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Parameters of quality of life in patients with pelvic floor dysfunction and diastasis recti in the postpartum period

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Abstract

Introduction. Today, the problem of weak core muscles in the postpartum period, primarily pelvic floor descent and diastasis recti in women of reproductive age, is becoming a significant challenge for practical medicine.

Aim. A comprehensive assessment of urogenital symptoms and manifestations of sexual dysfunction in the formation of parameters of quality-of-life components in primiparous women after urgent delivery.

Materials. The study was conducted in two groups of patients aged 18 to 35 years: 60 patients with signs of pelvic floor dysfunction and diastasis recti (main group) and 60 women who did not have these symptoms (comparison group). Patients were included in the study 6 months after the first full-term spontaneous delivery in cephalic presentation with minimal signs of pelvic floor dysfunction and diastasis recti detected during a routine examination. The following validated questionnaires were used: the International Conference on Incontinence Questionnaire-Short Form (ICIQ-SF), the Female Sexual Function Index (FSFI), the Functional Pelvic Pain Scale (FPPS), and the MOS SF-36 quality-of-life score. The statistical processing of the results was performed in the Windows 7 operating environment using the statistical software 'Statistica 6.0'.

Results. Inheritance of genital prolapse was noted in more than a third of patients in the main group (38.3%), signs of undifferentiated connective tissue dysplasia (UCTD) were found in almost half of the observations (43.3%), the most significant were complications in childbirth, birth trauma (61.7%) and shoulder dystocia (13.3%). The main complaints were pain in the lower back and pelvis (56.7%), perineal pain (31.7%), increased transient urinary incontinence (26.7%), increased secretory function (36.7%), recurrent vaginal dysbiosis (48.3%), dyspareunia (31.7 %), lack of sexual desire and reduced sexual activity (38.3 %). Most patients noted a prolonged recovery time for sexual activity after childbirth (more than 10 weeks) and the presence of a cosmetic defect of the perineum and anterior abdominal wall. Vaginal re-

laxation syndrome (loss of vaginal wall tone and elasticity, increased vaginal volume), as well as urinary incontinence, was quite common in almost every fifth patient (26.7% of observations). It should be noted that the proportion of psycho-emotional manifestations such as postpartum depression, anxiety, tokophobia has increased in almost every fourth patient. The dysfunction of the muscles of the anterior abdominal wall and pelvic floor has negative influence on psychological health of women, as demonstrated by differences in the average indicators of vital activity (66.7±3.2 points) social functioning (71.6±2.4 points), role functioning due to emotional state (62.8±1.5 points) and mental health (61.6±2.4 points) compared to the comparison group (82.6±1.4 points) ($p<0.01$). In 19 (31.7 %) patients of the main group, the lowest mental health score (less than 60 points) was noted, which is associated with an increase in anxiety, depressive disorders and a decrease in the proportion of positive emotions.

Conclusions. This study established a correlation between pregnancy and childbirth in primiparous women and the prevalence of disorders such as low back pain, pelvic and perineal pain, urinary incontinence, fecal incontinence, and sexual dysfunction. These symptoms in young primiparous women are often asymptomatic and remain undiagnosed; however, in the late postpartum period, they lead to the development of psycho-emotional disorders in one out of four patients and negatively affect the psychological component of quality of life.

Keywords: Quality of life, diastasis recti, pelvic floor dysfunction, connective tissue dysplasia, sexual disorders, urogenital disorders, long-term consequences, complications of childbirth.

Introduction

Quality of life is increasingly recognized as a key component in the development of comprehensive postpartum care programs, as it encompasses both physical comfort and psychological well-being in daily functioning. According to both national and international literature, there has been a notable decline in the quality of life among women in recent years, largely due to the rising incidence of gynecological conditions and reproductive dysfunctions. These include pelvic floor disorders and related conditions—such as alterations in the vaginal microbiome, urinary incontinence, and sexual dysfunction—which are reported in nearly every second woman and are now being described as a "silent epidemic" [1–4].

Despite growing interest, the specific socio-psychological characteristics of postpartum women remain under-researched. Although several studies have attempted to evaluate quality of life as a novel, integrative health indicator in this population, the available literature is limited and often contradictory. Nevertheless, a systematic analysis of quality of life during pregnancy and the postpartum period—along with the tracking of its dynamics—may provide the basis for constructing predictive models and optimizing strategies for childbirth preparation, physical rehabilitation, and the implementation of psychoprophylactic interventions in the postpartum period.

Today, the problem of weak core muscles in the postpartum period, primarily pelvic floor descent and diastasis recti in women of reproductive age, is becoming a significant challenge for practical medicine [5-8].

The frequency of pelvic floor dysfunction in this cohort of women ranges from 26 to 63.1% and progresses with age [9, 10]. At the same time, the lack of

Table 1. Characteristics of the study groups (n=120)

Indicators	Main group, n=60	Comparison group, n=60	
Age (years)	31.6±1.8	24.4±1.2	p<0.05
Family history of genital prolapse	23 (38.3 %)	9 (15.0 %)	χ2=7.20, p<0.01
Connective tissue dysplasia	26 (43.3 %)	8 (13.3 %)	χ2=11.86, p<0.001
Asthenic body type	23 (38.3 %)	11 (18.3 %)	χ2=4.97, p<0.03
BMI > 25,0 kg/m2	19 (31.7 %)	7 (11.7 %)	χ2=5.94, p<0.01
GI diseases	16 (26.7 %)	5 (8.3 %)	χ2=5.77, p<0.02
Pulmonary diseases	14 (23.3 %)	4 (6.7 %)	χ2=5.29, p<0.02
Varicose veins	18 (30.0 %)	5 (8.3 %)	χ2=7.75, p<0.005
Instrumental delivery (vacuum extraction)	11 (18.3 %)	1 (1.7 %)	χ2=7.5, p<0.006
Fetal weight >3600 g	25 (41.7 %)	9 (15.0 %)	χ2=9.23, p<0.002
Perineal injury	37 (61.7 %)	11 (18.3 %)	χ2=21.7, p<0.001
Epidural anaesthesia	28 (46.7 %)	15 (25.0 %)	χ2=5.22, p<0.02
Prolonged labour	14 (23.3 %)	5 (8.3 %)	χ2=4.0, p<0.05

rehabilitation measures, as well as appropriate correction, increases the likelihood of surgical treatment [11, 12].

It is known that in the perimenopausal period 18% of all hysterectomies are performed, including for urethrovaginal prolapse [13].

The Lancet Global Health (2024) published data showing that about 40 million women experience clinical health problems related to pregnancy and childbirth every year [14]. This publication is part of a series of studies in the field of maternal health that demonstrate the consequences of postpartum health disorders that can persist from 6 months to decades after childbirth. The most significant are dyspareunia in more than a third of cases (35%), cosmetic defects of the perineum, low back pain (32%), anal incontinence of feces and gas (19%), urinary incontinence (8-31%), anxiety disorders (9-24%), postpartum depression (11-17%), perineal pain (11%), tochophobia (6-15%), and secondary infertility (11%) [15-17].

A key factor contributing to dysfunction of the anterior abdominal wall and pelvic floor musculature is pregnancy and vaginal delivery, particularly when complicated by birth trauma, multiple gestation, or macrosomia. The primary initiating mechanism is the progressive increase in intra-abdominal pressure during pregnancy, accompanied by excessive stretching of the ligamentous and muscular structures of the pelvis and pelvic floor, displacement and compression of the rectum, and hormonally mediated changes—namely, elevated progesterone levels and decreased relaxin concentrations [18]. The group of modifiable risk factors includes physical inactivity, a high somatic morbidity index (such as obesity or overweight), neuroendocrine dysregulation, gastrointestinal and respiratory disorders, and chronic infectious and inflammatory diseases of the urogenital tract. Non-modifiable risk factors comprise maternal age, genetic predisposition, and the presence of markers indicative of undifferentiated connective tissue dysplasia [19–21].

It is noteworthy that Caucasian women exhibit increased pelvic organ mobility and undergo surgical correction for pelvic organ prolapse (POP) approximately three times more frequently. The genetic basis of prolapse has been linked to high-risk alleles associated with mutations in genes responsible for collagen and elastin fiber synthesis. These mutations result in structurally altered collagen with reduced resistance to mechanical stress, contributing to the development of more severe and recurrent forms of pelvic organ prolapse [22, 23]. Disorders of anatomy and topog-

Table 2. Urogenital symptoms and manifestations of sexual dysfunction, (n=120)

Indicators	Main group, n=60	Comparison group, n=60	
Diastasis recti	16 (26.7 %)	2 (3.3 %)	χ2=11.05, p<0.001
Vaginal laxity	13 (21.7 %)	2 (3.3 %)	χ2=7.62, p<0.005
Altered secretory function	22 (36.7 %)	8 (13.3 %)	χ2=7.51, p<0.01
Fecal incontinence	11 (18.3 %)	1 (1.7 %)	χ2=7.50, p<0.01
Obstructive defecation syndrome	9 (15.0 %)	1 (1.7 %)	χ2=5.35, p<0.02
Transient urinary incontinence	16 (26.7 %)	1 (1.7 %)	χ2=13.43, p<0.001
Perineal pain	19 (31.7 %)	2 (3.3 %)	χ2=14.78, p<0.001
Lower back and pelvic pain	34 (56.7 %)	11 (18.3 %)	χ2=17.21, p<0.001
Recurrent vaginal dysbiosis	29 (48.3 %)	8 (13.3 %)	χ2=15.63, p<0.001
Dyspareunia	19 (31.7 %)	6 (10.0 %)	χ2=7.28, p<0.01
Dysorgasmia	10 (16.7 %)	1 (1.7 %)	χ2=6.41, p<0.01
Sexual arousal disorder	13 (21.7 %)	2 (3.3 %)	χ2=7.62, p<0.005
Decreased sexual activity	23 (38.3 %)	7 (11.7 %)	χ2=10.0, p<0.001

nomy, endocrine and psychosomatic changes during pregnancy and in the postpartum period contribute to various manifestations of sexual dysfunction – dyspareunia, loss of sexual desire, vaginal laxity and reduced lubrication, postcoital pain and bleeding, dysbiotic manifestations, and only 15% of women seek medical attention for these complaints [24, 25].

Thus, a young woman after childbirth requires a preventive approach [4], as symptoms of pelvic floor dysfunction can significantly impair the quality of life, negatively affect performance and general somatic condition, and create prerequisites for a negative attitude towards the next pregnancy due to possible potential worsening of manifestations and cosmetic defects. In the national literature, studies related to the assessment of the quality of life of such patients in the postpartum period are few, and the issues of prevention of pelvic dysfunction and diastasis recti mainly relate to the existing problem of pelvic floor descent, where the use of conservative techniques to restore the core muscles after childbirth determines the relevance of expanding scientific research.

The aim of the study was a comprehensive assessment of urogenital symptoms and manifestations of sexual dysfunction in the formation of parameters of quality-of-life components in primiparous women after urgent delivery.

Materials and methods

This is a prospective cohort study. The study was conducted in two groups of patients aged 18 to 35 years: 60 patients with signs of pelvic floor dysfunction and diastasis recti (main group) and 60 women who did not have these symptoms (comparison group). Patients were enrolled in the study after the completion of lactation and the resumption of menstruation (but not earlier than 6 months postpartum). Inclusion criteria were: early reproductive age (18–35 years), first childbirth, vaginal delivery, clinical signs of pelvic floor dysfunction (first appearing postpartum), regular menstrual cycle, and provision of informed consent to participate in the study. Exclusion criteria included: cesarean section, ongoing lactation, severe pelvic organ prolapse, premature ovarian insufficiency, amenorrhea, hormonal therapy for menstrual regulation, acute inflammatory diseases of the pelvic organs, malignant neoplasms, severe somatic diseases, or the patient's refusal to participate in the study.

All patients gave informed consent to participate in the study. The study was approved by the Institutional Review Board on November 29, 2023 (№ 128-23). It

Table 3. Psycho-emotional manifestations in the postpartum period, (n=120)

Indicators	Main group, n=60	Comparison group, n=60	
Postpartum depression	11 (18.3 %)	1 (1.7 %)	$\chi 2=7.50$, $p<0.01$
Anorgasmia	13 (21.7 %)	1 (1.7 %)	$\chi 2=9.78$, $p<0.01$
Anxiety	16 (26.7 %)	3 (5.0 %)	$\chi 2=9.00$, $p<0.002$
Tokophobia	10 (16.7 %)	1 (1.7 %)	$\chi 2=6.41$, $p<0.01$
Aesthetic defect	16 (26.7 %)	2 (3.3 %)	$\chi 2=11.05$, $p<0.001$

should be noted that the women did not have any complaints and considered their condition to be natural, but an in-depth assessment of the anamnesis and questioning in 52 cases (86.7%) revealed complaints of constipation, episodes of gas incontinence which were first noted after childbirth, transient urinary incontinence, persistent white spotting without a clinical picture of vaginitis, discomfort during intercourse, vaginal laxity, and vaginal flatulence.

To assess the markers of undifferentiated connective tissue dysplasia, screening tests were used: the thumb test (with a positive result, the patient's thumb was easily placed across the palm, protruding in this position beyond the ulnar edge); the wrist test (with a positive result, the patient easily wrapped the wrist with the little finger and thumb).

To assess the degree of urinary incontinence, the International Conference on Incontinence Questionnaire-Short Form (ICIQ-SF) was used. The severity of sexual dysfunction was assessed using a validated questionnaire to calculate the Female Sexual Function Index (FSFI). The Functional Pelvic Pain Scale (FPPS) was used to assess the intensity of pelvic pain, and the MOS SF-36 questionnaire was used to assess the quality of life.

The use of validated questionnaires made it possible to convert the clinical manifestations of core muscle dysfunction into digital values, as well as to assess the degree of their impact on the quality of life of women. The statistical processing of the results was carried out in the Windows 7 operating environment using Statistica 6.0 statistical software. For indicators with a normal distribution, parametric statistics methods were used (arithmetic mean and standard error – Student's test, Pearson's linear correlation coefficient). The reliability of the differences in quantitative indicators was assessed by the Mann-Whitney test, and relative indicators by the χ 2 test – Pearson's test.

Results

The mean age of patients in the main and comparison groups was 31.6 ± 1.8 years and 24.4 ± 1.2 years, respectively, indicating an age-dependent association (Table 1). A positive family history of pelvic organ prolapse was documented in more than one-third of patients in the main group (38.3%). Clinical signs of undifferentiated connective tissue dysplasia were observed in nearly half of the cases (43.3%). The most notable obstetric complications included birth trauma (61.7%) and shoulder dystocia (13.3%). Assessment of the somatic disease profile revealed a statistically significant prevalence of gastrointestinal disorders (26.7%), including chronic gastritis, colitis, irritable bowel syndrome, and biliary dyskinesia. Tracheobronchial dysfunction, particularly chronic bronchitis, was present in 18.1% of cases. Cardiovascular abnormalities were especially prominent, occurring in 21.7% of patients, and included mitral valve prolapse, aberrant left ventricular chordae, and atrial septal defect. Varicose vein disease was diagnosed in 30.0% of participants.

Analysis of validated questionnaires enabled us to delineate the structure of urogenital symptoms and sexual dysfunctions (Table 2). The most frequently reported symptoms included lower back and pelvic pain (56.7%), perineal pain (31.7%), transient stress uri-

nary incontinence (26.7%), increased vaginal secretions (36.7%), recurrent episodes of vaginal dysbiosis (48.3%), dyspareunia (31.7%), decreased libido and reduced sexual activity (38.3%). A prolonged recovery time for sexual activity after childbirth (more than 10 weeks), as well as concerns about cosmetic defects of the perineum and anterior abdominal wall, were also commonly reported.

Postpartum vaginal relaxation syndrome (characterized by a loss of vaginal tone and elasticity and increased vaginal volume) was identified in nearly one in five patients. Urinary incontinence, diagnosed in 26.7% of cases, was associated with limitations in daily activities, sexual functioning, and interpersonal relationships. Notably, many young women did not seek medical attention for urinary incontinence, often perceiving it as a normal postpartum consequence rather than a clinically significant health issue.

However, the negative impact on quality of life is evident in the context of emotional disorders, including low self-esteem, depression, etc.

It should be noted that the proportion of psychoemotional manifestations, such as postpartum depression, anxiety, and tokophobia, has increased in almost every fourth patient (Table 3).

There is no doubt that the onset of these symptoms, which first appeared postpartum, significantly influenced key components of quality of life, leading to notable reductions in both physical and psychological well-being.

One of the core domains of quality of life is physical functioning (PF), including role-based physical functioning (RBPF), which encompasses the ability to perform everyday activities. In the main group, this was reflected in outcomes such as cessation of professional activity (19.0%), reduced physical exertion (38.3%), and the need for rest breaks during the day (21.7%). The mean PF score in the main group was 68.1 ± 0.6, compared to 87.8 ± 0.3 in the comparison group. Only 14 women (23.3%) reported no limitations in social adaptation or ability to perform routine daily tasks.

Social functioning (SF) scores were also reduced in the main group, with a mean value of 71.6 ± 2.4, compared to 88.4 ± 0.4 in the comparison group. A substantial proportion of patients in the main group (34–56.7%) reported persistent perineal, pelvic, and lower back pain. When assessing the impact of pain on both physical and psychological functioning, the mean score was 63.2 ± 1.4 in the main group, significantly lower than the 78.1 ± 1.6 observed in the comparison group.

The aggregate index for the influence of basic health characteristics (BHC) on overall quality of life was also markedly reduced in the main group—67.2 ± 1.2 points versus 87.4 ± 1.3 points in the comparison group.It should be emphasised that the combination of negative emotional manifestations of varying severity (anxiety, insomnia, depression) significantly reduces the subjective assessment of one's own physical functioning in the context of performing daily activities. At the same time, the postpartum period with symptoms of pelvic floor muscle dysfunction is the most stressful factor and significantly affects the parameters of physical functioning and the psychological component of quality of life.

The conducted testing with the use of the MOS SF-36 questionnaire allowed to note that in case of dysfunction of the muscles of the anterior abdominal wall and pelvic floor, the psychological component of health suffers first of all, as demonstrated by differences in the average indicators of vital activity (VA) (66.7±3.2 points), social functioning (SF) (71.6±2.4 points), role functioning due to emotional state (RF) (62.8±1.5 points) and mental health (MH) (61.6±2.4 points) compared to the comparison group (82.6±1.4 points) ($p<0.01$). At the same time, the differences between the baseline data of the assessment of the parameters of MH, BHC, and VA in the main group were significant at all study points, demonstrating lower scores, which should be associated with the manifestation of urogenital symptoms and sexual dysfunction. It is important in this regard that 19 (31.7%) patients in the main

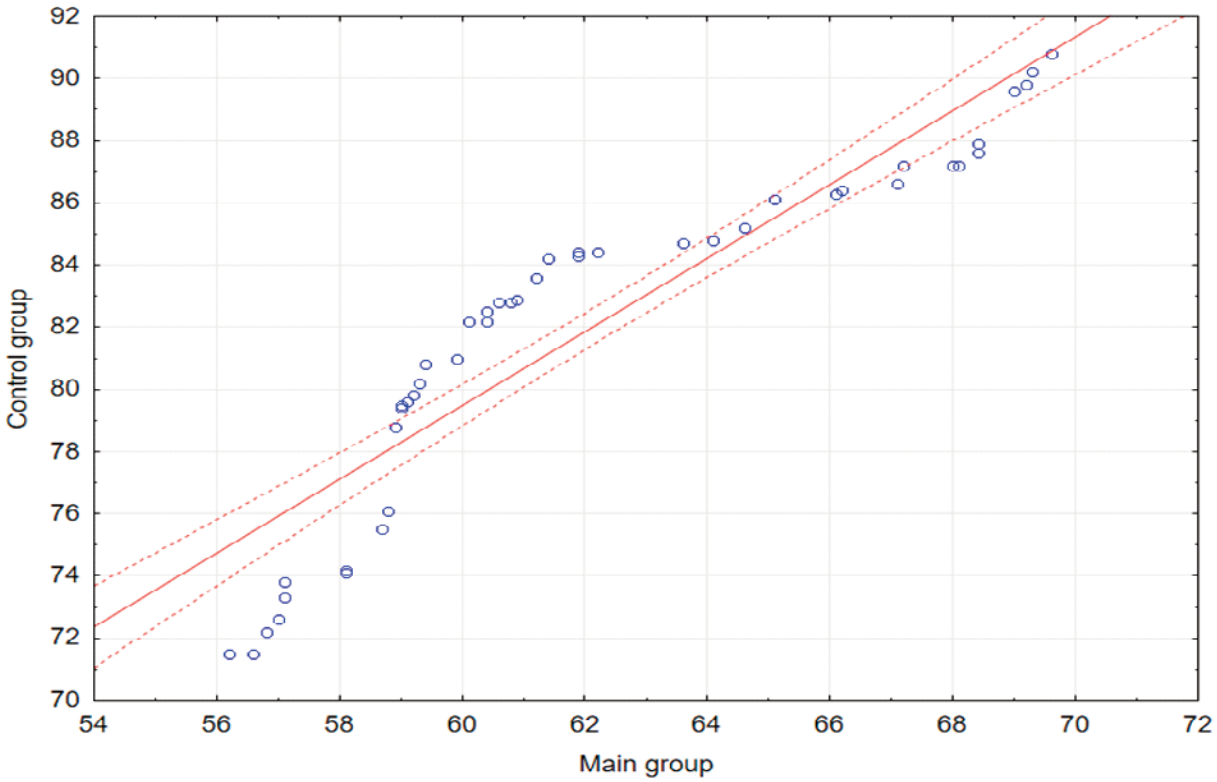

Figure 1. Scatter diagram of the main group and comparison group (psychological component of the quality-of-life scale – according to mental health data).

group reported the lowest score of MH (less than 60 points), which is associated with increased anxiety, depressive disorders and a decrease in the proportion of positive emotions (Figure 1).

These facts actualise the search for non-drug effective, safe and minimally invasive compliant approaches and techniques for the full restoration of the anatomical and functional structure of both the pelvic floor and the anterior abdominal wall in the postpartum period in women of reproductive age.

Discussion

This study demonstrates that the direct association of pregnancy and childbirth with the prevalence of disorders such as low back pain, pelvic and perineal pain, urinary incontinence, fecal incontinence, and sexual dysfunction highlights the need for increased attention to the preservation and rehabilitation of the pelvic floor musculature in postpartum women. Postnatal care should emphasize the assessment and early diagnosis of abdominal wall muscle diastasis and pelvic floor dysfunction, as these conditions often remain asymptomatic and undiagnosed in young women, ultimately impairing their quality of life.

According to the literature, 34.3 % of women have varying degrees of urinary incontinence within 3 months after delivery, of which 3.3 % have daily urinary leakage or more frequently, and 8.5% of women need to wear pads [26-30]. Thus, the prevention and treatment of urogenital disorders in patients of early reproductive age is important for the quality of life of

pregnant women. Recurrent dysbiosis associated with changes in the anatomical and topographic relationships of the vaginal walls, vaginal laxity, a decrease in the vaginal barrier function and microbiocenosis remains a significant symptom [31]. Zhang Y et al. point out that pelvic floor muscle dysfunction and a vaginal microbiota deficient in Lactobacillus are common in women after childbirth. It is the decline in pelvic floor muscle function in women 6-8 weeks after childbirth that can disrupt the balance of the vaginal microbiota, and the restoration of pelvic floor function promotes a healthy and balanced vaginal microbiota [1]. The authors demonstrate a decrease in the number of vaginal Lactobacillus in the group with impaired pelvic muscle function, with a diversity and species richness of other opportunistic flora [32].

Of interest is a systematic review of 66 studies that demonstrate a decrease in the quality of life in patients with urinary disorders, where physical discomfort and the above-mentioned changes persisted for 2 months after cesarean delivery, i.e., the path of surgical delivery does not eliminate the development of urinary disorders [33]. Another study examined the topic of planning further pregnancies in the presence of fecal incontinence after a previous delivery. According to the data obtained by the authors, 37 % of patients had such complaints as gas incontinence and loose stools, 53% needed to modify their lifestyle taking this problem into account, and 29 % of respondents said they did not want to plan the next pregnancy, citing fear of deterioration [34]. The emergence of negative emotional symptoms of varying severity in women during the postpartum period (such as anxiety, insomnia, and depressive states) significantly reduces their subjective perception of physical functioning in the context of daily and professional activities. This category of women constitutes a high-risk group and requires appropriate medical supervision and professional psychological support.

According to the study by MacArthur et al., 6 % of women had persistent urinary incontinence even after 12 years after delivery, and 43 % had symptoms of fecal incontinence 3 months after delivery. This population had significantly lower quality of life scores, with the authors pointing to factors such as obesity and the use of obstetric forceps, while cesarean section does not affect such risks [35-37]. Given the fact that most studies have focused on the development of these symptoms in the older age group (perimenopause), we consider it appropriate to focus research in a cohort of young women of reproductive age, primarily on the problem of chronic pelvic pain, sexual dysfunction and assessment of quality of life in the postpartum period. It is promising to conduct further research to optimise rehabilitation measures aimed at preventing the progression of pelvic floor and anterior abdominal wall muscle dysfunction.

Conclusion

This study established a correlation between pregnancy and childbirth in primiparous women and the prevalence of disorders such as low back pain, pelvic and perineal pain, urinary incontinence, fecal incontinence, and sexual dysfunction. These symptoms in young primiparous women are often asymptomatic and remain undiagnosed; however, in the late postpartum period, they lead to the development of psychoemotional disorders in one out of four patients and negatively affect the psychological component of quality of life.

Participation consent

Written information consent was obtained from the patients.

Data availability

Further data are available from the corresponding

author on reasonable request.

Conflict of interest

The authors declare no conflict of interest.

Article publication

The authors declare that the materials presented in the article are original and have not been previously published or submitted for publishing.

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Authors' contribution

Conceptualization, OM and AC; methodology SV and IK; validation, IK and MR; writing – original draft preparation, OP and MR; writing – review and editing, OM and NK; visualization, SV and IK; supervision, OM and AC; project administration, SV.

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