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**ABSTRACT**

of the dissertation for the degree of Doctor of Philosophy

**ASSESSMENT OF THE IMPACT OF WOMEN'S  
CONTRACEPTIVE BEHAVIOR PATTERNS ON EFFECTIVE  
BIRTH PLANNING AND APPROACHES TO ITS  
CORRECTION**

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Applicant: **Kamala Humbat Habibova**

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The work was performed at the Department of Public Health and Health Organization, the Azerbaijan Medical University.

Scientific supervisor: Doctor of Medical Sciences, Professor  
**Rafiq Anvar Chobanov**

Scientific consultant: Doctor of Medical Sciences, Professor  
**İslam Sharif Mahalov**

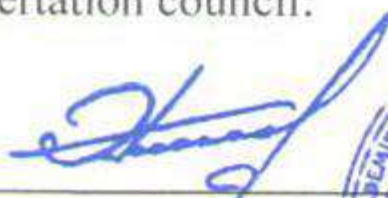
Official opponents: Doctor of Medical Sciences, Professor  
**Hikmət İsfandiyar İbrahimli**

Doctor of Medical Sciences  
**Kamal Gafar Gafarov**

Doctor of philosophy in Medical Sciences  
**Ayshan Zaqlul Lemberanskaya**

Dissertation Council FD 1.03 of Supreme Attestation Commission under the President of the Republic of Azerbaijan operating at the National Ophthalmology Centre named after Academician Zarifa Aliyeva

Chairman of the  
Dissertation council:



Corresponding Member of ANAS,  
Honored Scientist, Doctor of Medical  
Sciences, Professor

**Elmar Mustafa Gasimov**

Scientific secretary of the

Dissertation council: Doctor of Medical Sciences, Associate Professor



**Nazilya Mammad Rustamova**

Chairman of the scientific  
seminar:



Doctor of Medical Sciences

**Adila Jalal Rzayeva**



## GENERAL DESCRIPTION OF THE WORK

**Relevance of the topic.** The family planning program is a complex of medical and social measures aimed at protecting the reproductive health of the population<sup>1</sup>.

Universal access to family planning services is now considered a priority component of global health and a critical element of the international sustainable development agenda. The main component of planning a childbirth and regulating pregnancy is the choice of appropriate contraceptives<sup>2</sup>.

According to global estimates from the United Nations, approximately 63–65% of women, whether married or in a relationship, use contraception (2017 estimates). The share of modern contraceptive methods used worldwide is approximately 58–59%<sup>3</sup>.

Insufficient use of effective and safe contraceptives contributes to an increase in the number of abortions, accompanied by serious medical and social consequences, including reproductive dysfunction, inflammatory diseases, infertility, complications in subsequent pregnancies and an increased risk of maternal mortality. Complications after abortion are recorded in 16–55% of women<sup>4</sup>. Among these issues, abortion is particularly significant. According to the World Health Organization, unsafe abortions account for between 4.7% and 13.2% of maternal deaths annually, and in developing

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<sup>1</sup> World Health Organization Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), Knowledge for Health Project. Family Planning: A Global Handbook for Providers (2018 update). Baltimore and Geneva: CCP and WHO, - 2018, - 440 p.

<sup>2</sup> Hellwig, F. Policies for expanding family planning coverage: lessons from five successful countries / F. Hellwig, L.R. Moreira, M.F. Silveira [et al.] // *Frontiers in Public Health*, – 2024, 12 (1339725), – p.1-26

<sup>3</sup> World Family Planning 2022 Meeting the changing needs for family planning: Contraceptive use by age and method. New York, United Nations, – 2022, – 28p.

<sup>4</sup> Алехина, А.Г. Влияние искусственного прерывания беременности на репродуктивные возможности женщин / А.Г. Алехина, Ю.А. Петрова, А.Е. Блесманович, Е.М. Галущенко // – Ростов-на Дону: Медико-фармацевтический журнал «Пульс», – 2019. 21 (1), – с. 15-19.

countries, there are up to 30 deaths for every 100,000 unsafe abortions. In addition, approximately 7 million women require hospitalization each year due to complications from unsafe abortions <sup>5</sup>.

According to global modeling, between 2015 and 2019, there were approximately 121 million unintended pregnancies worldwide each year, of which approximately 61% (about 73 million) ended in induced abortion, representing approximately 29% of all pregnancies<sup>6</sup>.

These data highlight that limited access to safe abortion methods and contraceptives directly impacts women's reproductive health (WRH) and can lead to mortality <sup>7</sup>.

The reasons for this are women's distrust of contraceptives, lack of awareness of their quality, difficulties in choosing, as well as financial difficulties <sup>8</sup>.

Women's ethnicity, family structure, and relationship with their partner influence their contraceptive use. Therefore, counseling women on contraception is particularly important <sup>9</sup>. However, the key direction is the correction of women's contraceptive behavior and, in general, their reproductive behavior <sup>10</sup>.

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<sup>5</sup> Аборт / Всемирная организация здравоохранения (WHO). – 2024: [Электронный ресурс]. URL: <https://www.who.int/ru/news-room/fact-sheets/detail/abortion>).

<sup>6</sup> Bearak, J. Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990–2019 / J. Bearak, A. Popinchalk, B. Ganatra [et al.] // *The Lancet Global Health*, – 2020. 8 (9), – p. 1152-1161

<sup>7</sup> Trends in maternal mortality estimates 2000 to 2023. Estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA / Population Division. Geneva: World Health Organization, – 2025. – 132 p.

<sup>8</sup> Дикке, Г.Б. Контрацепция в Современной России: применение и информированность (популяционное исследование) / Г.Б. Дикке, Л.В. Ерофеева // – Москва: Акушерство и гинекология, – 2016. № 2, – с. 108-113

<sup>9</sup> Pazol, K. Impact of Contraceptive Education on Contraceptive Knowledge and Decision Making: A Systematic Review / K. Pazol, L.B. Zapata, S.J. Tregear [et al.] // *American journal of preventive medicine*, – 2015. 49 (2 Suppl 1), – p. 46-56

<sup>10</sup> Павлов, Я.Н. Влияние разных групп контрацептивов на общее состояние женщины, ее репродуктивную систему. Аналитический обзор // – Москва: Социальные аспекты здоровья населения, – 2021. №1(67), – с. 1-19.

In our republic, the problem of insufficient use of contraceptives remains relevant <sup>11</sup>. According to the international Demographic and Health Survey (DHS) conducted in Azerbaijan in 2011, the level of use of any method of contraception among married women was 54.9%. <sup>12</sup>. However, according to data from the State Statistics Committee of Azerbaijan for 2023, this figure dropped to 42.2%. In addition, 73,800 abortions were registered in the country in 2023, with an upward trend observed <sup>13</sup>. This may indicate the insufficient effectiveness of existing family planning measures. Therefore, studying the contraceptive behavior of the local population and developing approaches to correcting it are relevant and necessary to improve the effectiveness of women's reproductive health. In the Decree of the President of the Republic of Azerbaijan dated February 2, 2021 No. 2469 “Azerbaijan 2030: National Priorities of Socio-economic Development”, section 3.3, reflecting the WRH, it is said that educational work on family planning and contraception among the population of fertile age is being carried out, which confirms the scientific and practical significance of this study.

**Object and subject of the study:** Healthy women of reproductive age registered at women's clinics.

**Subject of the study:** characteristics of contraceptive behavior of women of reproductive age, including motivation, awareness and use of modern methods of contraception, as well as identification of factors influencing their behavior.

**The purpose of the study** was to identify the characteristics of women's contraceptive behavior, determine its impact on the

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<sup>11</sup> European Contraception Policy Atlas – Azerbaijan. European Parliamentary Forum for Sexual & Reproductive Rights. 2020 [Electronic resource] URL: <https://www.epfweb.org/node/717#:~:text=1,destigmatise%20the%20topic%20of%20contraception>

<sup>12</sup> Demographic and Health Survey. Final Report. Baku 2013. – Baku: Demographic and Health Survey, 2013. – 331 p.

<sup>13</sup> Azərbaycan Respublikasının Dövlət Statistika Komitəsi. Azərbaycanın demografik göstəriciləri, 2023 / Azərbaycan Statistika Komitəsi. – Bakı, 2024: Elektron resurs]. URL: <https://www.stat.gov.az>

effectiveness of family planning, and develop practical recommendations for its correction.

**Research objectives.**

1. To assess the state of demand for contraceptives and the influence of age, social, family, educational and professional status of women on it.

2. To study the nature and mode of contraceptive use by women, as well as the reasons that reduce their demand.

3. To study the impact of contraceptive use patterns on the effectiveness of family planning, abortion rates, and women's reproductive potential.

4. To study the need to increase women's awareness of the benefits and available methods of contraception, and to justify the need to develop an educational tool on reproductive health issues that would help increase motivation to use effective contraceptives.

5. To develop social and hygienic approaches to correct women's contraceptive behavior and conduct their experimental testing.

**Research methods:**

1. Women's Health Questionnaire (WHQ)

2. Women's Health Questionnaire (Finnish version)

3. Questionnaire for the study of contraceptive behavior

4. Mathematical statistical method

**The main provisions of the dissertation submitted for defense:**

- Contraception has socio-demographic significance in terms of maintaining the reproductive health of the population;
- Effective contraceptive behavior of women plays a key role in regulating fertility and increasing the effectiveness of family planning.
- Social and personal factors determine the low level of contraceptive use among women of reproductive age;
- Social measures to correct contraceptive behavior of women of reproductive age complement medical care and promote effective family planning.

### **Scientific novelty of the research.**

– Social, economic and informational factors influencing the low demand for contraceptives by women were identified, and the range of their impact on family planning and reproductive potential was determined.

– The understanding of the state of women's contraceptive motivation has been studied and expanded, and a cluster method for its assessment has been proposed, allowing for a systematic analysis of women's attitudes toward modern contraceptive methods.

– The influence of women's social environment (age, marital status, presence of children, education, work activity) on their reproductive potential and contraceptive behavior was determined.

– An algorithm and inventory of the most effective and accessible contraceptive methods recommended for use by family planning services and women's health screening have been developed, which contributes to improving the quality of counseling and improving the accessibility of reproductive services.

– Social and hygienic approaches to correcting contraceptive behavior have been developed and scientifically substantiated, and their effectiveness in increasing the effectiveness of family planning and strengthening women's reproductive health has been experimentally tested.

### **Practical significance of the study.**

As a result of the conducted research, the following practically significant results were obtained:

– The developed inventory of the most effective, cost-effective, and easy-to-use contraceptives can be used in women's clinics and family planning services, thereby increasing the accessibility and quality of counseling.

– The identified reasons for the low demand for contraceptives and certain mechanisms for their elimination can serve as a basis for the development of targeted educational and organizational activities.

– The proposed cluster system for assessing women's contraceptive motivation allows for segmentation of groups based on their level of awareness and attitudes toward family planning, which increases the effectiveness of advisory and preventive work.

– The developed measures (algorithm) to improve the effectiveness of contraceptive services for women in women's clinics can be implemented in the practice of outpatient clinics.

– Based on the results of the pilot testing, mechanisms were proposed for increasing women's awareness of modern contraceptive methods and correcting their contraceptive behavior, which helps reduce the number of unplanned pregnancies and improve reproductive health.

**Approbation of the research results.** The materials of the dissertation thesis have been presented at scientific and practical conferences:

All-Ukrainian Scientific and Practical Conference of Young Scientists 'Medical Science into Healthcare Practice', Poltava, December 9, 2016;

V All-Ukrainian Scientific Conference of Students and Young Scientists in Physiology with International Participation, Kharkov, May 16, 2018;

XI International Scientific and Practical Conference 'Current Issues of Medicine' and V Public Health and Health Policy Satellite Forum, Baku, March 27–28, 2024;

Karabakh V International Congress of Scientific research. Odlar Yurdu University. 23-25 July, 2025.

The preliminary defense of the dissertation thesis took place at the Department of Public Health and Healthcare Organization of Azerbaijan Medical University (01.05.2025; Protocol No. 14).

**Publications.** Based on the dissertation materials, 23 scientific works have been published, including 11 articles and 11 abstracts, of which 4 articles and 3 abstracts were featured in international publications. One methodological guideline has been issued.

**Implementation of the research results into practice.** The results are being used in the educational process at Azerbaijan Medical University, as well as in outpatient clinics and women's health clinics in Baku.

**Location of the research.** The study was conducted within the framework of the scientific program of the Department of Public

Health and Healthcare Organization of Azerbaijan Medical University, based at women's clinics and a maternity hospital.

### **Structure and volume of the dissertation.**

The dissertation is outlined on 180 pages of a typewritten text. The dissertation consists of the following sections: contents, introduction, literature review, Chapter II (materials and research methods), Chapter III (results of original research), Chapter IV, Chapter V, conclusion, findings, and practical recommendations. The total volume of the text amounts to 206,732 characters, including: introduction – 11,474 characters; literature review – 44,870 characters; Chapter II – 7,370 characters; Chapter III – 29,939 characters; Chapter IV – 63,290 characters; Chapter V – 18,019 characters; conclusion – 27,244 characters; findings – 3,645 characters; and practical recommendations – 881 characters. The dissertation is illustrated with 22 graphs, 25 tables, and 3 figures. The reference list includes 198 sources, of which 13 are domestic publications and 165 are works by Russian and foreign authors.

## **MATERIALS AND METHODS OF RESEARCH**

The study was conducted as part of the research program of the Department of Public Health and Healthcare Organization. By agreement, the research was conducted in city clinics and women's health clinics in the Sabail, Sabunchu, and Yasamal districts of Baku.

The research method was a questionnaire survey, which was developed on the basis of the Finnish version of the international WHQ questionnaire and a questionnaire developed by us.

A total of 4000 questionnaires were distributed, of which 1577 (39.4%) were fully completed and used in the analysis.

To assess women's motivation to use contraceptives, we developed a cluster system based on the biopharmaceutical cluster.

For statistical analysis of the actual data, the IBM SPSS Statistics 21.0 statistical software package was used. Confidence limits for frequencies were calculated based on the binomial distribution. The following biometric methods were used for statistical processing of the obtained results: weighted arithmetic mean,

Student's t-test,  $\chi^2$  test, correlation coefficient, and van der Waerden test. Differences were considered statistically reliable (significant) at  $p < 0.05$ .

## RESULTS OF THE STUDY

We examined the age distribution of female respondents. Women aged 20-24 and 30-34 predominated, accounting for 20.4% and 20.1% of the total study participants, respectively.

In terms of education level, among the women surveyed, 36.4% had higher education, 34.7% had secondary education, and 7.3% had incomplete secondary education.

The majority of women (84.4%) were employed in various fields of activity, while 15.6% of respondents were housewives.

Among the respondents, the most active women were those in the following professions: teachers - 12.1%, educators - 11.8%, doctors - 10.6%, nurses - 10.3%.

In terms of marital status, 24.3% of women were unmarried, 53.1% had the marital status of "married", 14.9% were divorced and 7.7% were widowed.

Among the women surveyed, 22.1% had one child, 48.6% had two, 18.7% had three, and 10.6% had four or more children.

The research methods used were the international WHQ questionnaire and a questionnaire instrument developed by us. The new questionnaire included modified questions adapted to the objectives of this study. The developed questionnaire was accompanied by a cluster system with a corresponding assessment model on a five-point scale.

At the beginning of the study, the nature and frequency of women's contraceptive use were examined. According to the survey data, 51.5% of women used contraceptives, including 12.0% consistently, 16.2% frequently, and 23.3% rarely. However, the number of women using contraceptives rarely was significantly lower than in other categories.

Contraceptive use rates varied significantly by age. The proportion of women over 40 using contraceptives was 20%, which is statistically significantly lower than in other age groups.

Among respondents who rarely used contraceptives, the largest proportion were in the age categories under 20 years (16.7%), 30-34 years (32.8%), 35-39 years (39.0%) and  $\geq 40$  years (12.7%); the differences identified were statistically significant ( $p < 0.001$ ). At the same time, women aged 20-24 years (25.1%) and 25-29 years (19.3%) were more likely to use contraceptives on a regular basis.

When analyzing the structure of the use of various methods of contraception by women of reproductive age, it was found that natural methods were used by 24.3% of respondents, barrier methods by 21.4%, spermicidal methods by 16.9%, intrauterine methods by 7.7%, hormonal methods by 13.1%, and emergency contraception methods by 7.5%.

Natural contraceptive methods were not used by 17.2% of women, 30.8% used them rarely, and 22.2% used them regularly. Barrier methods were not used regularly by the majority of respondents: 27.2% used them rarely and only 9.2% used them frequently.

Spermicides were not used by 72.9% of women; 19.9% used them rarely and 7.1% frequently. The proportion of women not using intrauterine contraceptives was also high – 70.5%; 22.1% used them rarely and 7.4% frequently.

The proportion of women not using combined oral contraceptives (COCs) and emergency contraception (EC) was approximately the same: 45.1% and 45.8%, respectively. 29.6% of women consistently used these methods for COCs and 11.0% for EC. Infrequent use was noted by 31.6% of respondents for COCs and 22.9% for EC, while frequent use was observed in 33.2% and 20.3% of cases, respectively.

Next, women's awareness of contraception was examined. Among the 1,577 respondents, awareness was low in 11.8%, insufficient in 25.5% ( $p < 0.001$ ), moderate in 40.0% ( $p < 0.001$ ), and sufficient in 22.7% ( $p < 0.001$ ). Respondents cited advertisements on television, radio, and popular magazines, information from others, and

consultations at women's clinics as sources of information about contraceptives.

The study analyzed the reasons for women's low contraceptive use, as well as their motivations for changing their contraceptive behavior. It was found that underuse of contraception is due to a number of objective and subjective factors. Among women who do not use contraceptives, the most frequently reported reasons were ethnic and religious prejudices (46.3%) as well as the relative high cost of contraceptives (39.7%).

Among women who rarely or frequently used contraceptives, the leading reasons were distrust of the effectiveness of contraception (31.0%;  $p < 0.05$ ), lack of awareness about contraceptives (33.2%) and fear of side effects (30.2%).

Among women who regularly use contraceptives, the reasons for skepticism about their use were religious prejudices (16.4%), unpredictability of sexual intercourse (14.3%) and deficiencies in family planning (13.8%;  $p < 0.001$ ).

At the same time, among women who constantly use contraceptives, the influence of such factors as morbidity, fear of contraceptive side effects, ethnic and religious prejudices, living with parents and poor hygienic conditions remained.

An analysis of the obtained data revealed that contraceptive behavior among the local population is low and requires improvement. Therefore, it seemed appropriate to determine the women's level of motivation. However, the available literature lacks standardized methods for solving this problem, so we developed our own 5-point cluster scale for assessing motivation. Next, the results of the cluster assessment system of the questionnaire of women included in the study were analyzed. Research shows that among the surveyed women who do not use contraceptives, the level of the first cluster (it is not necessary to use contraceptives - 1 point) and especially the second cluster, respectively (use natural methods of terminating pregnancy - 2 points) is quite high - 16.7% and 38.8% ( $p < 0.001$ ), the level of the third cluster is also high ("use of contraceptives as needed" - 3 points) - 26.5% ( $p < 0.001$ ). The level of the fourth cluster (it is advisable to

use contraceptives - 5 points) turned out to be low at 14.8% ( $p < 0.001$ ) and the level of the fifth cluster was very low - 3.1% ( $p < 0.001$ ).

A different pattern of results was found among women who considered contraceptive use mandatory (cluster 5). Of these, 9.5% selected cluster 4, while 3.2% selected cluster 3 ( $p < 0.05$ ). To assess women's satisfaction with the organization of contraceptive care, a scoring system was used that included indicators of accessibility, awareness, and the quality of counseling services. Evaluation of the activities of women's consultation clinics revealed organizational and informational shortcomings, including insufficient counseling on contraception issues, limited awareness among women, lack of anonymity when obtaining contraceptives, and insufficient accessibility of counseling services. On average, women reported approximately 3.95 shortcomings in the organization of contraceptive care. After the informational and educational intervention, the mean accessibility score increased from 26.6 to 37.4 points, while the awareness score increased from 33.5 to 40.8 points ( $p < 0.001$ ).

Next, we examined the characteristics of personality and behavioral characteristics and their impact on women's demand for contraceptives. Given the importance of age, the age distribution of contraceptive demand among the study respondents was analyzed. Of the 1,577 women surveyed, 812 were using contraceptives, so their age distribution was examined. Contraceptive use was significantly higher among women aged 20-24, with an average value of approximately 56.6% ( $p < 0.001$ ). We attribute this to more active reproductive function and sexual activity. Among women aged 25-29, contraceptive use was also quite high – approximately 55.7% ( $p > 0.05$ ). The highest rate of contraceptive use was observed among women aged 30-34 – approximately 67.8% ( $p < 0.01$ ). This is explained by the reluctance of women of this age to have children. Starting at age 35, we observed a decrease in contraceptive use, as in the group of women aged 35-39, this figure was approximately 61.4% ( $p > 0.05$ ). According to respondents, many women stop having active sex by the end of this age, and the need for contraception begins to decline. The lowest rate of contraceptive use was observed among women over 40

years old – approximately 20.0% ( $p < 0.001$ ). This was due to the decline in female fertility at this age.

The number of children in the respondents' families was also examined. Based on the number of children, the following categories were formed: women with one child, two children, three children, and a category of women with four or more children. In our study, 765 women did not use contraception. We then examined the number of births between women not using contraception ( $n=765$ ) and women using contraception ( $n=812$ ). The birth rate rates among these women were calculated as follows: one child - 18.2% and 25.7% ( $p < 0.001$ ); two children - 45.4% and 51.7% ( $p < 0.05$ ); three - 23.3% and 14.4% ( $p < 0.001$ ); The smallest share in this group was among families with four or more children - 13.2% and 8.1% ( $p < 0.01$ ). Regardless of contraceptive use, most women prefer to have one or two children. However, among women who do not use contraception, higher rates were found for families with three children, as well as families with four or more children.

We examined women's contraceptive use by education level. For this purpose, four categories of education level were identified among the study respondents: incomplete secondary education, secondary education, vocational secondary education, and higher education. Among respondents not using contraception, women with incomplete secondary education were predominant (83.5%). Also, in this group, there was a high proportion of women with secondary education (65.1%), while the figure among women with higher education was the lowest and amounted to about 24% ( $p < 0.01$ ).

Among women who rarely use contraceptives, respondents with higher education predominated (30.8%). Furthermore, a significant proportion were women with secondary vocational education (21.1%), while the smallest proportion were women with incomplete secondary education – approximately 10.4%.

When analyzing the level of education among respondents who frequently or constantly use contraceptives, a high proportion of women with higher education was revealed - 22.6% and 22.5%, respectively.

Among women who frequently used contraceptives, there were respondents with incomplete secondary education; however, this figure was the lowest at 6.1%. In the group of women who constantly applied contraceptives, no respondents with this level of education were identified.

In addition, among respondents who constantly use contraceptives, the proportion of women with secondary education was minimal compared to other study participants and amounted to about 4.1%.

Along with the level of education, the influence of women's professional and social status on the demand for contraceptives was studied. The following occupational categories were identified in the study: executives, office workers, doctors, teachers, educators, nurses, service personnel, and housewives. Women who did not fall into the specified categories were combined into a group of respondents with other occupations.

Among women who do not use contraceptives, a high proportion of service personnel (working in medical organizations, children's institutions, trade and public catering) was noted - 73.0%, respectively, among women using contraceptives, this figure was 27.0 ( $p > 0.05$ ). Among women who do not use contraceptives, a high proportion of service personnel (working in medical organizations, children's institutions, trade and public catering) was noted - 73.0%, respectively, among women using contraceptives, this figure was 27.0 ( $p > 0.05$ ).

Housewives were the second most common among women who did not use contraception, at 69.3%, compared to 30.7% among women who did. Facilities managers were the second most common among women who did use contraception, at 70.3%, compared to 29.7% among women who did not.

Among women using contraceptive methods, 56.9% were married, 22.4% were unmarried, 12.9% were divorced, and 7.7% were widowed. Barrier contraceptive methods were more commonly used by unmarried women (37.4%), whereas non-oral methods were more frequently used by married women (44.8%). The frequency of

emergency contraception use was highest among unmarried women (39.1%).

Next, the influence of family financial status on women's demand for contraception was studied. For this purpose, respondents were classified into the following financial status categories: poor, relatively satisfactory, satisfactory, sufficient, and comfortable.

The quantitative distribution of respondents by material status was as follows: 18.1% of respondents noted a very low level of material security, about 36% indicated a relatively satisfactory level, 25.6% had a satisfactory level, 9.1% had a sufficient level, and 11.2% of women had a comfortable.

Within the framework of the study, a cross-sectional analysis of contraceptive use preferences among women with different levels of financial status was conducted. The analysis was conducted across seven categories: no need to use contraception, use whenever possible, as needed, after the birth of three children, after the birth of two children, to regulate pregnancy and to prevent unintended pregnancy.

Among women with low levels of material wealth, the predominant answer was that there was no need to use contraception (51.7%). In this group, no responses were received for the items "to regulate pregnancy" and "to prevent unintended pregnancy." The lowest frequency of reasons for using contraception was noted for "after the birth of a second child," at 2.8%.

Women with a relatively satisfactory financial situation also did not indicate the option "to prevent unintended pregnancy." In this group, as before, the predominant response was "no need"—25.1%. Moreover, the frequency of responses in the positions "as far as possible" and "as far as necessary" was almost the same and amounted to 23.7% and 23.0%, respectively.

Among women with satisfactory financial status, the predominant answer was "no need" – approximately 17.3%. Within this group, the responses "as much as possible," "as needed," "after the birth of three children," and "after the birth of two children" had approximately the same rates – from 14.3% to 14.8%.

The lowest values were noted in the positions “to regulate pregnancy” and “to prevent unintended pregnancy”, amounting to 13.9% and 10.8%, respectively.

Among women with sufficient and comfortable financial status, no responses were received for the "no need" item. Furthermore, among women with comfortable financial status, the "as much as possible" item was not selected.

For women with a sufficient level of financial status, the distribution of answers looked as follows: “as far as possible” - 4.2%, “as necessary” - 5.5%, “after the birth of three children” - 11.6%. The indicators for the following items remained relatively high: “after the birth of two children” (20.5%), “to regulate pregnancy” (25.7%), and “to prevent unintended pregnancy” (32.4%).

Among women with a comfortable financial situation, the lowest response rates were for "as needed" (6.3%) and "after having three children" (11.2%). In this group, the highest percentage was for "to prevent unintended pregnancy" – approximately 42.0%.

Analysis of the assortment of contraceptive methods in urban pharmacies showed that products costing 5–9 manats (26.2%) and 10–14 manats (24.7%) were the most commonly available. Among the surveyed women, 40.4% preferred contraceptive methods costing 5–9 manats.

We then examined the qualitative and quantitative indicators of contraceptive pregnancy regulation within our study. During the current survey of 1,577 respondents, 7,047 pregnancies were recorded, averaging 4.47 pregnancies per woman.

Of the total number of episodes, approximately 54% occurred in women who did not use contraception, while among women who rarely or frequently used contraception, 41.4% of pregnancy episodes were noted ( $p < 0.001$ ).

Only 4.6% of pregnancy episodes were recorded among women who consistently used contraception ( $p < 0.001$ ).

Among 1577 respondents, 7047 pregnancy episodes were registered, of which 48.4% were unintended. The highest frequency of unintended pregnancies and abortions was observed among women who did not use contraceptive methods or used them irregularly.

Continuous use of modern contraceptive methods was associated with a significant reduction in the frequency of unintended pregnancies and abortions. During 23–27 months of follow-up, 2515 abortions were registered among 1194 women. After repeated abortions, psych emotional and reproductive disorders were more frequently observed in women. The conducted informational and educational intervention was accompanied by a statistically significant increase in the level of contraceptive use from 51.5% to 84.5%, an increase in the use of modern contraceptive methods from 25.7% to 77.9%, a decrease in the frequency of unintended pregnancies from 47.3% to 32.4%, and a reduction in the average number of abortions from 2.02 to 0.73 per woman ( $p < 0.001$ ).

The validity of the cluster system used to study women's motivation to use contraception was assessed based on the final results of observation after 23-27 months.

The informational and educational campaigns resulted in a statistically significant increase in contraceptive awareness. The proportion of women with low awareness decreased from 11.8% to 3.3% ( $p < 0.001$ ). The proportion of women with insufficient awareness also decreased - from 25.5% to 10.8% ( $p < 0.001$ ). The level of moderate awareness did not change significantly and amounted to  $40.0 \pm 1.2\%$  and  $38.7 \pm 1.6\%$ , respectively ( $t = 0.65$ ;  $p > 0.05$ ). At the same time, the proportion of women with a sufficient level of awareness increased from 22.7% to 47.3% ( $p < 0.001$ ). At the baseline, women cited 12 reasons limiting their contraceptive use. The average number of reasons was 3.26 per woman. After 23-27 months, a statistically significant decrease was observed to 0.84 reasons per woman ( $p < 0.001$ ).

Similarly, at the initial stage, 15 deficiencies in the organization of antenatal clinics were identified (an average of 3.95 per woman). By the end of the study, the average number had statistically significantly decreased to 1.26 per woman ( $p < 0.001$ ).

According to the results of the study, the average assessment of the availability of contraceptive care for women increased from 26.6 to 37.4 points ( $p < 0.001$ ), satisfaction with the care provided increased from 34.7 to 41.6 points ( $p < 0.001$ ), and awareness of all aspects of

women's health clinic services increased from 33.5 to 40.8 points ( $p<0.01$ ). Over the course of 23-27 months, there was a statistically significant increase in the number of women using contraceptives: from 51.5% at the beginning of the study to 84.5% by its completion ( $p<0.001$ ).

Improvements in contraceptive use were observed during the study. The proportion of women using contraceptives "rarely" decreased from 23.3% to 8.5% ( $p<0.001$ ), while the proportion of women using them "frequently" increased from 16.2% to 25.8% ( $p<0.001$ ). The most significant increase was observed among women using contraceptives constantly – from 12.0% to 50.2% ( $p<0.001$ ).

At the final stage of the information and education campaign, the structure, frequency, and usage patterns of contraceptive methods among women were studied. According to the research findings, the proportion of women using natural family planning methods decreased from 24.3% to 13.8% ( $p<0.001$ ), and barrier methods fell from 21.4% to 8.2% ( $p<0.001$ ), whereas the use of spermicides and intrauterine devices practically ceased.

Along with this, the use of modern contraceptives, especially combined hormonal drugs, has increased significantly. The number of women using COCs increased from 13.1% to 33.4% ( $p<0.001$ ), and those using non-oral methods increased from 5.1% to 18.3% ( $p<0.001$ ).

By the end of the study, there was a significant increase in the number of women using emergency contraception, from 7.5% to 13.8% ( $p<0.001$ ). Approximately 12.4% of women initiated the use of LARC methods for the first time. Although the overall percentage of women using traditional methods at the beginning of the study was 70.3%, by the end of the study this figure had decreased to 22.1% ( $p<0.001$ ).

The utilization rate of modern contraceptive methods increased from 25.7% to 77.9% ( $p<0.001$ ). Thus, as a result of the information and education campaign, a significant proportion of women (64.5%) showed a preference for modern contraceptives.

Upon completion of the study, the distribution of values within the cluster we identified was analyzed. In the first cluster, the

proportion of women adhering to the category 'contraception use is not mandatory' decreased from 11.1% to 4.1% by the end of the study ( $p < 0.001$ ). Similar changes were observed in the second cluster, 'natural family planning methods are sufficient,' where the rate decreased from 24.4% to 9.2% ( $p < 0.001$ ).

Analysis of the third cluster – “it is advisable to use contraceptives as needed” – showed a statistically significant decrease in the proportion of women from 26.3% to 13.7% ( $p < 0.001$ ), which indicates an increase in motivation to use contraceptives.

That is, upon completion of the research work, a statistically significant improvement was noted in the frequency of cluster occurrences. By the end of the study, a reliable improvement in the distribution of women across the clusters was observed. The values of the fourth cluster (4 points) – 'if possible, use contraception consistently' – remained virtually unchanged (20.7% and 20.4%, respectively;  $p > 0.05$ ).

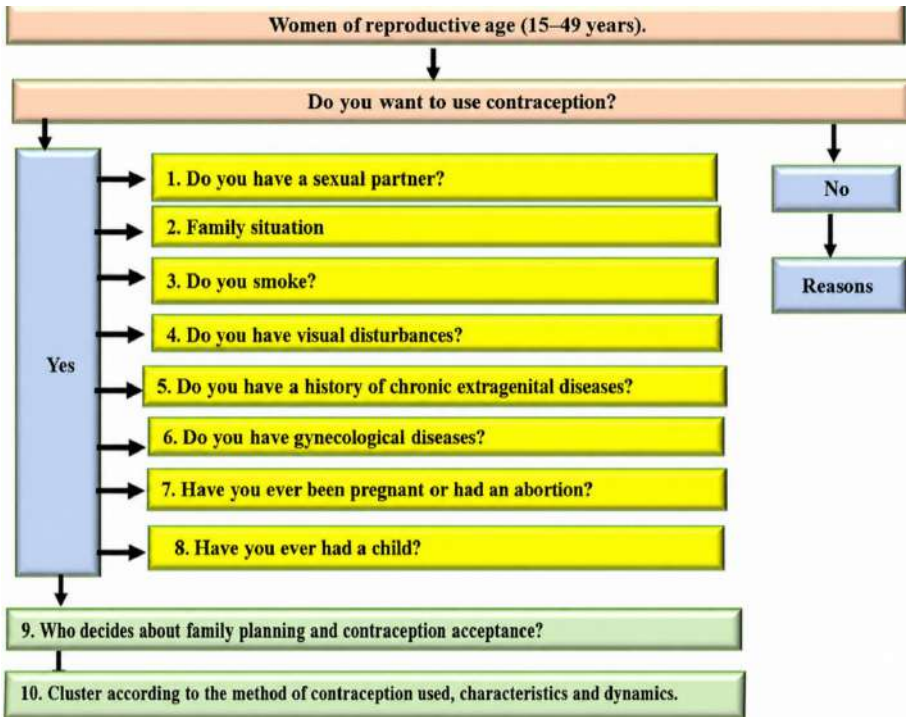
Conversely, the proportion of women in the fifth cluster (5 points) – 'it is necessary to consistently use contraception throughout the entire fertile period' – significantly increased from 17.6% to 52.5% ( $p < 0.05$ ). The mean motivation score among women increased from 3.09 to 4.18 points ( $p < 0.001$ ), indicating a high level of motivation to use contraceptive methods by the end of the study.

At the baseline stage of the study, the rate of unintended pregnancy was 47.3%, whereas upon completion of the research, this indicator decreased to 32.4% ( $p < 0.001$ ). The effectiveness of different types and usage patterns of contraceptive methods in preventing unintended pregnancy differed statistically significantly. Among women who used traditional contraceptive methods, the mean number of unintended pregnancy episodes ranged from 1.69 to 1.91 ( $p > 0.05$ ). However, when modern contraceptives were used, their frequency was much lower, varying from 0.55 to 0.77 ( $p < 0.05$ ), which is 2.19 times lower compared to traditional contraceptive methods.

The respondents noted the high effectiveness of LARC methods: following their use, an average of approximately 0.27 unintended pregnancy episodes occurred ( $p < 0.001$ ).

In the course of the study, a statistically significant decrease in the number of performed abortions was observed: at the baseline stage, the mean number of abortions per woman was 2.02, whereas by the end of the study, it had decreased to 0.73 abortions per woman ( $p < 0.001$ ).

Upon completion of the research work, a cadastral algorithm was developed to optimize and increase the efficiency of family planning efforts within the framework of women's reproductive health protection.

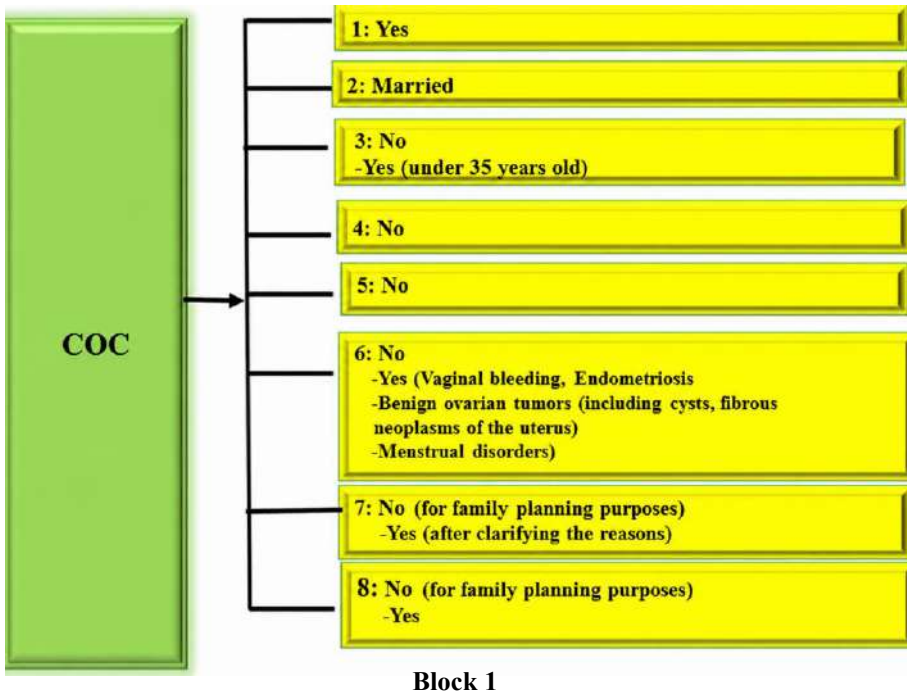


**Figure 1. A concise version of the survey algorithm for the objective assessment of women's motivation to use contraceptives.**

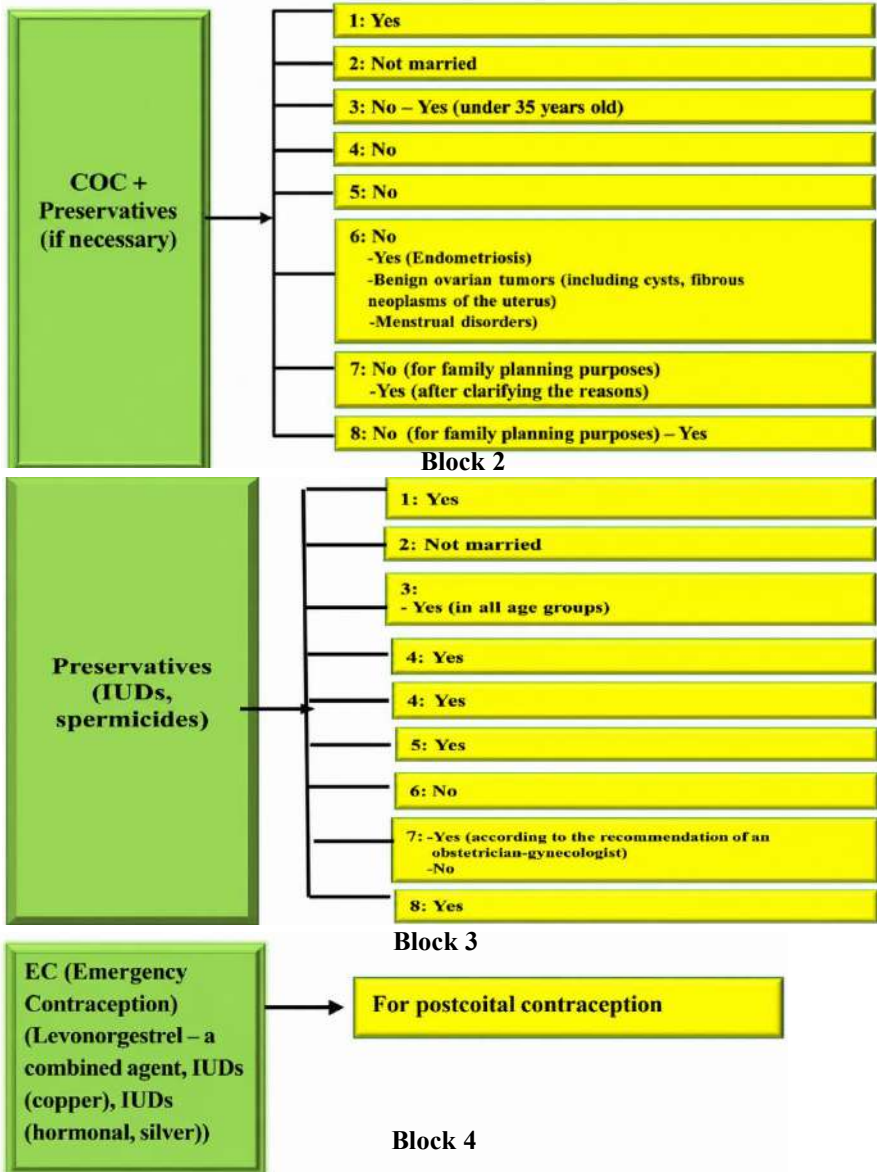
The algorithm excluded pregnant women, menopausal women, and women who had undergone a hysterectomy, as preventing unintended pregnancy was not relevant for them. The algorithm

contains highlighted yellow and green cells: the yellow cells are designed for working with the registry, while the green cells provide a general profile of the woman's contraceptive use.

The first block of the inventory is intended for individual prescription of COCs based on women's responses, the second inventory is for COCs in combination with condoms, and the third inventory provides for the use of emergency contraception along with COCs and condoms.



**Figure 2. The first blocks of the cadaster of effective contraceptive forms for individual selection within the framework of the integrated survey algorithm.**



**Figure 3. The second, third and fourth blocks of the cadaster of effective contraceptive forms for individual selection within the framework of the integrated survey algorithm.**

## RESULTS

1. The rate of contraceptive use among women stands at  $51.5 \pm 1.3\%$ . The most frequently utilized methods are natural family planning ( $24.3 \pm 1.1\%$ ), barrier methods ( $21.4 \pm 1.0\%$ ), and spermicides ( $16.9 \pm 0.9\%$ ). Contraceptives are most actively used by women aged 30–34 years ( $67.8 \pm 2.6\%$ ), whereas for women with 4 or more children, the rate decreases to  $8.1 \pm 1.0\%$ . The proportion of women not using contraceptives was higher among respondents with incomplete secondary and secondary education ( $83.5 \pm 3.5\%$  and  $65.1 \pm 2.0\%$ , respectively) compared with women with higher education ( $24.0 \pm 1.8\%$ ) ( $p < 0.001$ ). Among consistent contraceptive users, there were no respondents with incomplete secondary or general secondary education. The highest proportion of consistent contraceptive users was recorded among physicians ( $39.5 \pm 3.8\%$ ), whereas the lowest rate was observed among female support staff ( $2.7 \pm 1.9\%$ ) ( $p < 0.001$ ) [2,21].
2. Spermicidal, barrier, oral, non-oral, and emergency contraceptive methods are used significantly less frequently ( $p < 0.001$ ), with their proportions ranging from  $7.9 \pm 0.9\%$  to  $15.1 \pm 1.3\%$  ( $p < 0.001$ ). The contraceptive usage pattern was evaluated based on the 5-point cluster system we developed: 'contraceptive use is not mandatory' – 1 point ( $11.1\%$ ) ( $p < 0.001$ ); "natural methods are sufficient" – 2 points ( $24.4\%$ ) ( $p < 0.05$ ); 'it is advisable to use contraceptives as needed' – 3 points ( $26.3\%$ ) ( $p < 0.001$ ); 'if possible, use contraceptives consistently' – 4 points ( $20.7\%$ ); 'it is necessary to consistently use contraception throughout the entire fertile period' – 5 points ( $17.6\%$ ) ( $p < 0.05$ ). Twelve reasons reducing the level of contraceptive behavior among women were identified, averaging 3.26 reasons per woman. The availability of medical services is rated as low ( $26.6 \pm 1.1$  points), satisfaction stands at  $34.7 \pm 1.2$  points, and awareness is  $33.5 \pm 1.2$  points [14,15].
3. The abortion rate due to unintended pregnancy was  $2.1 \pm 0.43$  episodes per woman, while among women not using contraception, this indicator reached  $52.1 \pm 1.2\%$  of cases. The

highest abortion rate was noted among women under 20 years of age ( $46.0\pm 0.2\%$ ). Abortion has an adverse effect on the reproductive potential of women. A significant proportion of women experience psych emotional disorders (up to  $62.7\pm 2.8\%$ ) [8].

Testing of the developed measures led to an increase in the level of contraceptive use (up to  $84.5\pm 1.2\%$ ), an increase in motivation to use contraception (up to  $4.18\pm 0.17$  points), a decrease in the frequency of unintended pregnancy (up to  $0.82\pm 0.25$  episodes per woman) and abortions (up to  $0.73\pm 0.17$  episodes per woman) [3].

4. The primary reason cited for this was lack of awareness of contraception among women who did not use contraception, accounting for 45.5% of women, and 35.8% of women who rarely used it. Fear of contraceptive side effects was reported by 46.3% and 35.1% of women, respectively. Reasons such as “lack of faith in the effectiveness of contraceptives,” “lack of knowledge of the rules for using contraceptives,” and “relative high cost of contraceptives” were less significant and accounted for 39.7% among women who do not use contraceptives and 31.5% among those who rarely use contraceptives [15,20].

The remaining seven reasons – 'unpredictability of sexual intercourse', 'flaws in family planning', 'various illnesses', 'ethnic and religious prejudices', 'cohabitation with parents', 'unsatisfactory hygienic conditions', and 'lack of media advertising' – along with the aforementioned factors, were also noted in 12.0% of women who use contraception throughout the entire fertile period. Based on the conducted research, we developed an information brochure consisting of two parts: 1. Explanatory information on women's reproductive health; 2. Educational information on the benefits, nature, and usage patterns of contraceptive methods [3,11].

5. Based on the information and education campaign aimed at addressing the shortcomings in contraceptive care at women's clinics, as perceived by the women themselves, we developed a cadastral algorithm. The effectiveness of this algorithm lies in

conducting an individual analysis of women's motivation, the specifics of their contraceptive use (including the pattern and nature of application), as well as their sexual behavior and reproductive health status. The registry we developed provides an opportunity for an individual, effective, and optimal selection of contraceptive methods [23].

## **PRACTICAL RECOMMENDATIONS**

1. To segment women based on their level of awareness and motivation to use contraception, it is advisable to use the cluster model we developed with a five-point assessment system.
2. The algorithm we propose allows for the rapid and objective identification of contraceptive use status, risk factors, and predisposing circumstances for their use among women seeking antenatal care. It is also advisable to recommend the use of this algorithm when deciding on individual selection and use of contraceptives based on evidence-based medicine criteria. Its implementation could contribute to improving women's healthcare services, strengthening contraceptive screening, and addressing existing shortcomings.
3. Wide application of the information brochure we developed is recommended for the public, social, and hygienic education of women across various age groups.

## LIST OF PUBLISHED SCIENTIFIC PAPERS ON THE TOPIC OF THE DISSERTATION

1. Чобанов, Р.Э., Габибова, К.Г. Особенности контрацептивного поведения женщин и социально-гигиенические меры по его коррекции // Tibb elmləri doktoru Ə.T.Ağayevin anadan olmasının 70 illiyinə həsr edilmiş elmi konfransın materialları “İctimai sağlamlıq və səhiyyə” – Bakı: – 2014, – s. 270-275
2. Габибова, К.Г. Состояние использования средств контрацепции женщинами репродуктивного возраста // – Полтава: Світ медицини та біології, – 2015, №4(53), – с. 21-25
3. Габибова, К.Г. Оценка контрацептивного поведения женщин фертильного периода и подходы по его коррекции // – Полтава: Вісник проблем біології і медицини, – 2016, Вип 2, Том 3 (130), – с.123-127 [8]
4. Габибова, К.Г. Состояние приверженности к использованию средств контрацепции женщинами репродуктивного возраста // Труды-Национального научно-исследовательского института медицинской профилактики имени В. Ахундова, – Баку, – 2016, – с. 232-236
5. Gabibova, K.G. The influence of education levels and medical knowledge on nature of contraceptive behaviour of women of 27 reproductive age // Young doctors of Azerbaijan, Medical Review – Baku, Azerbaijan – 2016, V.3, – p. 93-94
6. Gabibova, K.G. The demand for contraceptives by women of reproductive age // XVIII international scientific and practical conference “European research: Innovation in science, education and technology”, - London. United Kingdom, – 28-29 July – 2016, №7 (18), – p. 87-88
7. Габибова, К.Г. Усовершенствование регулируемости рождаемости и планирования семьи // Всеукраїнська Науково Практична Конференція «Медична Наука В Практику Охорони Здоров'я». – Полтава, – 9 грудня – 2016 року, – с. 64-65

8. Габибова, К.Г., Агаев, А.А. Роль контрацептивов в эффективном планировании семьи // – Bakı: Azərbaycan tibb jurnalı, – 2017. №4, – s. 94-99.
9. Габибова, К.Г. Влияние уровня семейно-брачного статуса на востребованность средств контрацепции женщинами репродуктивного возраста // – Bakı: Təbabətin aktual problemləri, – 2017, – s. 173
10. Габибова, К.Г., Джаббарова, Н.Р. Особенности контрацептивного поведения женщин г. Баку // Əziz Əliyevin anadan olmasının 120 illik yubileyinə həsr olunmuş ATU-da keçirilən elmi-konfransın materialları, görkəmli dövlət və elm xadiminə həsr olunmuş xatirələr. – Bakı, – 2017, – s. 506-507
11. Габибова, К.Г. Коррекция контрацептивного поведения женщин и ее роль в предотвращении нежелательной беременности // – Казань: Казанский медицинский журнал, – 2018. ХСІХ, Том I, – с. 127-131
12. Габибова, К.Г. Востребованность женщинами средств контрацепции в зависимости от материального состояния семьи // – Bakı: Azərbaycan təbabətinin müasir nailiyyətləri, – 2018, №3, – s. 101-105
13. Габибова, К.Г. Эффективность средств контрацепции в предотвращении нежеланной беременности // Матеріали V Всеукраїнської наукової-конференції студентів та молодих 28 вчених з фізіології з міжнародною участю, – Харків –16 травил, 2018 року, – с. 38-39
14. Габибова, К.Г. Мотивированность женщин по коррекции контрацептивного поведения и ее кластерная оценка // – Bakı: Sağlamlıq, – 2019. №2, – s. 56-62
15. Габибова, К.Г. Лифтиев, Р.Б. Особенности контрацептивного поведения женщин и значимость его коррекции в эффективном планировании семьи // – Bakı: Azərbaycan təbabətinin müasir nailiyyətləri, – 2021. №3, – s. 46-52.
16. Габибова, К.Г., Джаббарова Н.Р. Изучение контрацептивного поведения женщин в возрастном аспекте // – Bakı: Azərbaycan təbabətinin müasir nailiyyətləri, – 2022. № 4, – s. 185-188.

17. Габибова, К.Г., Джаббарова, Н.Р., Джафарова, А.Г. Профилактика абортов путем использования средств контрацепции // – Baku, Medical Review, – 2024. 8, – с. 127-128
18. Габибова К.Г., Сулейманлы, Г.К Роль женской контрацепции в повышение эффективности в планировании семьи // Əzəm Təyyar oğlu Ağayevin 80 illiyinə həsr olunmuş elmi-praktik konfrans. – Bakı, – 2025, – с. 43-45
19. Габибова, К.Г. Повышение мотивированности женщин по использованию средств контрацепции. Методические рекомендации. Баку, – 2024, – 45 с.
20. Габибова, К.Г. Женская контрацепция как эффективное средство планирования семьи и сохранения репродуктивного здоровья женщин // – Минск: Вопросы организации и информатизации здравоохранения, – 2024. № 4, – с. 89-94
21. Габибова, К.Г. Отношение городских женщин к противозачаточным средствам: социально-гигиенический подход // – Минск: Медицинские новости Минск, – 2025. №7, – с. 78
22. Nəbibova, K., Cabbarova, N., Nəgıyeva, R., Səfərova, A. Azərbaycan Tıp Universiteti Başkent kadinlarının kontraseptif davranışı: sosial-hiyenik araştırma ve müdahale modeli // Karabakh V. International congress of scientific research, – 2025. vol 2, – s. 23-25
23. Габибова, К.Г., Бадалова, А.О., Тагиева, А.А., Джаббарова, Н.Р. Повышение эффективности использования контрацептивных средств через оптимизацию организационных мероприятий // Müasir ginekologiya və perinatologiyanın aktual məsələləri, – 2026. N1, s. 62-67

## LIST OF ABBREVIATIONS

<b>CM</b>	– contraceptive methods
<b>COCs</b>	– combined oral contraceptives
<b>EC</b>	–Emergency Contraception
<b>LARC</b>	– Long- Acting Reversible Contraception
<b>MM</b>	– Maternal mortality
<b>WHQ</b>	– Women’s Health Questionnaire
<b>WRH</b>	– Women’s Reproductive Health

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