2	5
	% within	0,5%	0,3%	0,4%
Olanzapine (Ziprexa, Ferzapine, Olfrex)	Count	43	43	86
	% within	6,8%	7,5%	7,2%
Amisulpride (Solian, Soleron)	Count	18	29	47
	% within	2,9%	5,1%	3,9%
Clozapine (Azaleptin)	Count	82	68	150
	% within	13,1%	11,9%	12,5%
Trifluoperazine (Triftazine)	Count	37	43	80
	% within	5,9%	7,5%	6,7%
Haloperidol (Galopril)	Count	199	182	381
	% within	31,7%	31,8%	31,8%
Total	Count	628	572	1200
	% within	100,0%	100,0%	100,0%

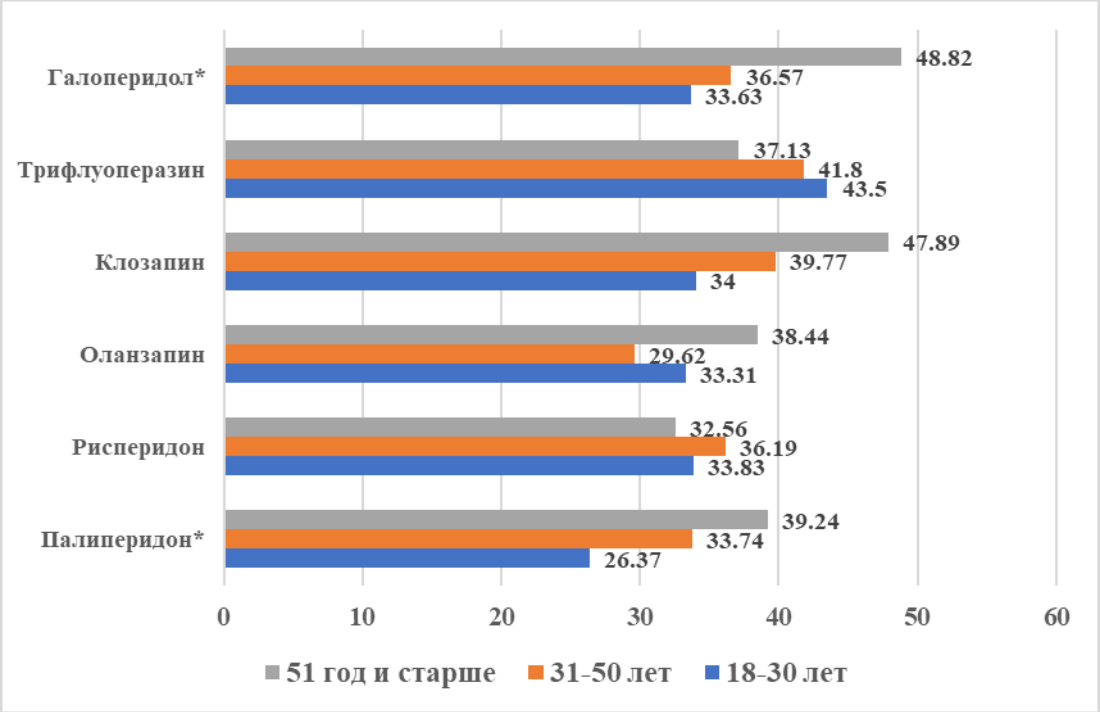

Figure 1. *Comparative data on the decrease in PANSS scores over 6 months of observation when using various antipsychotic drugs in the treatment of paranoid schizophrenia in Kazakh ethnic men.*

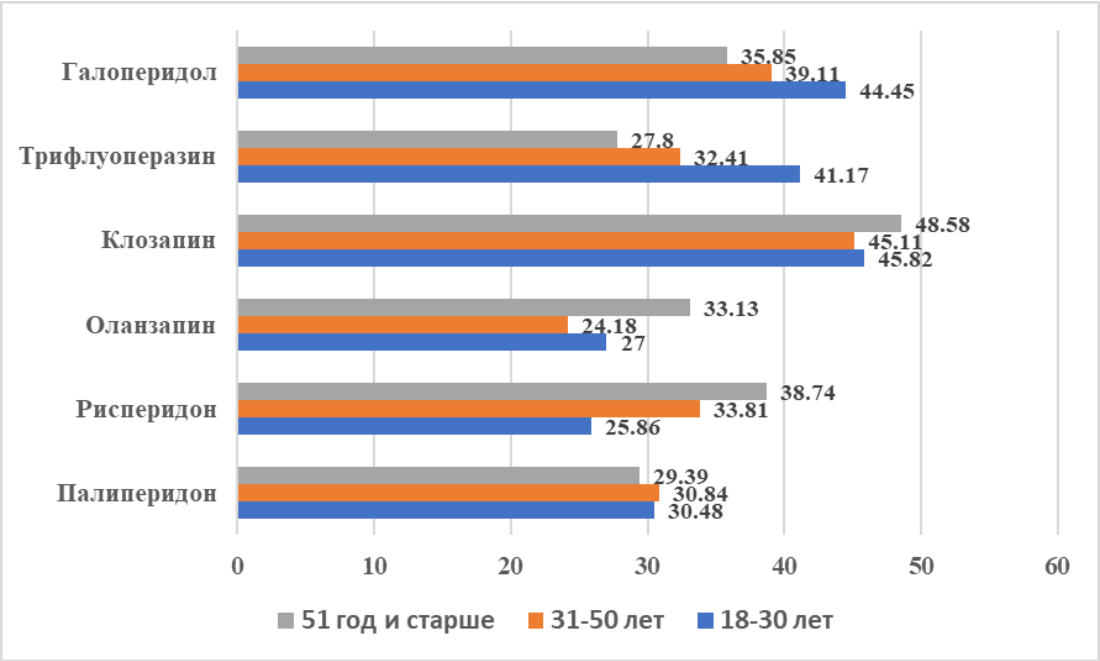

Figure 2. *Comparative data on the decrease in PANSS scores over 6 months of observation when using various antipsychotic drugs in the treatment of paranoid schizophrenia in Kazakh ethnic women.*

for women, priority effectiveness in age groups older than 50 years.

- Olanzapine – a priority efficacy for men and women in the age groups over 50 years.
- Clozapine – priority effectiveness for men in age groups over 50 years, and for women - high efficiency in all age groups.
- Trifluoprazine – a priority efficacy for men and women in the age groups up to 50 years.
- Haloperidol – a priority for men in the age groups over 50 years, and for women - in the age group of 18-30 years.

An analysis of the safety of the use of certain types of antipsychotic drugs included in the current clinical protocol for the diagnosis and treatment of schizophrenia in the Republic of Kazakhstan is presented in Table 3 and Figure 4.

The analysis of the data presented in Table 5 and Figure 3 allowed:

Table 3. *Comparative data on the effectiveness of antipsychotics in the treatment of paranoid schizophrenia in certain age groups in Kazakh ethnic men during 6 months of follow-up.*

Age	**The average number of points reduction on the PANSS scale for 6 months. Observations, mean±standard deviation**					
	Paliperidone	Risperidone	Olanzapine	Clozapine	Trifluoperazine	Haloperidol
18-30 years old	26,37±12,22	33,83±19,21	33,31±14,98	34,00±19,42	43,50±4,95	33,63±18,14
31-50 years old	33,74±21,07	36,19±25,04	29,62±13,14	39,77±21,26	41,80±22,57	36,57±22,62
51 years and older	39,24±17,20	32,56±18,22	38,44±19,68	47,89±23,46	37,13±20,68	48,82±23,74
Total[1]: (Average score excluding age)	33,01±18,99	34,86±22,36	32,58±17,30	41,67±22,04	40,00±21,01	38,49±22,69

[1]*A statistically significant difference was confirmed at p=0.022.*

Table 4. *Comparative data on the effectiveness of antipsychotics in the treatment of paranoid schizophrenia in certain age groups in Kazakh ethnic women during 6 months of follow-up.*

Age	**The average number of points reduction on the PANSS scale for 6 months. Observations, mean±standard deviation**					
	Paliperidone	Risperidone	Olanzapine	Clozapine	Trifluoperazine	Haloperidol
18-30 years[1]	30,48±13,69	25,86±9,79	27,00±9,74	45,82±18,54	41,17±17,26	44,45±15,02
31-50 years[2]	30,84±14,76	33,81±14,31	24,18±11,70	45,11±18,70	32,41±10,69	39,11±16,83
51 years and older[3]	29,39±10,44	38,74±16,09	33,13±14,21	48,58±19,38	27,80±9,94	35,85±16,77
Total: (Average score excluding age[4])	30,41±13,32	34,84±14,92	30,37±12,26	46,81±18,78	32,02±12,00	38,77±16,71

1 *statistically significant difference was confirmed at p=0,003.*

2 *statistically significant difference was confirmed at p=0.002.*

3 *A statistically significant difference was confirmed at p<0,001.*

4 *A statistically significant difference was confirmed at p<0,001*

Table 5. *Comparative data on the severity of side effects (safety) of the use of antipsychotics used in the treatment of paranoid schizophrenia in men of Kazakh ethnicity during 6 months of follow-up.*

Age	**The average number of points on the UKU side effects severity scale for 6 months. Observations, mean±standard error**					
	Paliperidone	Risperidone	Olanzapine	Clozapine	Trifluoperazine	Haloperidol
18-30 years	0,48±0,15	0,31±0,10	0,62±0,27	0,27±0,14	0,5±0,5	0,31±0,10
31-50 years[1]	0,63±0,15	0,81±0,14	0,48±0,18	0,41±0,12	1,05±0,44	0,4±0,08
51 years and older	0,43±0,23	0,56±0,15	1,11±0,42	0,85±0,30	0,53±0,27	0,97±0,22
Total: (Average score excluding age)[2]	0,56±0,10	0,64±0,09	0,65±0,15	0,54±0,12	0,81±0,27	0,5±0,07

1*A statistically significant difference was confirmed at p=0,018.*

2 *A statistically significant difference was confirmed at p=0,032.*

Table 6. *Comparative data on the severity of side effects (safety) of antipsychotics used in the treatment of paranoid schizophrenia in Kazakh ethnic women during 6 months of follow-up.*

Age	**The average number of points on the UKU side effects severity scale for 6 months. Observations, mean±standard error**					
	Paliperidone	Risperidone	Olanzapine	Clozapine	Trifluoperazine	Haloperidol
18-30 years	1,17±0,31	1,86±0,88	0,75±0,49	1,73±0,47	1,5±0,81	1,68±0,46
31-50 years[1]	0,68±0,14	0,88±0,18	0,9±0,31	1,58±0,33	2,0±0,32	1,33±0,17
51 years and older[2]	0,46±0,19	1,71±0,35	1,07±0,37	2,39±0,37	1,07±0,35	1,25±0,22
Total: (Average score excluding age)[3]	0,74±0,12	1,22±0,18	0,93±0,21	1,97±0,23	1,6±0,24	1,35±0,13

1 *A statistically significant difference was confirmed at p=0,006.*

2 *A statistically significant difference was confirmed at p=0,002.*

3 *A statistically significant difference was confirmed at p<0,001.*

1. To determine the increased risk of side effects when using certain antipsychotics in the appropriate age groups in men of the Kazakh ethnic group suffering from schizophrenia:

- Paliperidone – men aged 31-50 years are more at risk of side effects.
- Risperidone – men aged 31-50 years are more at risk of developing side effects.
- Olanzapine – men over the age of 50 are more at risk of developing side effects.
- Clozapine – men in the age groups over 50 are more at risk of developing side effects.
- Trifluoprazine – men aged 31-50 years are more at risk of developing side effects.
- Haloperidol – men in the age groups over 50 are more at risk of developing side effects.

2. To identify the safest antipsychotics for their use in the treatment of paranoid schizophrenia in certain age groups of Kazakh ethnic men:

- 18-30 years – risperidone, clozapine, and haloperidol
- 31-50 years – clozapine and haloperidol
- 51 years and older – paliperidone, risperidone and trifluoperazine.

The analysis of the data presented in Table 6 and Figure 4 allowed:

1. To determine the increased risk of side effects when using certain antipsychotics in the appropriate age groups in women of the Kazakh ethnic group suffering from schizophrenia:

- Paliperidone – women aged 18-30 years are more at risk of side effects.
- Risperidone – women aged 18-30 years are more at risk of developing side effects.
- Olanzapine - women in the age groups over 50 are more at risk of developing side effects.
- Clozapine - women in the age groups over 50 are more at risk of developing side effects.
- Trifluoprazine - women aged 31-50 years are more at risk of developing side effects.
- Haloperidol - women aged 18-30 years are more at risk of developing side effects.

2. To identify the safest antipsychotics for their use in the treatment of paranoid schizophrenia in certain age groups of Kazakh ethnic women:

- 18-30 years – olanzapine.
- 31-50 years – paliperidone.
- 51 years and older – paliperidone.

According to the conducted clinical observations, the safest antipsychotics in the treatment of paranoid schizophrenia in men of the Kazakh ethnic group should be considered paliperidone, clozapine and haloperidol, and for women of the Kazakh ethnic group – olanzapine and paliperidone. In general, it should be recognized that the severity of side effects in women exceeds that in men, which should be taken into account when selecting doses of antipsychotic drugs and their correctors (Figure 5).

As a result of a genetic study of the biological material collected during the implementation of the tasks of this project, genetic polymorphisms have been identified and studied, which are important in the effectiveness and risk of undesirable side effects when using antipsychotics in the treatment of paranoid schizophrenia in persons of the Kazakh ethnic group, which are presented in Table 6.

Conclusion and outputs.

1. According to the results of this study, clozapine (by 40.55 points) and trifluoperazine (by 37.49 points) demonstrated the greatest effectiveness in the treatment of paranoid schizophrenia in men of the Kazakh ethnic group in reducing PANSS scores over 6 months. The priority effectiveness of individual antipsychotics in the corresponding age groups in men of the Kazakh ethnic group suffering from schizophrenia was determined: Paliperidone – for the age over 30 years; Risperidone – without significant differences in all age groups; Olanzapine – in age groups over 50 years; -Clozapine - in age groups older than 50 years; Trifluoprazine - in age groups up to 50 years; Haloperidol - in age groups older than 50 years.

Thus, the priority effectiveness of individual antipsychotics for the corresponding age groups in men of the Kazakh ethnic group suffering from schizophrenia has been determined: 18-30 years – trifluoperazine; 31-50 years – clozapine and trifluoperazine; 51 and older – clozapine and haloperidol, which can be used in recommendations for a personalized approach in choosing the most effective type of antipsychotic therapy for men of the Kazakh ethnic group according to the age of the patients.

2. According to the results of this study, clozapine (by 45.14 points) and haloperidol (by 37.56 points) demonstrated the greatest effectiveness in the treatment of paranoid schizophrenia in women of the Kazakh ethnic group in reducing PANSS scores over 6 months. The priority effectiveness of individual antipsychotics in the corresponding age groups in women of the Kazakh ethnic group suffering from schizophrenia was determined: Paliperidone – without significant differences in all age groups; Risperidone – in age groups older than 50 years; Olanzapine – in age groups older than 50 years; Clozapine – in all age groups; Trifluoprazine - in the age groups up to 50 years; Haloperidol - in the age group of 18-30 years.

Thus, the priority effectiveness of individual antipsychotics for the corresponding age groups in women of the Kazakh ethnic group suffering from schizophrenia has been determined: 18-30 years – clozapine and haloperidol; 31-50 years – clozapine and haloperidol; 51 and older – clozapine and risperidone, which can be used in recommendations for a personalized approach in choosing the most effective type of antipsychotic therapy for women Kazakh ethnic group in accordance with the age of the patients.

3. According to the results of this study, an increased risk of side effects was determined when using certain antipsychotics in the appropriate age groups in men of the Kazakh ethnic group suffering from schizophrenia: Paliperidone – at the age of 31-50 years; Risperidone – at the age of 31-50 years; Olanzapine - at the age of 18-30 years; Clozapine – in age groups older than 50 years; Trifluoprazine - at the age of 31-50 years; Haloperidol - in age groups older than 50 years.

The safest antipsychotics have been identified for their use in the treatment of paranoid schizophrenia in certain age groups

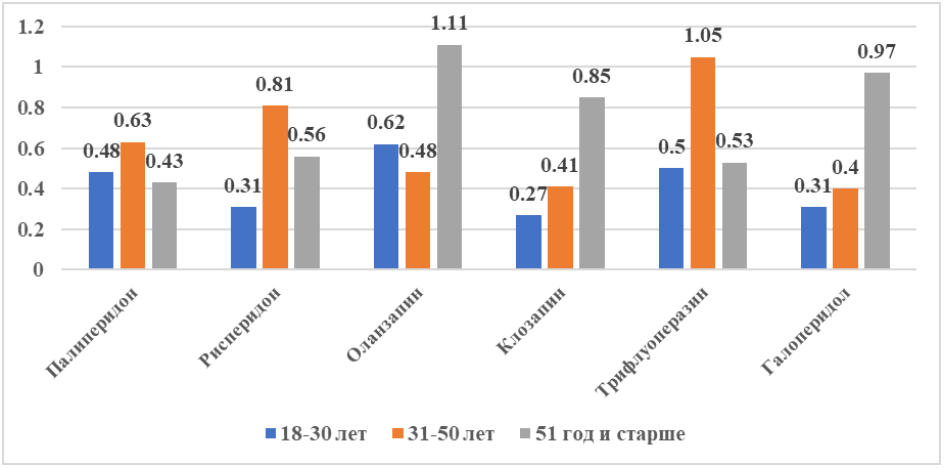

Figure 3. *Comparative analysis of the severity of side effects (safety) of the use of antipsychotics used in the treatment of paranoid schizophrenia in Kazakh ethnic men during 6 months of follow-up (according to the UKU side effects severity scale).*

Table 7. *Genetic polymorphisms that are important in the effectiveness and risk of undesirable side effects when using antipsychotics in the treatment of paranoid schizophrenia in people of the Kazakh ethnic group.*

Antipsychotic	Gene polymorphism	The predominance of the genotype in persons of the Kazakh ethnic group	Clinical effects and recommendations
Haloperidol	**rs1135840** polymorphism of the gene **CYP2D6*2**: A=C, B=G	Heterozygotes **AB** and homozygotes predominate	For slow metabolizers of **CYP2D6**, it is to use 60% of the normal dose of **haloperidol**, and for ultrafast metabolizers of **CYP2D6 -** use a dose 1.5 times higher than normal or choose an alternative to haloperidol.
	rs17143212 polymorphism of the gene **ABCB5**: T=A, C=B	**BB** homozygotes predominate.	Lower risk of toxic reactions of haloperidol in comparison with heterozygotes **AB.**
	rs1049353 polymorphism of the gene **CNR1**: T=A, C=B	**BB and AB** genotypes dominate.	Carriers of the **BB** genotype are susceptible to an increase in body weight when prescribed **haloperidol**, compared with other carriers of the **AB and AA** genotypes.
	rs909706 polymorphism of the gene **DTNBP1**: T=A, C=B	**AB** heterozygotes predominate	Greater adherence and better response to haloperidol treatment compared to carriers of the **BB** genotype.
	rs4680 polymorphism of the gene **COMT**: A=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype are less susceptible to metabolic syndrome, as well as a lower risk of developing extrapyramidal syndromes, unlike **AB** carriers at increased risk.
Risperidone Paliperidone	**rs6313** polymorphism of the gene **HTR2A**: A=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype may be characterized by a reduced response to risperidone therapy, while heterozygous **AB** carriers have an intermediate position and have a positive response to risperidone in comparison with **BB.**
	rs776746 polymorphism of the gene **CYP3A5*3/*3**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **AB** genotype may have higher levels of risperidone in serum.
	rs1045642 polymorphism of the gene **ABCB1**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype may require higher doses of risperidone compared to **AA** carriers.
	rs2032582 polymorphism of the gene **ABCB1**: A=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype may require higher doses of risperidone compared to **AA** carriers.
	rs4818 polymorphism of the gene **COMT**: A=C, G=B	The distribution of genotypes is in favor of **AB and AA.**	Carriers of the **AA** genotype have the worst underestimated response to risperidone therapy compared to **AB and BB** carriers.
	rs9606186 polymorphism of the gene **COMT**: C=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype are associated with an increased reaction to risperidone in patients with schizophrenia compared with **AA+AB** genotypes.
	rs4680 polymorphism of the gene **COMT**: A=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype are associated with an increased reaction to risperidone in patients with schizophrenia compared with **AA+AB** genotypes.
	rs1799978 polymorphism of the gene **DRD2**: A=T, C=B	The distribution of genotypes is in favor of **AB and AA.**	In carriers of the **AA** genotype, the biotransformation time of the drugs olanzapine and risperidone may be prolonged until the therapeutic effect is achieved.
	rs1800497 polymorphism of the gene **ANKK1, DRD2**: A=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **BB** genotype have an underestimated prolactin level during treatment with risperidone in comparison with the **AA and AB** genotypes.
	rs3803300 polymorphism of the gene **AKT1**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	In carriers of the **BB** genotype in response to therapy may be underestimated when treated with risperidone in comparison with the **AA and AB** genotypes. The **AB** genotype is associated with an increased reaction to risperidone compared to the **AA** genotype.
	rs2494732 polymorphism of the gene **AKT1**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	In carriers of the **BB** genotype in response to therapy may be underestimated when treated with risperidone in comparison with the **AA and AB** genotypes. The **AB** genotype is associated with an increased reaction to risperidone compared to the **AA** genotype.

Olanzapine	**rs762551** polymorphism of the gene **CYP1A2**: A=A, C=B	The distribution of genotypes is in favor of **AB and AA.**	Carriers of the **AA** genotype have a reduced response to olanzapine therapy. In carriers of the **AB** genotype adherence to olanzapine manifests better in comparison with the **AA** genotype.
	rs776746 polymorphism of the gene **CYP3A5**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	Carriers of the **AB** genotype in combination with the allele of normal function may be exposed to increased exposure to olanzapine [116-117].
	rs6313 polymorphism of the gene **HTR2A**: A=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	Patients with the **AB** genotype treated with olanzapine are more susceptible to weight gain compared to carriers of the **AA** genotype.
	rs61750900 polymorphism of the gene **UGT2B10**: T=A, G=B	The distribution of genotypes is in favor of **AB and BB.**	**AB and AA** genotypes are characterized by reduced glucuronidation of olanzapine. Carriers of the **BB** genotype act as a normal variant of biotransformation and adherence to olanzapine.
	rs887829 polymorphism of the gene **UGT1A1**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	**CC=BB** carriers of this genotype have significantly higher blood glucose levels.
	rs2266780 polymorphism of the gene **FMO3**: A=A, G=B	The distribution of genotypes is in favor of **AB and AA.**	Carriers of the **AA** allele have elevated concentrations of olanzapine N-oxide in the blood serum. Patients with the **AA** genotype who have responded to treatment with neuroleptics may need to reduce the dose of neuroleptics compared to patients with the **CC** genotype.
	rs2032582 polymorphism of the gene **ABCB1**: A=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	**CC=BB** genotype is associated with an increased dose of neuroleptics in patients with schizophrenia compared to the **AA** genotype.
	rs1045642 polymorphism of the gene **ABCB1**: T=A, C=B	The distribution of genotypes is in favor of **AB and BB.**	The **AA** genotype is not associated with olanzapine exposure in healthy individuals compared to the **AB+BB** genotypes. Patients with the **AA** genotype may need to reduce the dose of neuroleptics compared to patients with the **BB** genotype.
	rs1128503 polymorphism of the gene **ABCB1**: A=A G=B	The distribution of genotypes is in favor of **AB and BB.**	**CC=BB** genotype characterizes a significantly higher exposure and reduced clearance of olanzapine.
	rs3842 polymorphism of the gene **ABCB1**: T=A, C=B	The distribution of genotypes is in favor of **AA** and **AB.**	**BB and AB** genotypes are at risk of palpitations and asthenia when treating schizophrenia with olanzapine. **TT=AA** genotypes are less likely to develop adverse effects of olanzapine treatment.
	rs3813928 polymorphism of the gene **HTR2C**: T=A, C=B	The distribution of genotypes is in favor of **BB=CC and B=C and AB=CT and A=T** genotypes.	Allele **A** is associated with a decrease in the likelihood of obesity in olanzapine treatment in people with schizoaffective disorder and schizophrenia compared to allele **B**.
	rs1414334 polymorphism of the gene a **HTR2C**: C=A, B=G	The distribution of genotypes is in favor of **BB=GG and B=G and AB=CG and A=C**	Allele **C=A** is associated with an increased likelihood of metabolic syndrome in olanzapine treatment in people with schizoaffective disorder or schizophrenia compared to the allele **G=B**.
	rs518147 polymorphism of the gene **HTR2C**: C=A, B=G	The distribution of genotypes is in favor of **BB=GG and B=G and AB=CG and AA=CC**	**AA** genotype have a reduced risk of weight gain. Patients with two X chromosomes, **BB and AB** genotypes, treated with olanzapine may have an increased risk of weight gain compared to patients with **AA** genotype.
	rs6314 polymorphism of the gene HTR2A: A=A, G=B	The dominant position in the distribution of genotypes is occupied by the **BB** genotype	The **BB** genotype determines an increased response to olanzapine compared to other genotypes.
	rs1076560 polymorphism of the gene **DRD2**: A=A, C=B	The dominant position in the distribution of genotypes is occupied by genotypes **BB and AB**	Patients with the **BB** genotype may have a reduced response to olanzapine therapy. **AA+AB** genotypes are associated with an increased reaction to olanzapine in people with schizophrenia compared to the **CC=BB** genotype.
	rs2734842 polymorphism of the gene **DRD2**: C=A, G=B	The predominant number consists of genotypes **BB and AB.**	The **G=B** allele is associated with increased prolactin levels in the treatment of women with olanzapine compared to the **C=A** allele.
	rs6279 polymorphism of the gene **DRD2**: C=A, G=B	The predominant number consists of genotypes **BB and AB.**	The **G=B** allele is associated with increased prolactin levels in the treatment of women with olanzapine compared to the **C=A** allele.
	rs6275 polymorphism of the gene **DRD3**: A=A, G=B	The predominant number consists of genotypes **AA и AB.**	Patients with the **AA** genotype have increased prolactin concentrations when prescribing olanzapine in comparison with **BB** carriers. The **A** allele is associated with increased prolactin levels in the treatment of women with olanzapine compared to the **G** allele. A female patients may have mild or moderate mania, type I bipolar depression, or treatment-resistant depression.
	rs6280 polymorphism of the gene **DRD3**: T=A, C=B	The predominant number consists of genotypes **AA и AB.**	Patients with the **AA** genotype may show a worse response to treatment with olanzapine, have a longer remission period, as well as heterozygotes **AB**. Patients with the **BB** genotype respond best to olanzapine therapy [123].

Aripiprazole	**rs1045642** polymorphism of the gene **ABCB1**: A=A, G=B	The predominant number consists of genotypes **BB and AB.**	The **AA** genotype is associated with a decrease in the minimum concentrations of aripiprazole adjusted for dose in children compared to the **AB + BB** genotypes. Carriers of the **BB** genotype may be recommended an increased dose of aripiprazole.
	rs6277 polymorphism of the gene **DRD2**: A=A, G=B	The predominant number consists of genotypes **BB and AB.**	Heterozygotes **AB** have a reduced reaction to aripiprazole. Only in carriers of the **AA** genotype, adherence to drugs has an increased positive character. **GG=BB** genotype is associated with a reduced response to aripiprazole compared to the **AA** genotype.
	rs6311 polymorphism of the gene **DRD2**: T=A, C=B	The predominant number are the **BB and AB** genotypes.	The **TT=AA** genotype is associated with an increased risk of tardive dyskinesia compared to the **BB +AB** genotypes.
	rs6313 polymorphism of the gene **DRD2**: A=A, G=B	Prevalence of **AB and BB** genotypes	**CC=BB=GG** carriers of this variant of the genotype show the worst reaction to treatment with aripiprazole. **AA** carriers, on the contrary, respond better to the use of the drug with the least undesirable outcomes and the presence of side effects.

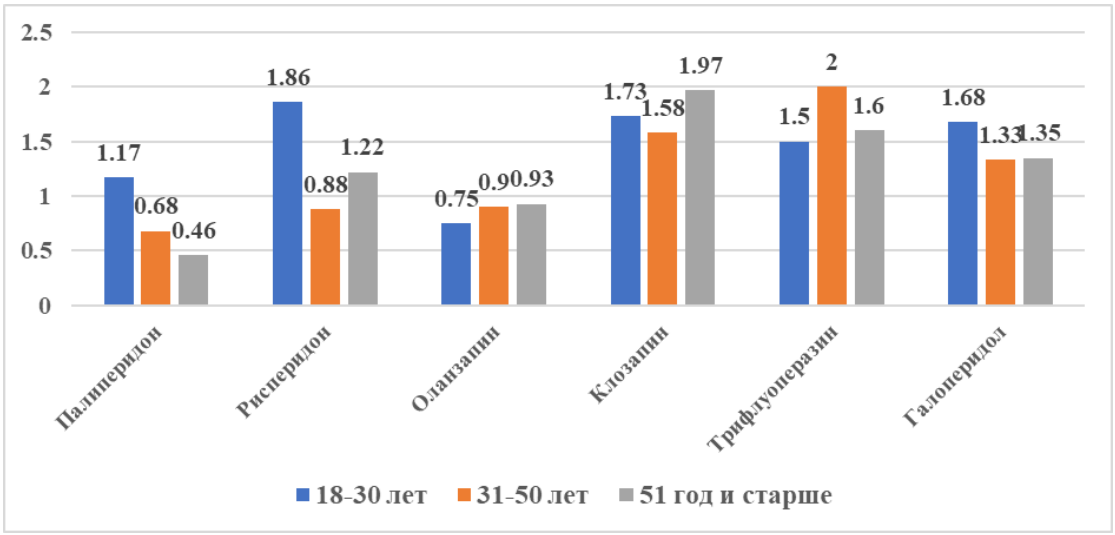

Figure 4. *Comparative analysis of the severity of side effects (safety) of the use of antipsychotics used in the treatment of paranoid schizophrenia in Kazakh ethnic women during 6 months of follow-up (according to the UKU side effects severity scale).*

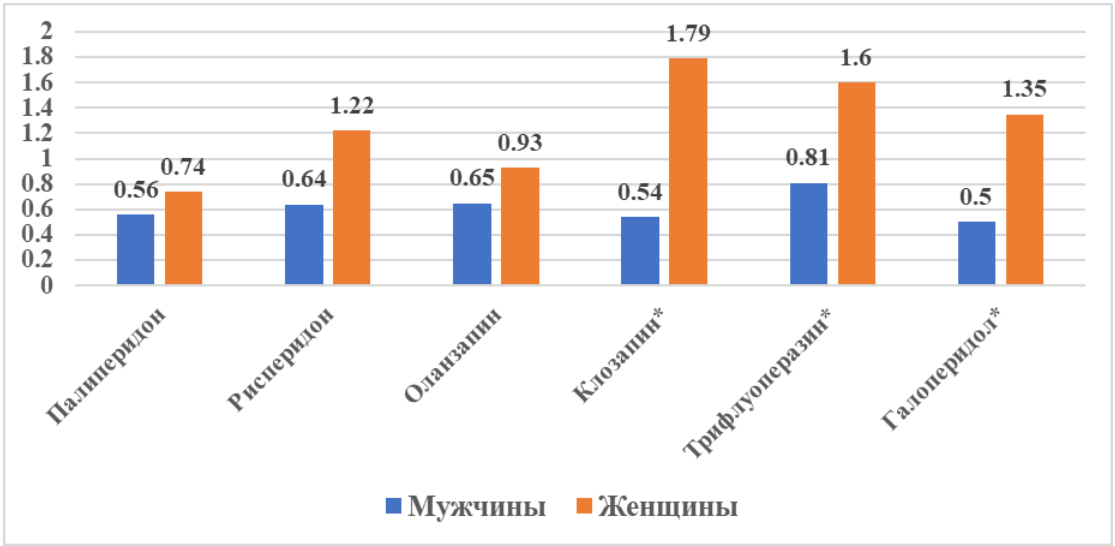

Figure 5. *Comparative analysis of the severity of side effects when using certain types of antipsychotics in men and women of the Kazakh ethnic group in the treatment of paranoid schizophrenia (in points on the UKU scale)*[11].

[11]*The indicators (*) are marked, for which a statistically significant difference is confirmed at p<0.05.*

of Kazakh ethnic men: 18-30 years – risperidone; 31-50 years – clozapine; 51 and older – clozapine, which can be used in recommendations for a personalized approach in choosing the safest type of antipsychotic therapy for Kazakh ethnic men in accordance with the age of patients.

4. According to the results of this study, an increased risk of side effects was determined when using certain antipsychotics in the appropriate age groups in women of the Kazakh ethnic group suffering from schizophrenia: Paliperidone – at the age of 18-30 years; Risperidone – at the age of 18-30 years; Olanzapine - in age groups older than 50 years; Clozapine - in age groups older than 50 years; Trifluoprazine - at the age of 31-50 years; Haloperidol - at the age of 18-30 years.

The safest antipsychotics have been identified for their use in the treatment of paranoid schizophrenia in certain age groups of Kazakh ethnic women: 18-30 years – olanzapine; 31-50 years – paliperidone; 51 and older – paliperidone, which can be used in recommendations for a personalized approach in choosing the safest type of antipsychotic therapy for Kazakh ethnic women in accordance with the age of patients.

5. According to clinical observations, risperidone and clozapine should be considered the safest antipsychotics in the treatment of paranoid schizophrenia in Kazakh ethnic men, and olanzapine and paliperidone for Kazakh ethnic women. In general, it should be recognized that the severity of side effects in women exceeds that in men, which should be taken into account when selecting doses of antipsychotic drugs and their correctors.

The clinical and genetic factors obtained during this study, which influence the effectiveness and safety of antipsychotic therapy, will allow us to personalize the approach to choosing an adequate antipsychotic and individual dose selection, ensuring an improvement in the quality of life and the level of social functioning of patients with paranoid schizophrenia.

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პერსონალიზირებული ანტიფსიქოზური თერაპიის კლინიკური და გენეტიკური თავისებურებები პარანოიდული შიზოფრენიით დაავადებული ყაზახური ეთნოსის პაციენტებს შორის ყაზახეთის რესპუბლიკაში

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რეზიუმე: შიზოფრენიის თერაპიის პრობლემებს წამყვანი ადგილი უჭირავს როგორც უცხოურ, ასევე ადგილობრივ კლინიკურ ფსიქიატრიაში. ნაშრომში წარმოდგენილია სანდო ბიომარკერების იდენტიფიცირების კვლევის შედეგები ანტიფსიქოზური თერაპიის პროგნოზირებისათვის პარანოიდული შიზოფრენიით დაავადებულ ყაზახური ეთნოსის პაციენტებში ყაზახეთის რესპუბლიკაში, რომელიც ჩატარდა „ყაზახეთის რესპუბლიკაში პერსონალიზებული და პროფილაქტიკური მედიცინის დანერგვის ეროვნული პროგრამის“ პროექტის ფარგლებში ინდივიდუალური სარეგისტრაციო ნომერი OR12165486.

გაანალიზდა ყაზახეთის რესპუბლიკაში პარანოიდული შიზოფრენიის თერაპიის დროს გამოყენებული ანტიფსიქოზური პრეპარატების ეფექტურობა და აუტანლობა, მკურნალობის კლინიკური პროტოკოლების თანახმად. აღწერილია პარანოიდული შიზოფრენიის კლინიკაში დინამიკის გენდერული და ასაკობრივი მახასიათებლები ანტიფსიქოზური თერაპიის დროს ყაზახური ეთნოსის პირებში. გამოვლენილია ყაზახური ეთნოსის წარმომადგენლების გარკვეული გენეტიკური მახასიათებლები, რომლებმაც შეიძლება გავლენა ოქონიონ ანტიფსიქოზური პრეპარატების ეფექტურობასა და აუტანლობაზე, რომელიც განსაზღვრავს ყაზახეთის რესპუბლიკაში ყაზახური ეთნოსის პაციენტებში პარანოიდული შიზოფრენიის პერსონალიზებული თერაპიის ინოვაციური მიდგომის საფუძველს.

საკვანძო სიტყვები: პარანოიდული შიზოფრენია, ყაზახური ეროვნება, ანტიფსიქოზური თერაპია, ბიომარკერები, გენეტიკა, ყაზახეთი.

КЛИНИЧЕСКИЕ И ГЕНЕТИЧЕСКИЕ ОСОБЕННОСТИ ПЕРСОНАЛИЗИРОВАННОЙ АНТИПСИХОТИЧЕСКОЙ ТЕРАПИИ БОЛЬНЫХ ПАРАНОИДНОЙ ШИЗОФРЕНИЕЙ КАЗАХСКОГО ЭТНОСА В РЕСПУБЛИКЕ КАЗАХСТАН

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Резюме: Проблемы терапии шизофрении занимают ведущее место как в зарубежной, так и в отечественной клинической психиатрии. В работе представлены результаты исследования по выявлению надежных биомаркеров для прогнозирования антипсихотической терапии больных параноидной шизофренией казахского этноса в Республике Казахстан, проведенного в рамках проекта: «Национальная программа внедрения персонализированной и профилактической медицины в Республике Казахстан» ИРН OP12165486.

Проанализированы эффективность и переносимость антипсихотических препаратов, применяемых в терапии параноидной шизофрении в Республике Казахстан согласно клиническим протоколам лечения. Описаны гендерные и возрастные особенности динамики в клинике параноидной шизофрении при антипсихотической терапии у лиц казахского этноса. Выявлены отдельные генетические особенности представителей казахского этноса, которые могут оказать влияние на эффективность и переносимость антипсихотических препаратов, что определяет основу инновационного подхода к персонализированной терапии параноидной шизофрении у пациентов казахского этноса в Республике Казахстан.

Ключевые слова: параноидная шизофрения, казахский этнос, антипсихотическая терапия, биомаркеры, генетика, Kazakhstan.