ANNOTATION

Of dissertation work of Laktionova M. on the topic: «Quality of life and justification of new organizational forms of postoperative management of patients with genital prolapse in primary care institutions» submitted for the degree of Doctor of Philosophy (PhD) in the according in the specialty 8D139 - "Public Health"

Relevance:

Despite the decrease in the number of women engaged in heavy physical labor, and the increased attention of the WHO and the Republic of Kazakhstan to women's health, the costs of problems associated with pelvic floor disorders remain high (Milsom I, 2019). It is important to note that genital prolapse significantly worsens the quality of life, reduces work capacity and can lead to social isolation (Masenga G. G., 2018). Prolapse occurs in 20-25% of women, varying from 5% to 50% according to different sources (2013-2024).The risk of undergoing surgical intervention due to prolapse is 11%, and the rate of reoperations due to recurrence increases, reaching 30-40% (Weintraub A. Y., 2019), which dictates the need to address organizational issues in providing rehabilitation for patients with prolapse at various levels of public healthcare.

Today, foreign literature indicates the need for rehabilitation measures of the pelvic floor after prolapse surgery for the prevention and treatment of relapses and complications (Haya N., 2018), however, there is not much data in the available literature about the organization of postoperative care. Also, in these legal documents of the Republic of Kazakhstan, there are no specific recommendations on the management of the postoperative period in relation to genital prolapse and the organization of continuity between inpatient care and primary care, aimed at the third stage of rehabilitation. In 2017, the World Health Organization (WHO) presented the initiative "Rehabilitation 2030", which emphasized the need to develop innovations in the field of rehabilitation, make management decisions at all stages, taking into account the digitalization of health care and the educational environment of medical workers. At the same time, the initiative highlights the importance of the formation of competent and diverse personnel in the field of rehabilitation, the expansion of funding in this field, as well as the improvement of data collection and conducting research in the field of rehabilitation.

In order to strengthen continuity between primary health care providers and hospital surgeons in matters of improving the quality of gynecological care, we believe that attention should be paid to the following important issues: integration of exercises for the pelvic floor, prevention of risk factors, and the use of the latest information and communication technologies (digitalization) in rehabilitation after prolapse surgery. These measures are not only actively used and studied today, but also contribute to increasing the effectiveness of treatment and improving the results for patients.

Purpose of the study: A comprehensive assessment of the effectiveness of postoperative rehabilitation for patients with genital prolapse, accompanied by the development of an integrated approach to enhancing the delivery of gynecological care in outpatient settings.

Research objectives:

1. To analyze international best practices in the management of patients with genital prolapse (GP) post-surgery, alongside a comprehensive review of national statistical trends over the past decade (2012-2021) to assess shifts in surgical intervention rates.
2. To evaluate the effect of continuous postoperative monitoring and outpatient risk factor management on the quality of life and recurrence rates among patients with genital prolapse.
3. To conduct an in-depth assessment of primary risk factors for GP recurrence, examining the specifics of gynecological care in the postoperative phase and the level of knowledge among healthcare providers.
4. To investigate the impact of a structured, simplified exercise regimen combined with online monitoring in outpatient settings on the prevention of genital prolapse recurrence.
5. To develop and implement an interactive digital resource that incorporates a postoperative monitoring algorithm for GP patients, enabling nationwide and regional gynecologists to assess its influence on public health literacy over time.

Research methods:

Informational-analytical, sociological, clinical, mathematical (conducted in Excel 2010), statistical (conducted in SPSS Statistics 26.0), and an electronic resource, **Prolaps-monitoring**, developed using the website builder Wix.com.

Research Object:

The existing system of outpatient and inpatient care for women with genital prolapse after surgery.

Research Subject:

The organization of the third stage of rehabilitation for patients with genital prolapse, focusing on the impact of a continuous exercise regimen and extended monitoring on recurrence rates and quality of life in postoperative patients.

Main Provisions for Defense:

1. The increasing prevalence of genital prolapse as documented in the literature, coupled with a rise in surgical interventions for its treatment within the Republic of Kazakhstan, and limited post-operative follow-up in primary healthcare (PHC) organizations, underscores the need for a comprehensive framework to ensure continuity in the third stage of rehabilitation between inpatient services and PHC.
2. The application of a continuous exercise program with a simplified regimen and online monitoring (ensuring 100% feedback between doctor and patient) at the third stage of rehabilitation within PHC organizations, along with sustained monitoring of recurrence risk factors and enhancement of medical literacy, has led to improved quality of life and long-term surgical outcomes in patients with genital prolapse.
3. Identified predictors of recurrence, including threshold values for pelvic floor muscle strength, physical exertion limits in weight equivalents, and a multifactorial regression model, allow for effective prediction of recurrence risk of genital prolapse in the postoperative period.

Main results of the study:

As a result of this research, the author adapted, validated, and automated a specialized quality of life questionnaire (P-QoL) for the Kazakhstani population in both Russian and Kazakh: Certificate of Authorship No. 23609 dated 15.02.22, titled "Adapted Specialized P-QoL Questionnaire in Russian and Kazakh for Women with Genital Prolapse in Kazakhstan." Additionally, an original Risk Factors Questionnaire (RFQ) in Russian and Kazakh was developed and validated to identify risk factors for genital prolapse: Certificate of Authorship No. 23610 dated 15.02.22, "Monitoring Postoperative Outcomes in Patients with Genital Prolapse – RFQ in Russian and Kazakh." An algorithm for an intersectoral approach to the postoperative monitoring of women with genital prolapse at the PHC level in both Russian and Kazakh was also developed: Certificate of Authorship No. 28674 dated 08.09.22, "Postoperative Monitoring Algorithm for Women with Genital Prolapse (Intersectoral Approach)."

A public information resource, the "Guide on Genital Prolapse for Women," was created to raise awareness of risk factors and preventive measures: Certificate of Authorship No. 31497 dated 30.12.22. Based on these tools, an electronic resource with computer and mobile versions, titled "Prolaps-monitoring," was developed and implemented in the following medical institutions:

1. SCE REM Polyclinic No. 2, Almaty (Implementation Act dated 22.12.2022);
2. SCE REM "Regional Perinatal Center No. 3," Turkestan (Implementation Act dated 14.11.2022);
3. Lsclinic LLP, Almaty (Implementation Act dated 01.12.2022);
4. SCE REM "Regional Perinatal Center No. 3," Taldykorgan (Implementation Act dated 22.11.2022);
5. SCE REM Polyclinic No. 17, Almaty (Implementation Act dated 04.01.2023);
6. SCE REM Polyclinic No. 7, Almaty (Implementation Act dated 10.03.2023);
7. Qamqor Clinic Almaty LLP, Almaty (Implementation Act dated 07.12.2023).

Educational programs for physicians and mid-level medical personnel were developed and approved at the Kazakhstan Medical University "KSPH," including: Certificate of Authorship No. 30496 dated 22.11.22, "Interdisciplinary Approach to the Prevention of Genital Prolapse Recurrence in PHC Organizations" (4 credits / 120 academic hours).Certificate of Authorship No. 30500 dated 22.11.22, "Fundamentals of Preventive Measures for Genital Prolapse Recurrence in PHC Organizations" (4 credits / 120 academic hours).

In total, 13 obstetrician-gynecologists and 19 nurses were trained under these programs at Lsclinic LLP, Qamqor Clinic Almaty LLP, and PHC Clinic No. 14, with participants receiving certification upon completion.

Justification of scientific novelty:

For the first time in Kazakhstan, we present results demonstrating the effectiveness of an automated, adapted version of the P-QOL questionnaire for assessing quality of life in patients with genital prolapse in both Russian and Kazakh, alongside the author’s RFQ ("Recurrence and Follow-up Questionnaire") for

monitoring postoperative outcomes. These tools facilitated the identification of significant factors influencing recurrence.

The effectiveness of developed prognostic models for assessing prolapse recurrence risk—based on a multifactor regression model, pelvic floor muscle strength, and weightlifting as predictors—has been substantiated through criteria established by rehabilitation physicians.

An assessment of the third stage of rehabilitation in post-surgical patients with genital prolapse allowed for the formulation of targeted recommendations to enhance therapeutic and preventive measures.

Scientifically grounded recommendations and a postoperative management algorithm were developed to optimize therapeutic and preventive interventions during the third stage of rehabilitation and streamline the routing of patients with genital prolapse in outpatient settings. This approach improved quality of life and contributed to a reduction in recurrence rates.

Following the implementation of the interactive electronic resource, positive trends were observed in medical literacy among patients with genital prolapse.

Theoretical and Practical Significance:

The analyzed international experience and best practices can be utilized by primary healthcare (PHC) gynecologists as a valuable resource to enhance rehabilitation measures for women following surgical intervention during the rehabilitation stage.

Survey data from physicians indicated a significant gap in continuity between inpatient services and PHC for the third stage of rehabilitation for patients with genital prolapse. This discontinuity in monitoring and post-surgical care underscores the need for integrated approaches.

Two educational programs, "Fundamentals of Preventive Measures for Genital Prolapse Recurrence in PHC Organizations" and "Interdisciplinary Approach to Preventing Genital Prolapse Recurrence in PHC Organizations," were tested across private and public medical centers. These programs were developed and approved by Kazakhstan Medical University "KSPH" and aim to deliver continuous, high-quality training for healthcare personnel on optimizing rehabilitation care for patients with genital prolapse.

To enhance access to rehabilitation services provided by PHC gynecologists and gynecological hospitals, an electronic resource was developed to improve public knowledge on genital prolapse, health promotion, and recurrence prevention. This resource also supports early diagnosis and the monitoring of complications following surgery.

Healthcare leaders at various administrative levels are advised to integrate the insights from monitoring studies using the automated P-QOL and RFQ ("Recurrence and Follow-up Questionnaire") on quality of life and postoperative outcomes. This integration into strategic planning will improve continuity between hospital and PHC services for managing rehabilitation in patients with genital prolapse and ensure ongoing monitoring for those who have undergone surgical intervention.

The outcomes—improved patient quality of life and reduced recurrence rates through targeted risk factor management and extended monitoring using the developed postoperative observation algorithm (intersectoral approach) and

interactive resource—align with WHO's strategy to combat non-communicable diseases by addressing risk factors and supporting public health initiatives.

The applied tools developed for structuring the rehabilitation period in PHC and for large-scale implementation at the Republican level contribute to the digitalization of healthcare services, enabling automated monitoring, reducing time demands on medical personnel, and strengthening the third stage of rehabilitation.

Doctoral Candidate's Personal Contribution:

The present study represents the original work of Mariya Vladimirovna Laktionova. Each phase of the research process, encompassing the literature review, study design, adaptation and validation of questionnaires, surveys of healthcare professionals, analysis of health literacy dynamics among patients, as well as assessments and clinical evaluations of long-term postoperative outcomes, was meticulously planned and executed by the doctoral candidate. The research incorporated both a single-blind randomized controlled trial and a non-randomized controlled trial. The author independently carried out the data analysis, prepared materials for publication, and developed and implemented practical applications of the findings for integration into medical practice.

Conclusions:

1. A review of the literature on surgical treatment and recurrence rates of genital prolapse (GP) revealed a concerning trend that suggests a potential increase in cases by 2050, underscoring the necessity of developing clear methodological guidelines for the third stage of rehabilitation. Statistical data from the Republican Center for Electronic Health (RCEH) indicate an 8% rise in GP surgeries nationwide, with a 15% increase in Almaty, 8% in Nur-Sultan (Astana), and 11% in Shymkent between 2012 and 2021. The differences between 2012 and 2021 are statistically significant, highlighting the importance of increased attention to this issue.
2. Implementing dynamic monitoring for patients with genital prolapse (GP), which includes regular evaluations, risk factor management, and improvements in medical literacy, significantly reduced recurrence rates (2.9% in the main group versus 43.3% in the control group, $p<0.001$) and enhanced quality of life ($p<0.001$). In the control group, 42.2% of patients required additional surgery, whereas no repeat surgeries were needed in the main group ($p<0.001$). The validated and automated P-QOL and RFQ (Recurrence and Follow-up Questionnaire) tools were essential for consistent and effective monitoring. Their interactive format enabled accurate identification and correction of recurrence risk factors. These results highlight the importance of adopting dynamic monitoring in clinical practice to lower recurrence rates and improve patient quality of life.
3. Monitoring conducted from 2013 to 2022 identified key factors influencing GP recurrence, substantiating the importance of targeted preventive strategies in gynecology. ROC analysis established a weightlifting threshold of 4.75 kg, with lifting beyond this limit associated with recurrence. This threshold was applied in a binary logistic regression model, revealing that lifting over 4.75 kg increases recurrence risk by 11.12 times. For the final predictive model, a probability function threshold of 0.07 provided accurate recurrence risk predictions. Key risk factors include: each 1 kg/m² increase in BMI (increasing

recurrence risk by 1.3 times), irregular protein intake (3.6 times), smoking (6.4 times), constipation (3.5 times), each additional year of menopause (2.7 times), and sugar intake above 25 grams per day (2 times). Weight loss of 5 kg and normalization of vitamin D3 levels can reduce recurrence risk by 1.9 and 2 times, respectively. Insufficient information provided by primary care obstetrician-gynecologists on GP and its prevention (less than half of surveyed doctors emphasize preventive measures post-surgery, covering only 23.5% of required recommendations), along with a lack of continuity in the third stage of rehabilitation between inpatient services and PHC for GP patients, highlights the need for staff training and improvement in the organization of postoperative rehabilitation processes.

4. The study results underscore the importance of healthcare system improvements through the implementation of a continuous exercise regimen supported by a simplified scheme and online monitoring, ensuring 100% feedback between the physician and patient during the third stage of rehabilitation in PHC. This approach contributed to short-term recurrence reduction, as evidenced by the absence of recurrence in the main group. It was found that when muscle contraction strength was ≤62.5 mmHg or scored 2 points on the Oxford scale, recurrence could be predicted with 87% sensitivity and 75% specificity, providing clinically significant insights for personalizing rehabilitation.
5. The development and integration of the digital platform Prolaps-monitoring for obstetrician-gynecologists at the national level substantially increased patient awareness of GP, its risks, and preventive methods. Health literacy among patients with GP improved more than threefold (pre-implementation: Median=8.0; Q1-Q3=4, post-implementation: Median=26.0; Q1-Q3=3), demonstrating the effectiveness of the resource in raising public knowledge on pelvic organ prolapse. The platform, designed to offer accessible interactive resources with a postoperative monitoring algorithm for GP patients, has been implemented for obstetrician-gynecologists at both national and regional levels, serving as a valuable tool for assessing the quality of healthcare services.

Approval of the Dissertation:

The main provisions of the dissertation were discussed at scientific-practical seminars and departmental meetings within the Department of Public Health and Social Sciences at Kazakhstan Medical University "KSPH." The results and conclusions of the dissertation were presented at a number of domestic and international conferences, including:

International Scientific Forum "Science and Innovations – Modern Concepts" (November 5, 2021, Moscow, Russia);

International Scientific and Practical Conference of Young Scientists and Students, dedicated to the 30th Anniversary of Independence of the Republic of Kazakhstan (December 9-10, 2021, Astana, Kazakhstan);

VIII International Scientific Conference of Young Scientists and Students "Perspectives of Development in Biology, Medicine, and Pharmacy" (December 9-10, 2021, Shymkent, Kazakhstan);

International Scientific and Practical Conference "Science and Youth: New Challenges and Solutions" (April 22, 2022, Almaty, Kazakhstan);

Interuniversity International Congress "Science and Innovations – Modern Concepts" (December 16, 2022, Moscow, Russia);

International Scientific Forum "Science and Innovations – Modern Concepts" (February 11, 2022, Moscow, Russia);

Interuniversity International Congress "Higher Education: Scientific Research" (November 24, 2022, Moscow, Russia);

International Gevher Nesibe Health Sciences Conference-X (February 3-5, 2023, Ankara, Turkey);

II International Forum "Asfen.Forum, New Generation-2025" (June 2024, Almaty, Kazakhstan).

Publications on the Dissertation Topic:

Based on the materials of the dissertation, a total of 15 works were published, including:

Scientific Publications in Scopus-Indexed Journals (2 articles):

Universal Journal of Public Health (ISSN: 2331-8880 [Print], 2331-8945 [Online]), Cite Score 0.7, 44th Percentile: "Relapse Prophylaxis and Early Recognition of Pelvic Organ Prolapse in Primary Medical Care Organizations - A Randomized Controlled Trial."

International Journal of Public Health Science (ISSN: 2352-8806 [Print], 2620-4126 [Online]), Cite Score 1.1, 34th Percentile: "Effect of Diet, Vitamin D3, and Other Factors on Genital Prolapse Recurrence."

Publications in Journals Approved by the Committee for Quality Assurance in Education and Science, Ministry of Education and Science, Kazakhstan (5 articles).

Presentations and Abstracts: A total of 3 articles and 5 abstracts were presented at 8 international and national scientific-practical conferences.

Certificates of Authorship (6 certificates): These include certificates No. 23609 (15.02.22), No. 23610 (15.02.22), No. 28674 (08.09.22), No. 31497 (30.12.22), No. 30496 (22.11.22), and No. 30500 (22.11.22).

Implementation Acts – 7 (SCE REM Polyclinic No. 2, SCE REM "Regional Perinatal Center No. 3" in Turkestan, Lsclinic LLP, SCE REM "Regional Perinatal Center No. 3" in Taldykorgan, SCE REM Polyclinic No. 17, SCE REM Polyclinic No. 7, and Qamqor Clinic Almaty LLP).

Volume and Structure of the Dissertation:

The dissertation is presented in printed form on 149 pages and consists of normative references, definitions, a list of abbreviations and symbols, an introduction, a literature review, a description of materials and methods, research results, a conclusion that includes findings, practical recommendations, and a bibliography. The work is illustrated with 15 figures and 34 tables. The bibliography includes 219 sources.