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EFFECTIVENESS OF RECOVERY OF THE PSYCHO-EMOTIONAL AND PHYSICAL STATUS OF WOMEN WHO HAVE SUFFERED A CAESAREAN SECTION

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Abstract. The postpartum period is characterized by a wide range of new states of women's life and increased sensitivity to external factors. The entire spectrum of postnatal changes can be viewed as an integrative combination of psychological, physiological and endocrine factors that affect the physical and mental activity of women, as well as determine their relationship with the child.

Purpose: to determine the influence of the developed program of physical therapy (PT) on the dynamics of the parameters of the psycho-emotional and physical status of women in the postpartum period after cesarean section.

Methods. 112 women were examined after childbirth. The comparison group (CG) consisted of 47 women who gave birth naturally. The main group 1 (MG1) consisted of 32 women after cesarean section, who recovered independently. The main group 2 (MG2) consisted of 33 women after cesarean section who underwent postpartum PT for 12 months (kinesiotherapy, abdominal bandage, kinesiology taping, abdominal massage and general; health nutrition, psychological relaxation, women's education). The basis of kinesiotherapy was functional training (to normalize the motor stereotype, restore the muscles of the torso and limbs, posture) with reference to household movements for child care. During the first weeks after the cesarean section, the movements that contributed to the tension of the postoperative suture were restricted, and the facilitated starting positions were chosen. Women were taught the optimal dynamic stereotype with the prevention of overload during habitual movements - lifting, feeding the baby, carrying a stroller, and the like.

Determination of psycho-emotional status (according to the Edinburgh Postnatal Depression Scale) and physical condition (according to the result of PWC170 and the value of VO_{2max}) was carried out in the early and late postpartum periods; 6 and 12 months after birth.

Results. In women in the late postpartum period, regardless of the type of delivery, there were signs of psycho-emotional depression (according to the Edinburgh Postnatal Depression Scale), a decrease in physical performance (according to the results of PWC170), a deterioration in cardio-respiratory reserves (according to the VO_{2max} value). Within a year after childbirth, there was a gradual improvement in the physical performance of women and the normalization of their psycho-emotional state, regardless of delivery and the implementation of active restorative interventions. The use of a physical therapy program starting from the early postpartum period after cesarean section revealed the advantages of the state of the psycho-emotional and physical state relative to women who underwent natural delivery and recovered after cesarean section on their own, already in the late postpartum period. 1 year after delivery, women who underwent cesarean section and performed the developed physiotherapy intervention showed a statistically significantly better result according to the Edinburgh Postnatal Depression Scale, PWC170, VO_{2max} compared with women who underwent vaginal delivery and recovered from cesarean section on their own. Women who had cesarean section but recovered on their own with general advice failed to reach the levels of women who gave birth by vaginal birth and women who underwent a physical therapy program in physical performance tests 1 year postpartum.

Conclusions. Physical therapy means should be prescribed from the first day of postpartum rehabilitation to improve the psycho-emotional state and increase the physical performance of women.

Keywords: caesarean section, rehabilitation, rehabilitation interventions, childbirth, multidisciplinary approach, physical therapy for women, postpartum period, psychological assistance.

Introduction. Caesarean section (CS) is a life-saving intervention for mothers and babies in the event of certain complications during pregnancy and childbirth. However, CS also increases the risk of maternal mortality and severe acute morbidity, and carries a higher risk of adverse outcomes in subsequent pregnancies compared with vaginal delivery [1, 2]. Infants born by CS, in turn, are exposed to different hormonal, physical, bacterial, and medical influences and are prone to more short-term risks, ranging from altered immune development, allergies, atopy, asthma, and reduced gut microbiome diversity compared with those born vaginally [3, 4], making the postpartum period more difficult for their mothers.

The postpartum period is characterized by a wide range of new states of women's lives and increased sensitivity to external factors. The entire spectrum of postnatal changes can be considered as an integrative combination of psychological, physiological and endocrine factors [3, 5] that affect the physical and mental activity of women, as well as determine their relationship with the child.

Research rationale. Pregnancy, childbirth and the postpartum period are complex and responsible periods in the life of every woman. The state of the woman in labor, physical and psychological readiness for motherhood, affect family relationships, emotional warmth towards the child, which contributes to harmonious growth and development.

Changes in the mood and physiological status of a woman depend on hormonal fluctuations associated with pregnancy and childbirth [6, 7]. The highest increase in depressive mood occurs on average on the 5th day after childbirth, which is combined with strong hormonal fluctuations. The level of cortisol in the blood can correlate with mood changes and postpartum depression. The hypothalamic-pituitary-adrenal system is also in a state of physiological hyperactivity, which determines hormonal instability [8, 9].

Postpartum depression (PPD) and other physiological conditions, in particular, physical weakness, which were not detected and remained uncorrected, can negatively affect the development of the child, distort the adequate connection in the interaction "mother-child" and increase the risk of depressive or anxiety symptoms in children at a later age. Therefore, maternal PPD is a potential risk factor for the further development of the child, and even a year after childbirth, some mothers continue to have depression, which negatively affects the emotional, cognitive, and social development of the child [6, 8].

Therefore, given the close relationship between the

health of the mother and the child, the problem of restoring the health of women after cesarean section requires the introduction of new medical knowledge and technologies into practical rehabilitation and obstetrics, in particular, methods of active functional physical therapy in order to improve the quality of life and the fastest possible physical and mental recovery. The advantages of using physical therapy in the postpartum period are their safety, the possibility of using them during lactation, and adaptation to any physical condition of the woman [10]. This determines the relevance of the presented work, its theoretical and practical value.

Purpose of the study: to determine the effectiveness of restoring the psychoemotional and physical status of women who have undergone cesarean section by means of physical therapy.

Material and methods. During the postpartum period, 112 women were examined. The comparison group (CG) consisted of 47 women (26.3 ± 1.3 years) who had vaginal birth (VD).

The main group consisted of 65 women who delivered by abdominal route according to the clinical protocol "Caesarean section" [11], who were divided into two subgroups according to their agreement to follow the recommendations within the framework of the developed PT program. Main group 1 (MG1) consisted of 32 women (25.8 ± 0.9 years old), who were given general recommendations for self-care in the postpartum period after CS (observance of hygiene, limitation of motor activity due to the presence of a postoperative scar, etc.), since they expressed a desire to recover independently. Main group 2 (MG2) consisted of 33 women aged 26.1 ± 1.5 years old who underwent postpartum PT, the effectiveness of which is presented in this study.

Criteria for including women in the study: postpartum period after vaginal (AV) or abdominal (OG) delivery; first transferred CS (OG); physiological course of the postpartum period; absence of acute or exacerbation of chronic extragenital pathology at the time of examination; informed consent to participate in the study (in control examinations for women with GP and MG1).

Exclusion criteria: pregnancy with the threat of interruption; delivery in multiple pregnancy; complicated postpartum period; repeated pregnancy or interruption of pregnancy during the observation period; professional sports before pregnancy and during the observation period; severe somatic diseases or defects of the newborn child; non-compliance with the inclusion criteria.

Table 1.

The developed physical therapy program lasted 12 months, starting from the early postpartum period

EPDS, points	Early postpartum period	Late postpartum period	6 months after giving birth	12 months after giving birth
CG, n=47	8,13±0,59	6,40±0,34°	6,19±0,33	4,81±0,26°
MG1, n=32	8,56±0,65	7,16±0,33*°	6,41±0,27°	5,56±0,33*°
MG2, n=33	7,48±0,52	5,58±0,34*°●	4,85±0,27*°●	3,28±0,22*°●

Notes: * – $p < 0.05$ – statistically significant difference between the corresponding parameters of CG and MG;

° – $p < 0.05$ – statistically significant difference between the corresponding parameters relative to the previous examination;

● – $p < 0.05$ – statistically significant difference between the corresponding parameters of MG1 and MG2

Physical performance is an expression of a person's vital activity, which is based on movement. It manifests itself in various forms of muscular activity; it depends on the ability and readiness of a person for physical labor and is determined by the characteristics of his physiological mechanisms and patterns. This quality is decisive in many types of industrial and household activities necessary in everyday life, and reflects the state of physical development and health of a person, in women in the postpartum period it directly determines the fullness of interaction with a newborn child [10, 12, 13].

Features of the physical status of women in the postpartum period were determined by the history of a motor stereotype changed during pregnancy and (for women with OG) the presence of a postoperative scar of the abdominal cavity. In particular, this was manifested in reduced parameters of physical performance according to the results of the PWC170 test. At the end of the late postpartum period, the results of OG1 women were at a low level, GP and OG2 - at a level below average/ 6 months after childbirth, the results of OG1 women reached a level below average, GP and OG2 - average (with a statistically significant advantage of women who were engaged in the developed FT program). A year after childbirth, women who recovered independently after VP and CR were characterized by an average level of work capacity (with the lowest digital expression in OG1 women). OG2 women under the influence of the developed measures showed the best indicator of work capacity according to PWC170 - at a level above average.

Discussion of the results. The increase in the number of women who have undergone abdominal delivery requires the search for new ways to improve their health [1, 4]. The postpartum period is an important stage of life for both the mother and the child, whose health depends on the normal functioning of each other. However, CG carries certain risks for the health of both the mother and the child [2, 3], therefore, the fastest possible correction of the state of the woman's body is extremely relevant.

Currently, relatively little is known about the features of the physical and psychological status of women during pregnancy and the postpartum period, and rehabilitation programs are mainly represented by prenatal training [2, 5, 6]. At the same time, during the postpartum period, changes can be detected in women in all domains of the International Classification of Functioning - structure and function, activity, participation. The physical condition after childbirth can be considered as one of the factors of an emotionally unstable state (for example, the presence of stitches, fatigue, problems with the toilet, eating, lack of comfort in the ward). The presence of a postoperative scar introduces changes into the postpartum period in the form of a limitation of physical performance at the time of its formation. This period is all the more important from the standpoint of the onset of future pregnancies, which requires the formation of a full-fledged elastic strong scar on the uterus and soft tissues [3, 10]. Motor dysfunction in women after childbirth is due to the specificity of a long-term unusual motor stereotype during pregnancy due to the

increased load on the musculoskeletal system, in particular the spine, and an enlarged uterus. At the same time, normal motor ability is the basis of safe daily activity [2], and in the postpartum period compensates for the increased load on child care.

The physical and mental status of a woman directly affects her ability to care for and raise a child, return to work and social activity, as well as the quality of life, which is the degree of comfort of a person both within herself and within the environment, therefore, they require certain recovery measures for the fastest normalization [2, 10].

Conclusions.

1. In women in the late postpartum period, regardless of the type of delivery, signs of psycho-emotional depression (according to the Edinburgh Postnatal Depression Scale), decreased physical performance (according to the results of PWC170), deterioration of cardio-respiratory reserves (according to the value of MSC) are detected.

2. During the year after childbirth, there is a gradual improvement in the physical performance of women and normalization of the psycho-emotional state, regardless of the type of delivery and the implementation of active restorative interventions by them.

3. The use of a physical therapy program from the early postpartum period in women after CR revealed advantages in the psychoemotional and physical state compared to women who underwent natural childbirth and those who recovered from CR independently, already at the end of the late postpartum period.

4. 1 year after childbirth, women who underwent CR and performed the developed physiotherapy intervention showed a statistically significantly better result on the Edinburgh Postnatal Depression Scale, PWC170, MSC compared to women who underwent natural childbirth and those who recovered from CR independently.

5. Women who underwent CR, but recovered independently using general recommendations, according to the results of determining physical performance 1 year after childbirth, could not reach the levels of women who gave birth naturally and women who underwent a physical therapy program.

6. Physical therapy should be prescribed from the first day of postpartum rehabilitation in order to eliminate signs of psycho-emotional depression and reduce physical performance for faster postpartum recovery of women and their return to full-fledged life activities.

Conflict of interest. Authors declare their absence conflict interests The prospects for further research are to practically determine the impact of the developed physical therapy program on the indicators of the functioning of the pelvic floor muscles in women who have undergone cesarean section.

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Author contributions: Yu.S. Kuravskaya a) conception and design; M.G. Aravitskaya c) provision of materials for the study; d) collection and synthesis of data; e) analysis and interpretation of results; I.K. Churpiy f)

writing of the manuscript; b) administrative support; M.V. Zelinska g) editing of the manuscript.

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ЕФЕКТИВНІСТЬ ВІДНОВЛЕННЯ ПСИХОЕМОЦІЙНОГО ТА ФІЗИЧНОГО СТАТУСУ ЖІНОК ПІСЛЯ КЕСАРІВ РОЗТИНУ

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Резюме. Післяпологовий період характеризується широким спектром нових станів жіночого життя та підвищеною чутливістю до зовнішніх факторів. Весь спектр постнатальних змін можна розглядати як інтегративну комбінацію психологічних, фізіологічних та ендокринних факторів, що впливають на фізичну та психічну діяльність жінок, а також визначають їх стосунки з дитиною.

Мета. Вивчити вплив розробленої програми фізичної терапії на зміну психоемоційного та фізичного статусу жінок у післяпологовому періоді після кесаревого розтину.

Методи. Обстежено 112 жінок після пологів. Групу порівняння склали 47 жінок, які народжували природнім шляхом. Основну групу 1 склали 32 жінки після кесарського розтину, які відновлювались без застосування реабілітаційної програми. Основну групу 2 склали 33 жінки після кесарського розтину, які проходили післяпологову фізичну терапію упродовж 12 місяців (бандаж черевної порожнини, кінезіологічне тейпування, кінезітерапія, загальний масаж та масаж живота; екологічне харчування, психологічна релаксація). Визначення психоемоційного статусу (за Edinburgh Postnatal Depression Scale) та фізичного стану (за результатом PWC₁₇₀ та величиною максимального споживання кисню) проводили у ранньому та пізньому післяпологових періодах; через 6 та 12 місяців після пологів.

Результати дослідження. У жінок у пізньому післяпологовому періоді, незалежно від виду родорозрішення, виявлялися ознаки психоемоційного пригнічення (за Edinburgh Postnatal Depression Scale), зниження фізичної працездатності (за результатами PWC₁₇₀), погіршення кардіореспіраторних резервів (за величиною максимального споживання кисню). Упродовж року після пологів відбувалось поступове покращення фізичної працездатності жінок та нормалізація їх психоемоційного стану, незалежно від виду родорозрішення, також вони виконували активні відновні вправи. Порівняно з жінками, які перенесли природне родорозрішення та тими, які відновлювались після кесарського розтину самостійно, вже у пізньому післяпологовому періоді, застосування програми фізичної терапії, починаючи з раннього післяпологового періоду після кесарського розтину, продемонструвало покращення їх психоемоційного та фізичного стану. Через 1 рік після пологів жінки, які перенесли кесарський розтин та виконували розроблене фізіотерапевтичне втручання виявили статистично значуще кращий результат за Edinburgh Postnatal Depression Scale, PWC₁₇₀, максимального споживання кисню, порівняно з жінками, які перенесли природне родорозрішення, та тими, які відновлювались після кесарського розтину самостійно. Жінки, які перенесли кесарський розтин, але відновлювались самостійно за допомогою загальних рекомендацій, за результатами визначення фізичної працездатності через 1 рік після пологів не змогли досягнути рівнів жінок, що народжували вагінальними пологами, та жінок, які проходили програму фізичної терапії.

Висновки. Застосування програми фізичної терапії доцільно призначати з першого дня родорозрішення з метою скорішого відновлення фізичної працездатності жінок та покращення психоемоційного стану.

Ключові слова: кесарів розтин, реабілітація, реабілітаційні втручання, пологорозрішення, мультидисциплінарний підхід, фізична терапія жінок, післяпологовий період, психологічна допомога.

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