Journal of Health Development
e2663-1776

Original article

Determining consumer needs and preferences for personalized diagnostics

Irina Kadyrova [1], Dmitriy Klyuyev [2], Kadisha Ospanova [3], Tatiana Bashirova [4], Karina Nukeshtayeva [5*]

Received: February 24, 2026
Revised: April 03, 2026
Accepted: April 18, 2026
Published: April 30, 2026

Citation: Irina Kadyrova, Dmitriy Klyuyev, Kadisha Ospanova, Tatiana Bashirova, Karina Nukeshtayeva. Determining consumer needs and preferences for personalized diagnostics. J Health Dev. 2026, 61 (2), jhd064. https://doi.org/10.32921/2663-1776-2026-61-2-jhd064

This work is licensed under a Creative Commons Attribution 4.0 International License

[1] Leading Researcher, Research Laboratory, Institute of Life Sciences, Associate Professor, Karaganda Medical University, Karaganda, Kazakhstan. E-mail: ikadyrova@qmu.kz
[2] Director, Institute of Life Sciences, Karaganda Medical University, Karaganda, Kazakhstan. E-mail: klyuev@qmu.kz
[3] Professor, Karaganda Medical University, Karaganda, Kazakhstan. E-mail: ospanova59@mail.ru
[4] Director, City Primary Health Care Center, Karaganda, Kazakhstan. E-mail: gcpmsp@mail.ru
[5] Assistant professor, School of Public Health Karaganda Medical University, Karaganda, Kazakhstan. E-mail: nukeshtaeva@qmu.kz

*** Corresponding author**: nukeshtaeva@qmu.kz

Abstract

In an era of rapidly advancing medical technologies, personalized diagnostics offer promising opportunities for improving disease prevention and management. This study explores patient preferences and systemic readiness for the implementation of individualized diagnostic approaches, with a focus on hereditary colorectal cancer.

Methods. A pilot genetic testing project integrated with questionnaire-based assessment was conducted among 113 participants from the general population. A panel of 184 single nucleotide polymorphisms associated with colorectal cancer susceptibility was analyzed.

Results. Among 113 respondents, only 3.5% had in-depth knowledge of personalized diagnostics, with accuracy, affordability, and accessibility cited as key factors. The majority of users were women aged 36–45, mostly from Almaty and Karaganda. While 71.4% were open to online consultations, cost remained a barrier—50% were willing to pay over 20.000 KZT. Among 133 professionals, only 8.7% had strong expertise, and just 17.4% used such diagnostics in practice, though 62.3% saw their high potential. Four genetic polymorphisms were significantly associated with colorectal cancer susceptibility within the analyzed cohort. The rs4779584 (T/T) and rs16892766 (C/C) genotypes increased the risk by 1.7 - and 4 - fold, respectively.

Conclusions. Personalized diagnostics have the potential to completely transform how diseases are managed and prevented. However, to enable them widespread acceptance, it is essential to overcome obstacles related to economics and education. When it comes to guaranteeing the sustainable expansion and accessibility of customized medicine, it is vital to take a comprehensive and integrative strategy that combines education, affordability, and regulatory support.

Keywords: personalized diagnostics, genetic markers, colorectal cancer, healthcare accessibility, medical marketing strategies.

1. Introduction

The field of personalized medicine and diagnostics is at the forefront of contemporary healthcare, with the objective of improving the precision, specificity, and efficiency of medical decision-making. Through the examination of an individual's genetic, biochemical, and physiological features, customized diagnostics make it possible to diagnose diseases at an earlier stage and enable the creation of therapy methods that are specifically tailored to the particular characteristics of each patient.

This strategy is especially useful in the management of chronic illnesses, cancer, and genetically predisposed ailments, which are areas in which standard diagnostic approaches frequently lack adequate accuracy. According to recent research, more than sixty percent of patients have shown an interest in receiving individualized medical treatments, which highlights the considerable demand that exists in this sector [1].

Customized medicine tackles greater healthcare concerns, such as the increasing frequency of chronic diseases, the aging of populations, and the burden that is being placed on healthcare systems. These difficulties are in addition to the benefits that customized medicine provides to individuals. Personalized diagnostics help to more effective resource allocation, which in turn reduces total treatment costs. This comes about as a result of improved diagnosis accuracy and the ability to initiate early intervention. As an illustration, the early identification of disease risk by tailored diagnostics makes it possible to take preventative measures at the appropriate time, which in turn slows the course of the disease and reduces the financial burdens placed on healthcare systems [2].

It is necessary to take a strategic and patient-centered strategy in order to successfully promote individualized medical services in today's highly competitive healthcare industry. For the purpose of increasing access to these services, it is essential to have a solid understanding of the requirements of patients and to connect marketing tactics with their expectations. Patients who are looking for individualized diagnostics want specific communication channels that clearly explain the unique value of these services. Traditional marketing tactics are becoming more insufficient as a result of this demand.

As genetic sequencing, big data analytics, and precision medicine continue to make significant strides forward, healthcare providers are being forced to modify their marketing tactics in order to accommodate the ever-changing tastes and requirements of their patients [3]. The customized diagnostics industry provides a complicated problem that requires a holistic strategy that integrates in-depth target audience analysis and creative engagement tactics [4]. In order to successfully attract and keep clients, it is necessary to take this approach.

The findings of this study are therefore extremely pertinent, since the successful promotion of individualized diagnostics not only makes it easier for breakthrough medical technology to be implemented, but it also increases the number of people who have access to modern diagnostic tools. As a result of the fact that a well-structured marketing strategy has the potential to play a crucial role in enhancing public health outcomes, lowering treatment durations, and optimizing healthcare costs, this research is both significant and timely.

Within the context of primary healthcare, the purpose of this study is to take into consideration the requirements and preferences of patients with relation to individualized diagnostics.

2. Materials and methods

This cross-sectional study was conducted in the cities of Almaty and Karaganda. Data on customer needs and preferences in the field of personalized diagnostics were collected using both qualitative and quantitative methods. A pilot project was conducted to detect single nucleotide polymorphisms for early detection of hereditary colorectal cancer among 113 survey respondents, demonstrating the capabilities of personalized medicine. In addition, surveys were conducted among medical personnel (133 respondents) and heads of medical institutions (5 respondents).

A pilot project was conducted among the 113 survey participants from the general population as a model of personalized diagnostics implementation. Peripheral venous blood samples were collected from participants for genomic DNA extraction and subsequent SNP genotyping associated with colorectal cancer susceptibility. The genetic screening component was integrated into the questionnaire-based assessment to evaluate public awareness, perception, and acceptance of genetic testing services.

Genotyping was performed at the Research Laboratory of the NJSC Karaganda Medical University using TaqMan™ Assay reagents (Applied Biosystems, USA) on the QuantStudio™ 12K Flex OpenArray Real-Time PCR System (Applied Biosystems, USA). Genomic DNA was extracted using the PureLink™ kit (Thermo Fisher Scientific, USA) according to the manufacturer's protocol. DNA purity was assessed prior to analysis, and DNA concentration was normalized to 50 ng/μL before genotyping. A panel of 184 single nucleotide polymorphisms associated with colorectal cancer susceptibility was analyzed.

https://doi.org/10.32921/2663-1776-2026-61-2-jhd064

The questionnaires were developed by the authors of the study, covering key factors such as diagnostic accuracy, accessibility, cost, and patient satisfaction. The questionnaires addressed aspects including awareness of personalized diagnostics, attitudes toward medical innovations, preferences for diagnostic procedures, and requirements for service availability and pricing.

The study examined factors influencing patient preferences for genetic testing services: accuracy and reliability; cost; accessibility and convenience; ease of sample collection, availability of remote sample collection; awareness and trust; and personalized recommendations.

A pilot project was conducted to detect single nucleotide polymorphisms for early detection of hereditary colorectal cancer in 113 participants in this study.

The study was conducted in compliance with ethical standards, and approval was obtained from the Ethics Committee of Karaganda Medical University (No. 60 dated 03.09.2024).

For data analysis, theoretical analysis, questionnaire methods, and comparative analysis were applied, along with statistical analysis using IBM SPSS 26. Specifically, χ^2 tests and Cramer's V coefficient were used to establish relationships between categorical data. This enabled the identification of statistically significant associations and a deeper understanding of customer needs in the field of personalized medicine.

3. Results

After conducting demographic research, it was discovered that the primary customer base for tailored diagnostics is comprised of persons between the ages of 36 and 45 (46.4%), with women constituting a significant majority (78.6%). When it comes to geography, the biggest concentration of respondents resided in major metropolitan areas, including Almaty (57.1% of respondents) and Karaganda (35.7% of respondents), indicating that these cities are important markets for the growth of services.

Results of the survey of participants. The results revealed a generally moderate level of awareness among respondents about personalized diagnostics (Table 1). Most participants had only a basic understanding of the field, while high levels of awareness were relatively rare. However, a significant portion of respondents remained insufficiently aware or completely unfamiliar with the capabilities of personalized diagnostics.

Digital communication channels served as the primary sources of information. Online resources and social media played the most important role in disseminating information, while medical specialists and personal networks were mentioned less frequently.

Overall, respondents' attitudes toward personalized diagnostics were predominantly positive. Most participants rated such services as important or highly important, indicating public interest in the development of personalized approaches in healthcare and potential demand for these services.

A moderate association was identified between awareness levels and educational attainment (V=0.414, p<0.001), with individuals holding advanced degrees displaying higher familiarity with the process of genetic testing.

Table 1 – Awareness and attitudes toward personalized diagnostics

Indicator	n	%
Level of awareness		
Very familiar	4	3.5
Familiar	6	5.3
Familiar in general terms	57	50.4
Slightly familiar	28	24.8
Not familiar at all	18	15.9
Primary source of information		
Internet	45	39.8
Social media	16	14.2
Physician	10	8.8
Friends/family	34	30.1
Work	8	7.1
Importance of personalized diagnostics		
Extremely important	12	10.6
Very important	49	43.4
Important	39	34.5
Not very important	13	11.5

A moderate association was identified between awareness levels and educational attainment (V=0.414, p<0.001), with individuals holding advanced degrees displaying higher familiarity with the process of genetic testing.

The most popular diagnostic categories were medical and oncological screenings, with each accounting for 25% of the responses. A significant association was found between gender and diagnostic preferences (V=0.618, p<0.001), with women showing a higher preference for oncological and medical screenings, while men exhibited stronger interest in

diagnostics related to chronic diseases. Personalized diagnostics were seen as significant by 53.6% of respondents, with 7.1% considering them highly essential (Figure 1).

Regarding consultation preferences, 67.9% of respondents indicated they would prefer in-person clinic visits, while 71.4% were open to online consultations for result interpretation. A hybrid model combining in-clinic consultations with online platforms could provide greater convenience.

Table 2 – Financial preferences and key decision-making factors

Indicator	n	%
Willingness to pay for personalized diagnostics		
Up to 5,000 KZT	6	5.3
5,000–10,000 KZT	12	10.6
10,000–20,000 KZT	54	47.8
More than 20,000 KZT	41	36.3
Most important factors influencing service choice*		
Accuracy of results	92	81.4
Cost	48	42.5
Physician recommendations	41	36.3
Clinic reputation	29	25.7
Convenience of appointment scheduling	17	15.0

**Multiple answers were allowed*

An analysis of financial preferences revealed that most respondents were willing to consider personalized diagnostic services in the mid- to high-price range. Participants most frequently chose a price range of 10,000 to 20,000 tenge (47.8%), while more than a third of respondents (36.3%) were willing to spend more than 20,000 tenge. Only a small proportion of respondents focused on the minimum price range, which may indicate the perception of personalized diagnostics as a valuable and meaningful medical service.

Among the factors influencing the choice of diagnostic services, the absolute dominance was demonstrated by the accuracy of results, cited by 81.4% of respondents. Cost (42.5%) and doctor recommendations (36.3%) were also significant. At the same time, the clinic's reputation and ease of appointment played a less significant, albeit significant, role in the decision-making process (Table 2).

A correlation analysis (Cramer's V values) revealed the following insights:

A high association between gender and diagnostic choices (V=0.591), with women more likely to select cancer and medical screenings, and men more likely to prioritize chronic disease diagnostics.

A moderate association between education level and awareness of personalized diagnostics (V=0.414, p<0.001), with individuals with higher education showing greater familiarity with these technologies.

A significant correlation between education and sources of information (V=0.489), with individuals with advanced degrees more likely to obtain information from healthcare professionals, while those with general university degrees preferred digital platforms.

A strong association between employment status and awareness of personalized diagnostics (V=0.466, p<0.001), with employed individuals demonstrating greater familiarity with the subject. Employed respondents also showed a stronger preference for screening services, whereas unemployed individuals favored genetic testing.

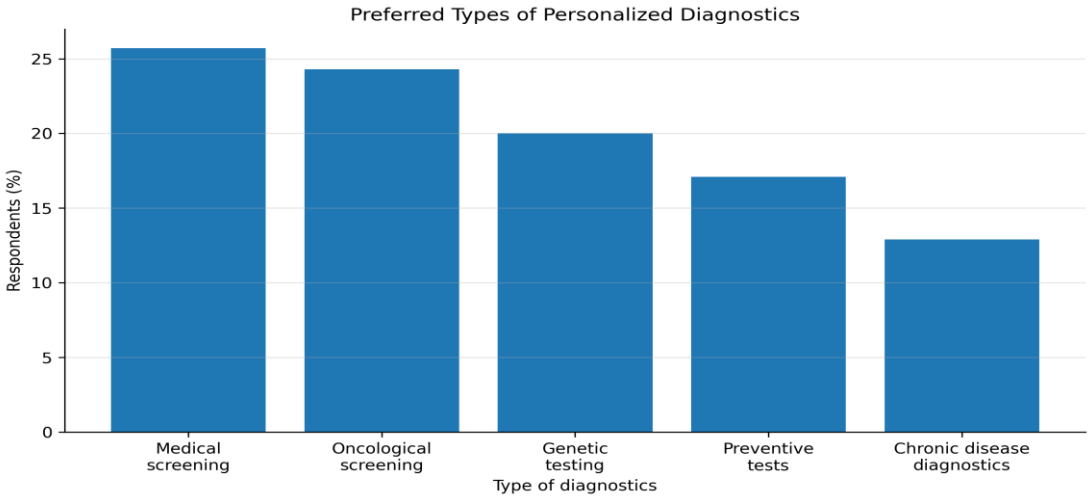

Figure 1 – Preferred type of personalized diagnostics

https://doi.org/10.32921/2663-1776-2026-61-2-jhd064

Survey results among healthcare professionals. The study primarily involved practicing physicians, who comprised more than half of the total sample (54.1%). A significant proportion of respondents were also researchers (33.8%), while specialists combining clinical and scientific activities, as well as healthcare administrators, were significantly less common.

Most participants had significant professional experience in the medical field. More than half of respondents (54.1%) had worked in the healthcare system for more than 10 years, indicating a high level of professional maturity among the sample. Specialists with 1-5 years of experience accounted for 24.1%, while respondents with 5-10 years of experience accounted for 21.8%.

Despite the high professional level of the sample, in-depth knowledge of personalized diagnostics remained limited. Most specialists (54.9%) were only vaguely familiar with the concept, while only 10.5% reported a high level of knowledge and practical use of these approaches. This may indicate a persistent gap between the theoretical understanding of personalized medicine and its practical integration into the healthcare system.

An analysis of information sources revealed the dominant role of digital and professional educational resources. Specialists most frequently used online resources (75.9%), medical journals (61.7%), and professional conferences (55.6%). A significant proportion of respondents also obtained information through colleagues, highlighting the importance of professional interaction in disseminating knowledge about personalized diagnostics.

Most participants associated the implementation of personalized diagnostics primarily with improved clinical outcomes. Respondents most frequently noted improved treatment outcomes (70.7%) and increased diagnostic accuracy (66.2%). Significantly less frequently, specialists associated these technologies with reduced treatment costs, which may reflect lingering doubts about the cost-effectiveness of personalized approaches.

At the same time, most respondents believed that patients are insufficiently informed about the possibilities of personalized diagnostics. This opinion was shared by 63.2% of study participants, while only 11.2% believed that patients are sufficiently informed. The results indicate the need for expanded public education and increased patient awareness of modern diagnostic technologies.

Among the main obstacles to the implementation of personalized diagnostics, specialists primarily identified the high cost of services for patients (82.0%), a lack of qualified personnel (68.4%), and limited technical resources (55.6%). Furthermore, significant barriers included the lack of a regulatory framework and insufficient patient demand (Figure 2).

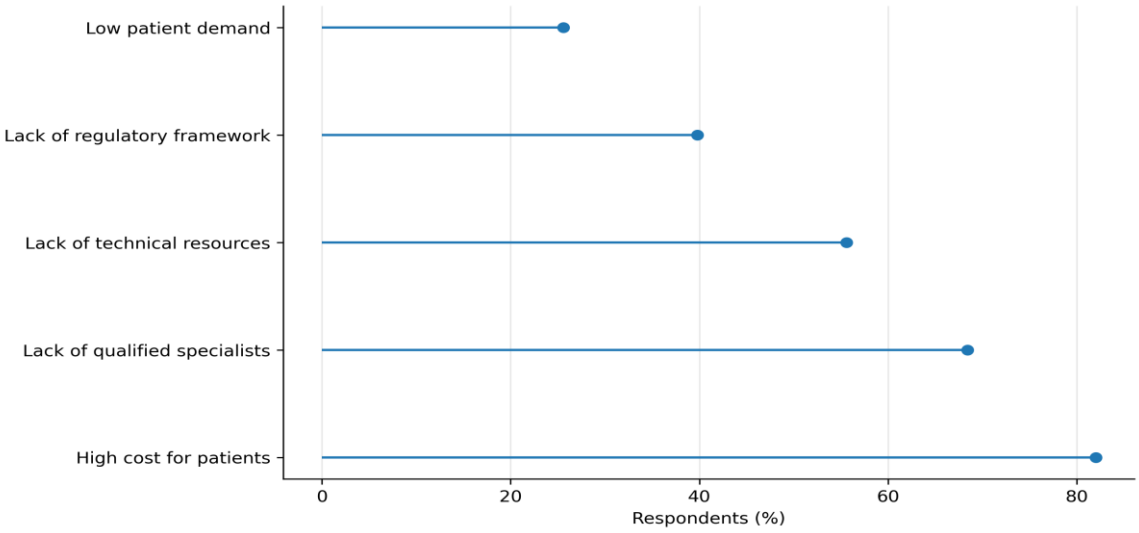

Figure 2 – Main barriers to implementation of personalized diagnostics

An assessment of practical application revealed that only 21.1% of respondents regularly use personalized diagnostic approaches in their professional activities, while half of the specialists use them only occasionally. Almost a quarter of the participants planned to implement these methods in the future. These results indicate a gradual, but still limited, adoption of personalized diagnostics in clinical practice.

Specialists considered genetic testing (57.1%) and molecular laboratory diagnostics (51.1%) to be the most promising areas. Microbiome analysis and biomarker

tests were mentioned significantly less frequently. Among the positive effects of personalized diagnostics, respondents most often noted increased diagnostic accuracy (54.9%) and accelerated treatment (30.8%). However, some participants did not observe significant changes, which may be due to limited practical experience with these technologies.

Assessment of the cost-effectiveness of personalized diagnostics was mixed. A significant portion of specialists found it difficult to provide a definitive assessment (43.6%), while 35.3% considered these approaches to be rather effective. Only a small proportion of respondents considered them to be completely cost-effective. This may reflect the insufficient integration of personalized diagnostics into existing healthcare financing models.

Analysis of genetic markers. The purpose of this study was to identify genetic markers associated with colorectal cancer susceptibility. Statistical analysis of genotype frequencies identified four polymorphisms significantly associated with colorectal cancer susceptibility within the analyzed cohort. Among the polymorphisms that were examined, there were four that displayed statistically significant variations in frequency across the research groups. These were rs36053993, rs4779584, rs16892766, and rs3802842. Notably, the rs4779584 polymorphism was shown to be associated with an increased risk of colorectal cancer (CRC). Individuals who had the C/T genotype had a 1.23-fold greater probability of acquiring the illness, whilst those who carried the T/T genotype faced a 1.7-fold increased risk. Similar to the previous example, the rs16892766 polymorphism was shown to have a high association with the susceptibility to colorectal cancer, particularly in homozygous C/C carriers, whose risk was nearly quadrupled. In addition, the presence of the A allele in the rs3802842 polymorphism was shown to be associated with a 17% greater probability of developing colorectal cancer. The significance of genetic indicators in the diagnosis and risk assessment of colorectal cancer is brought to light by these findings.

4. Discussion

The study identified factors influencing patient preferences for genetic testing services. The most important factors influencing patient preferences for genetic testing services were:

1. Accuracy and reliability – Patients prioritized tests with high clinical validity and reproducibility;
2. Cost considerations – While recognizing the value of genetic testing, affordability remained a decisive factor;
3. Accessibility and convenience – Ease of sample collection, the availability of remote submission options, and rapid result turnaround were significant concerns;
4. Awareness and trust – The reputation and credibility of testing providers played a crucial role in decision-making;
5. Personalized recommendations – Patients expected not only test results but also actionable insights for practical application in daily life.

The results of this study set the framework for the development of genetic tests that not only make it possible to diagnose diseases at an earlier stage but also provide individuals with important risk assessments. It is possible for healthcare practitioners to improve treatment monitoring and assist early diagnosis by adding these indicators into diagnostic and prognosis tools [5-7].

It is vital to integrate marketing and outreach tactics with the requirements and interests of key groups in order to increase the acceptability of individualized diagnostic services across a larger audience. The women of middle age who live in large metropolitan areas are a particularly potential target demographic because of their increased level of interaction with digital platforms such as social media and online health groups. A digital marketing strategy that is personalized to the audience's needs may greatly broaden the audience's reach and boost the market positioning [8–10].

Education is a crucial component that plays a significant role in developing trust in individualized diagnoses and growing awareness of the field. It is advised to proceed with a dual-tier instructional strategy:

Individuals with academic or medical backgrounds who are looking for precise information might benefit from content that is well researched and scientifically rigorous.

Materials that have been simplified and made available to the general population, with the goal of assuring greater comprehension and involvement.

In addition to increasing the approachability of individualized diagnoses, this distinction will bring about an increase in trust. Furthermore, the implementation of a segmented service model, which involves providing specific diagnostic programs for both men and women, would further enhance the relevance and attraction of the service.

In light of the rapid pace at which modern healthcare is delivered, a hybrid service model that combines in-person clinic appointments with follow-up online consultations provides a significant benefit. It is

especially beneficial for those living in urban regions to have this structure since it enhances convenience and time efficiency [13].

A pricing plan that is well-designed should be able to accommodate a variety of market groups. As a result of offering tiered service packages, which range from solutions that are kind to one's wallet to premium diagnostic plans, these services will become more accessible. The confidence and participation of consumers will be further strengthened by the implementation of transparent pricing and flexible payment options [14,15].

Companies should emphasize digital engagement methods such as the following in order to increase the awareness of personalized diagnostics and the adoption of these diagnostics:

1. By publishing informative information, strengthening our presence on social media.
2. Webinars involve online question and answer sessions for instructional purposes.
3. Developing a partnership with medical professionals and institutions in order to strengthen one's reputation.
4. Both the cultivation of a loyal audience and the acquisition of new customers will be facilitated by these approaches [16,17].

In addition, loyalty programs have the potential to play a significant part in the retention of customers. For encouraging long-term engagement and increasing service consumption, incentives such as discounts for returning customers, special offers for older citizens, and family package deals can be particularly effective.

The broad use of customized diagnostics is hampered by two fundamental hurdles, despite the fact that these diagnostic instruments offer considerable clinical benefits:

There are a lot of people who are unable to obtain genetic testing technologies because of the high cost of these technologies.

Inadequate specialist training - The incorporation of these diagnostics into ordinary medical practice is hindered by a shortage of experts who have received necessary training.

A multi-pronged approach, including the following, is required in order to address these difficulties.

Through the implementation of continuing education programs, increased professional training in tailored diagnostics is being implemented.

Improving efficiency and investigating alternative finance options in order to bring down the expenses of providing services.

Increasing the effectiveness of regulatory frameworks to make market entrance and affordability easier.

Strong connections between socio-demographic characteristics and diagnostic preferences are highlighted by statistical analysis (for example, high Cramér's V values). These relationships are particularly evident with regard to job status and the need for diagnostic services. These insights have the potential to inspire marketing and outreach tactics that are more accurate, allowing for more successful targeting of certain demographic groups [18,19].

Limitations. This study has several limitations that should be considered when interpreting the results. First, the study population consisted predominantly of women and residents of large urban centers, particularly Almaty and Karaganda, which may limit the applicability of the results to rural populations. Second, a cross-sectional study does not allow for an assessment of causal relationships between sociodemographic factors and attitudes toward personalized diagnostics. Awareness and perceptions of personalized medicine were assessed using self-assessment questionnaires, which may be influenced by response bias and subjective interpretation of questions. The pilot genetic analysis was conducted on a relatively small sample of participants, which may limit the statistical power of the results and the broader applicability of the identified associations between genetic polymorphisms and colorectal cancer risk. Furthermore, the study focused only on individual SNP markers associated with colorectal cancer and did not include comprehensive genomic profiling.

5. Conclusions

This study reveals growing awareness and interest in personalized diagnostics, though there are significant knowledge gaps. While over half of respondents see personalized diagnostics as important, with a preference for oncological and medical screenings, affordability remains a critical barrier. Gender, education, and employment status influence familiarity and diagnostic preferences. Many are open to online consultations, suggesting potential for hybrid service models.

In the professional community, while there is moderate familiarity with personalized diagnostics, more training is needed for broader integration into clinical practice. Genetic testing and molecular diagnostics are viewed as promising areas, requiring further research and development.

Sustainable progress in personalized medicine relies on investment from both public and commercial sectors. Focusing on education, affordability, and regulatory support can broaden access to personalized

diagnostics and improve health outcomes. A comprehensive approach combining innovation and strategic execution is key to integrating personalized diagnostics into routine healthcare.

Conflict of interests. Authors must declare the absence of a conflict of interest.

Acknowledgements. Not applicable.

Funding. There are no external sources for this research.

Author contributions. Conceptualisation – I.K.; methodology – D.K.; examination– K.O.; formal analysis– T.B., K.N. and I.K.; writing (original draft preparation) – D.K.; writing (review and edition) – K.N.

All authors have read, agreed to release version of a manuscript and signed the Author's right transfer form.

Artificial Intelligence Disclosure. The authors used Grammarly to refine the grammar and language of the manuscript. The final content was reviewed and approved by the authors, who maintain full responsibility for the results.

References

1. Lopatin, Z. V., Kurbanbayeva, D. F., Meltser, A. V., Shmatko, A. D., Erastova, N. V., & Kolomenskaya, T. V. (2022). Analysis of the needs of medical organizations in employees with the competence to use end-to-end digital technologies. Medical Education and Professional Development, 13(2), 91–102. https://doi.org/10.33029/2220-8453-2022-13-2-91-102
2. Tavberidze, K. Yu. (2023). Tsifrovoy marketing v sfere zdravookhraneniya (Digital marketing in healthcare) [in Russian]. Vestnik nauki, 5(62), 18–26. https://doi.org/10.56685/18120555
3. Davitadze, A. P. (2024). Modeling consumer choice between public and private health care in Russia. Journal of Applied Economic Research, 23(2), 499–521. https://doi.org/10.15826/VESTNIK.2024.23.2.020
4. Sintani, L., Ridwan, R., Kadeni, K., Savitri, S., & Ahsan, M. (2023). Understanding marketing strategy and value creation in the era of business competition. International Journal of Business, Economics and Management, 6(1), 69–77. https://doi.org/10.21744/IJBEM.V6N1.2087
5. Kudryavtseva, A. V., Lipatova, A. V., Zaretsky, A. R., Moskalev, A. A., Fedorova, M. S., Rasskazova, A. S., Shibukhova, G. A., Snezhkina, A. V., Kaprin, A. D., Alekseev, B. Y., Dmitriev, A. A., & Krasnov, G. S. (2016). Important molecular genetic markers of colorectal cancer. Oncotarget, 7(33), 53959–53983. https://doi.org/10.18632/oncotarget.9796
6. Szuman, M., Kazimierczyk, M., Grot, N., Kaczmarek-Ryś, M., Kryszczyńska, A., Dziechciowska, I., ... & Pławski, A. (2025). Molecular markers associated with elevated colorectal cancer risk: a mini review. Hereditary Cancer in Clinical Practice, 23(1), 24. https://doi.org/10.1186/s13053-025-00319-6
7. Radanova, M., Levkova, M., Mihaylova, G., Manev, R., Maneva, M., Hadgiev, R., ... & Donev, I. (2022). Single nucleotide polymorphisms in microrna genes and colorectal cancer risk and prognosis. Biomedicines, 10(1), 156. https://doi.org/10.3390/biomedicines10010156
8. Oniani, D., Sreekumar, S., DeAlmeida, R., DeAlmeida, D., Hui, V., Lee, Y. J., Zhang, Y., Zhou, L., & Wang, Y. (2023). Toward improving health literacy in patient education materials with neural machine translation models. AMIA Joint Summits on Translational Science Proceedings, 2023, 418–426. https://doi.org/10.48550/arXiv.2209.06723
9. Aksypnova, E. I., & Zudin, A. B. (2020). Marketing of healthcare organizations: Tools for attracting and retaining patients. Avicenna Bulletin, 22(4), 548–552. https://doi.org/10.25005/2074-0581-2020-22-4-548-552
10. Marketing in industries and fields of activity: Textbook. Website. [Cited 1 April 2026]. Available from URL: https://dokumen.pub/da6de830cf7d1c59d53d834e5b4f5507.html
11. Karakus, I. S., Strechen, I., Gupta, A., Nalaie, K., Chen, C. L., Hassett, L. C., & Barwise, A. K. (2025). Bridging language gaps in healthcare: a systematic review of the practical implementation of neural machine translation technologies in clinical settings. Journal of the American Medical Informatics Association, 32(11), 1756-1766. https://doi.org/10.1093/jamia/ocaf150
12. Stefanicka-Wojtas, D., & Kurpas, D. (2023). Personalised medicine—implementation to the healthcare system in Europe (focus group discussions). Journal of personalized medicine, 13(3), 380. https://doi.org/10.3390/jpm13030380
13. Cinti, C., Trivella, M. G., Joulie, M., Ayoub, H., & Frenzel, M. (2024). The roadmap toward personalized medicine: challenges and opportunities. Journal of Personalized Medicine, 14(6), 546. https://doi.org/10.3390/jpm14060546

14. Aguiar, P. N., Matsas, S., Dienstmann, R., & Ferreira, C. G. (2023). Challenges and opportunities in building a health economic framework for personalized medicine in oncology. Personalized Medicine, 20(5), 453-460. https://doi.org/10.2217/pme-2022-0008

15. Cui, Z., Liu, X., Feng, Z., & Huang, Z. (2024). Regulated pricing decisions and diagnostic test choices in personalized medicine: Navigating the implications within legal frameworks. Risk Management and Healthcare Policy, 2763-2776. https://doi.org/10.2147/RMHP.S475929

16. Singhal, A., Neveditsin, N., Tanveer, H., & Mago, V. (2024). Toward fairness, accountability, transparency, and ethics in AI for social media and health care: scoping review. JMIR medical informatics, 12(1), e50048. https://doi.org/10.2196/50048

17. De Keyzer, F., Buzeta, C., & Lopes, A. I. (2024). The role of well-being in consumer's responses to personalized advertising on social media. Psychology & Marketing, 41(6), 1206-1222. https://doi.org/10.1002/mar.21977

18. Leppin, A., & Nielsen, J. B. (2022). Readiness to accept genetic testing for personalized medicine: Survey findings on the role of socio-demographic characteristics, health vulnerabilities, perceived genetic risk and personality factors. Journal of Personalized Medicine, 12(11), 1836. https://doi.org/10.3390/jpm12111836

19. Tommel, J., Kenis, D., Lambrechts, N., Brohet, R. M., Swysen, J., Mollen, L., ... & Houwink, E. J. (2023). Personal genomes in practice: exploring citizen and healthcare professionals' perspectives on personalized genomic medicine and personal health data spaces using a mixed-methods design. Genes, 14(4), 786. https://doi.org/10.3390/genes14040786

Тоқ ішектің жеке диагностикасына қатысты медициналық қызметті тұтынушылардың қажеттіліктері мен қалауын анықтау

Кадырова И. [1], Клюев Д. [2], Оспанова К. [3], Баширова Т. [4], Нукештаева К. [5*]

[1] Жетекші ғылыми қызметкер, Ғылыми-зерттеу зертханасы, Қарағанды медицина университеті, Қарағанды, Казақстан. E-mail: ikadyrova@qmu.kz

[2] Тіршілік туралы ғылымдар институтының директоры, Қарағанды медицина университеті, Қарағанды, Казақстан. E-mail: klyuev@qmu.kz

[3] Профессор, Қарағанды медицина университеті, Қарағанды, Казақстан. E-mail: ospanova59@mail.ru

[4] Директор, Қалалық бірінші медициналық-санитарлық көмек көрсету орталығы, Караганда, Казақстан. E-mail: gcpmsp@mail.ru

[5] Ассистент-профессор, Қоғамдық денсаулық мектебі, Қарағанды медицина университеті, Қарағанды, Казақстан. E-mail: nukeshtaeva@qmu.kz

Түйіндеме

Медицина технологияларының қарқынды дамуы жағдайында дербестендірілген диагностика аурулардың алдын алу мен оларды басқаруды жақсарту үшін үлкен мүмкіндіктер ұсынады. Бұл зерттеу тұқым қуалайтын тоқ ішек қатерлі ісігінің мысалында науқастардың қалауы мен денсаулық сақтау жүйесінің дербестендірілген диагностиканы енгізуге дайындығын бағалауға бағытталған.

Әдістері. Жалпы популяциядан алынған 113 қатысушы арасында сауалнамамен біріктірілген генетикалық тестілеу бойынша пилоттық жоба жүргізілді. Колоректальды обырға бейімділікпен байланысты 184 бірнуклеотидті полиморфизмнен тұратын панельдік жиынтыққа талдау жасалды.

Нәтижелер. 113 респонденттің тек 3,5%-ы дербестендірілген диагностика бойынша терең білімге ие болды; негізгі мән берілген факторлар – тесттің дәлдігі, қолжетімділігі және бағасы. Негізгі пайдаланушылар – 36–45 жас аралығындағы әйелдер, негізінен Алматы (57,1%) мен Қарағандыда (35,7%) тұратындар. Респонденттердің 71,4%-ы онлайн кеңеске дайын екенін білдірсе де, баға кедергі болып қала береді – 50%-ы 20 000 теңгеден артық төлеуге дайын. 133 маманның ішінде тек 8,7%-ы терең білімге ие, ал 17,4%-ы бұл технологияларды тәжірибесінде қолданады, дегенмен 62,3%-ы олардың жоғары әлеуетін мойындайды. Зерттелген когортада төрт генетикалық полиморфизм колоректальды обырға бейімділікпен статистикалық тұрғыдан мәнді байланыс көрсетті. Атап айтқанда, rs4779584 (T/T) және rs16892766 (C/C) генотиптері сәйкесінше 1,7 және 4 есеге дейін ауру қаупін арттырады.

Қорытынды. Дербестендірілген диагностика ауруларды басқару мен олардың алдын алуда түбегейлі өзгеріс енгізе алады. Алайда бұл тәсілдің кеңінен таралуы үшін экономикалық және білім беру кедергілерін жою қажет. Жеке медицинаның тұрақты дамуы мен қолжетімділігін қамтамасыз ету үшін білім беруді, қолжетімді баға саясатын және нормативтік қолдауды біріктіретін кешенді тәсіл қажет.

Түйін сөздер: жеке диагностика, генетикалық маркерлер, колоректальды қатерлі ісік, денсаулық сақтаудың қолжетімділігі, медициналық маркетинг стратегиялары.

Определение потребностей и предпочтений потребителей в отношении персонализированной диагностики рака толстой кишки

Кадырова И. [1], Клюев Д. [2], Оспанова К. [3], Баширова Т. [4], Нукештаева К. [5*]

[1] Ведущий научный сотрудник, Научно-исследовательская лаборатория, Карагандинский медицинский университет, Караганда, Казахстан. E-mail: ikadyrova@qmu.kz

[2] Директор института наук о жизни, Карагандинский медицинский университет, Караганда, Казахстан. E-mail: klyuev@qmu.kz

[3] Профессор, Карагандинский медицинский университет, Караганда, Казахстан. E-mail: ospanova59@mail.ru

[4] Директор, Городской центр первичной медико-санитарной помощи, Караганда, Казахстан. E-mail: gcpmsp@mail.ru

[5] Ассистент-профессор, Школа общественного здоровья, Карагандинский медицинский университет, Караганда, Казахстан. E-mail: nukeshtaeva@qmu.kz

Резюме

В эпоху стремительного развития медицинских технологий персонализированная диагностика открывает перспективные возможности для улучшения профилактики и лечения заболеваний. Настоящее исследование направлено на изучение предпочтений пациентов и готовности системы здравоохранения к внедрению индивидуализированных диагностических подходов, с акцентом на наследственный рак толстой кишки.

Методы. Среди 113 участников из общей популяции был проведен пилотный проект по генетическому тестированию, интегрированный с анкетированием. Был проанализирован панельный набор из 184 однонуклеотидных полиморфизмов, ассоциированных с предрасположенностью к колоректальному раку.

Результаты. Только 3,5% из 113 участников обладали глубокими знаниями о персонализированной диагностике; основными факторами, влияющими на выбор, были точность, доступность и цена. Большинство пользователей составляли женщины в возрасте 36–45 лет, в основном из Алматы и Караганды. Несмотря на то, что 71,4% были готовы к онлайн-консультациям, высокая стоимость оставалась барьером — 50% были готовы платить более 20 000 тенге. Среди 133 специалистов только 8,7% обладали высокой компетенцией, и лишь 17,4% использовали такие методы на практике, хотя 62,3% признали их высокий потенциал. Четыре генетических полиморфизма были статистически значимо ассоциированы с предрасположенностью к колоректальному раку в исследуемой когорте. Генотипы rs4779584 (T/T) и rs16892766 (C/C) увеличивали риск в 1,7 и 4 раза соответственно.

Выводы. Персонализированная диагностика способна радикально изменить подход к лечению и профилактике заболеваний. Однако для ее широкого внедрения необходимо преодолеть экономические и образовательные барьеры. Устойчивое развитие и доступность персонализированной медицины возможны только при комплексном подходе, сочетающем образование, ценовую доступность и нормативную поддержку.

Ключевые слова: персонализированная диагностика, генетические маркеры, колоректальный рак, доступность здравоохранения, стратегии медицинского маркетинга.