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Original Article

Awareness of Puerperal Exercises Among Postnatal Kurdish Mothers in Erbil City

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ABSTRACT

Background and objectives: The postnatal period is a critical phase for maternal and newborn health, with increased risk of illness and complications. Postnatal exercise plays a vital role in reducing these risks and helps mothers recover and return to their pre-pregnancy state. This study aimed to assess the awareness of postnatal Kurdish mothers regarding puerperal exercises.

Methods: A cross-sectional study was conducted from September 2021 to November 2023, involving 1,000 postpartum Kurdish mothers in the postpartum ward of the Maternity Teaching Hospital, Erbil City, Kurdistan Region, Iraq. Data were collected using a structured interview questionnaire comprising 45 items to assess mothers' knowledge of puerperal exercises, including types (5 items), benefits (34 items), and contraindications (6 items). Each correct answer was awarded one point, with a total possible score of 45. Data were analyzed using SPSS version 20.0, applying descriptive statistics (frequencies, percentages, means) and inferential statistics (chi-square test) to examine associations between variables.

Results: Approximately half of the study participants (51.6%) Kurdish mothers, had low knowledge regarding the types, benefits, and practices of puerperal exercise. While many participants expressed willingness to engage in postpartum physical activity, a range of barriers were reported that hindered their actual participation. These included neglect and lack of time (100%), fatigue and discomfort (98.7%), limited information (72.5%), disinterest in exercise (45.4%), as well as family-related responsibilities such as spousal support (80.9%) and childcare duties (83.4%). A very highly statistically significant relationship was found between Kurdish mothers' overall knowledge and their educational level and age (P-values < 0.000).

Conclusion: The study reveals a lack of puerperal exercise knowledge among Kurdish mothers in Iraq's Kurdistan Region, indicating the necessity for culturally sensitive education, healthcare provider training, and community-wide awareness initiatives to promote postpartum health and exercise.

Keywords: Puerperal Exercise; Postnatal Mothers; Cross-sectional Study; Mother's Awareness.

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INTRODUCTION

The postpartum, or puerperium, period begins immediately after birth and typically lasts for about six weeks or until the body has returned to a state similar to its pre-pregnancy condition. During this time, the anatomical and physiological changes that occurred during pregnancy have the potential to impact women's health and contribute to obesity [1]. The postpartum period is a critical transition phase for women, as the body undergoes significant changes that can have a substantial effect on their physical and mental well-being, necessitating physical and psychological adjustments [2]. By approximately six weeks after delivery, most of the changes associated with pregnancy, labor, and delivery have resolved, and the body returns to its pre-pregnancy condition [3].Exercise is a subset of physical activity that is planned, structured, and repetitive and has a final or intermediate objective: the improvement or maintenance of physical fitness [4]. Exercises are an important part of daily life for many women. Postpartum exercises (PPEs) are regarded as a basic therapy, which may improve the health of puerperal women [5-6].To prevent complications following childbirth, it is crucial to provide high-quality care, health education and encourage adherence to proper diet and postnatal exercise. Postnatal exercise plays a vital role in promoting various health benefits, such as encouraging the drainage of lochia, reducing the risk of deep venous thrombosis (DVT), strengthening the pelvic floor muscles, minimizing respiratory and vascular complications, preventing future prolapse and stress incontinence, alleviating back pain and genital prolapse, promoting proper posture and body alignment, and maintaining abdominal muscle tone. Furthermore, postpartum exercises promote weight loss, improve mood, and help relieve stress and postpartum depression [6,7,8].However, it is important to note that postpartum exercises are contraindicated in certain conditions such as heart disease, infections like bronchitis, urinary or vaginal infections, certain skin diseases or open wounds, continuing vaginal bleeding, incontinence, uncontrolled diabetes, or epilepsy [9]. Different types of postpartum exercises include Kegel exercises (pelvic floor exercises), foot and leg exercises, relaxation exercises, abdominal exercises (abdominal breathing), pelvic tilting or rocking, head and shoulder raising, leg raising, knee rolling, hip hitching, abdominal tightening on outward breath, foot bending and stretching, ankle rotating, leg sliding, straight curl-ups, and diagonal curl-ups [10].In addition, the investigator, through clinical work and engagement with students in the postpartum unit, has observed that Kurdish mothers in the Kurdistan Region of Iraq demonstrate limited knowledge regarding postpartum exercises. This lack of awareness highlights on the urgent need for educational and supportive initiatives to empower Kurdish women with the necessary information and resources to prioritize their physical and mental well-being during the postpartum period. By raising awareness and providing guidance on the importance of postpartum exercise, healthcare professionals can contribute to improving maternal health outcomes and enhancing the overall quality of life for mothers and their families within Kurdish society.Importance of Postpartum Exercise for Women in Kurdish SocietyIn Kurdish society, where cultural norms and traditions often place limited emphasis on the well-being of mothers during the postpartum period, the importance of postpartum exercise cannot be overstated. Engaging in regular physical activity following childbirth offers numerous benefits for women’s overall health and well-being.

Primarily, postpartum exercise assists Kurdish women in regaining strength and vitality after the physically demanding processes of pregnancy and childbirth. By incorporating appropriate exercises into their routines, women can rebuild stamina and improve physical fitness, enabling them to better cope with the demands of motherhood and daily tasks (Mottola & Davenport, 2019).Furthermore, postpartum exercise plays a vital role in promoting optimal mental health and emotional well-being among Kurdish mothers. Pregnancy and childbirth involve significant hormonal changes and emotional adjustments, rendering the postpartum period a vulnerable time for many women. Regular exercise has been shown to alleviate symptoms of postpartum depression and anxiety, enhance mood, and reduce stress levels (Daley et al., 2007; Ko et al., 2020), thereby empowering Kurdish women to better navigate the emotional challenges associated with new motherhood. Failure to engage in postpartum exercise is considered a contributing factor to increased morbidity after delivery and may negatively impact maternal health (Artal & O'Toole, 2003).Despite these well-documented benefits, awareness and practice of puerperal exercise among Kurdish women remain insufficient, largely due to cultural barriers and lack of information. Therefore, this study aims to assess the knowledge and barriers related to postpartum exercise among Kurdish mothers.

Objectives:

1-To assess the knowledge of postpartum exercise among Kurdish mothers.

2-To identify barriers that hinder Kurdish women from practicing puerperal exercise.

3-To examine the association between mothers' knowledge of postpartum exercise and their age and education level.

METHOD

A descriptive cross-sectional study was conducted to assess postnatal mothers' awareness regarding puerperal exercise. The study was carried out between September 2021 and November 2023 in the postpartum ward of the Maternity Teaching Hospital in Erbil City, Kurdistan Region, Iraq. A convenience sample of 1,000 postnatal mothers was selected, representing approximately 30% of the total number of postnatal mothers (3,750) who attended the postpartum ward during a three-month period. These women visited the hospital for postpartum care and newborn examination within the first 24 hours after delivery. The sample size calculation was based on the SSC program (Sample Size Calculator) version 3.0.43, with a confidence level (CL) of 95%, a margin of error of 0.05%, and a population proportion of 50%. According to the SSC program, the estimated sample size was 937 postnatal mothers. However, for reliability, 1000 postnatal mothers were included in the study. Inclusion criteria were mothers who had a normal vaginal delivery (with or without episiotomy) or cesarean section, had a live newborn, were either primiparous or multiparous, and identified as Kurdish. Exclusion criteria included women who experienced postpartum complications such as postpartum hemorrhage, had babies with congenital anomalies, suffered from major psychiatric disorders, or participated in an exercise program during their last pregnancy. An interview questionnaire was designed for the purpose of data collection from mothers during their postpartum period. The questionnaire was developed after the researcher reviewed current local and international literature, including textbooks, articles, and scientific journals. This process helped the investigator become acquainted with the problem and guided the tool design process.

Subsequently, the tool was prepared. To assess the content validity of the tool, the researchers ensured that the questionnaire items adequately represented what they were supposed to measure by presenting it to experts for review and validation. The questionnaire was reviewed by a panel of 15 experts from various related specialties within the Kurdistan Region. They were asked to evaluate the questionnaire for clarity of content, relevance of items, and overall adequacy. The experts' responses were assessed based on their agreement or disagreement regarding item relevance, content clarity, and adequacy of the entire questionnaire. The results indicated that 15 of the experts agreed upon the questionnaire items with minor suggested changes. The investigator considered their responses and suggestions, resulting in some modifications to the tool. The finalized questionnaire comprised five parts: demographic data, obstetrical and medical history, mothers' knowledge regarding puerperal exercise, mothers' barriers to performing puerperal exercise, and sources of information regarding puerperal exercise. The section on mothers' knowledge regarding puerperal exercise included a total of 45 items, covering the types of postpartum exercises (5 items), benefits of walking, Kegel, leg/foot, abdominal, and relaxation exercises (34 items), and contraindications for exercise during the postpartum period (6 items). Each item was assessed using a 3 -point Likert scale: "Agree" was scored as 2 points, "Neither agree nor disagree" as 1 point, and "Disagree" as 0 points. Therefore, the total possible knowledge score ranged from 0 to 90 points. To categorize the overall knowledge level, the total score was converted into a percentage. Participants were classified into three levels: Low knowledge (0-49.9%; 0-44 points), moderate knowledge (50-74.9%; 45-67 points), and high knowledge (75-100%; 68-90 points). The study received approval from the Midwifery Scientific Committee and Ethical Committee at the College of Nursing, Hawler Medical University (Registration No: 1) and (Registration No:156) respectively on 02/09/2021. All postnatal mothers were informed that their participation was voluntary and that the collected data would be used solely for research purposes. Oral consent was obtained from all participating women after explaining the study's purpose and informing them of their right to withdraw at any time. Statistical analysis was performed using SPSS version 20.0 software. Categorical variables were presented as numbers and percentages. Numerical data were assessed for normal distribution. Independent sample t-tests and $\chi 2$ tests were utilized to analyze differences between groups, with a significance threshold set at P-value < 0.05.

RESULTS

Table 1 showed the majority, 69.6%, of the study participants fall within the age range of 21 to 30 years old. Furthermore, 35.4% of the women had attained a secondary education level. Interestingly, 78.6% of the participants identified themselves as housewives. Additionally, the table indicates that 66.1% of the sample had experienced multiple pregnancies, while only 26.1% had a history of one-time abortion.

Table 2 showed that 53.0% of the study sample were aware of the benefits of walking as a puerperal exercise, while 47.0% were not. For Kegel exercises, only 5.0% were knowledgeable about them, whereas a significant majority, 95.0%, were not aware. Similarly, 5.0% of women knew about leg and feet exercises, with 95.0% lacking knowledge in this area. In contrast, a larger proportion of women, 30.2%, were informed about abdominal exercises, leaving 69.8% unaware. For relaxation

exercises, 8.8% of women had knowledge, while 91.2% did not.

Table 1: Background of the Study Sample

Variables Age (years)	F (%)
< 20	516 (51.6)
21 – 30	271 (27.1)
≤31	213 (21.3)
Mean + SD	**26.95 ± 5.013**
Education level	
Illiterate	170 (17)
Primary	293 (29.3
Secondary	354 (35.4)
Institute	101 (10.1)
College	82 (8.2)
Occupation	
Formal employment	13 (1.3)
Self-employed	109 (10.9)
Housewife	786 (78.6)
Student	92 (9.2)
Gravida	
Primigravity	250(25)
Multi gravity	661(66.1)
Grand Multi gravity	89(8.9)
Previous Miscarriage	
None	739(73.9)
1	261(26.1)

Table 2: Mothers Knowledge Regarding the Types of puerperal exercise

Variables	Yes F (%)	No F (%)	Total F (%)
Walking	530 (53)	470 (47)	1000 (100)
Kegel exercise	50 (5)	950 (95)	1000 (100)
Leg and feet exercise	50 (5)	950 (95)	1000 (100)
Abdominal exercise	302 (30.2)	698 (69.8)	1000 (100)
Relaxation exercise	88 (8.8)	912 (91.2)	1000 (100)

Table 3 showed that half of the study sample (51.6%) had low knowledge regarding puerperal exercise. Additionally, 27.1% of the participants had moderate knowledge, and 21.3% had high knowledge regarding puerperal exercise. These findings suggest that a significant portion of the participants had low levels of knowledge regarding puerperal exercise, while smaller percentages had moderate or high levels of knowledge.

Table 3: Level of overall knowledge of mothers regarding types and benefits of the puerperal exercise

Overall Knowledge	F (%)
Low	516 (51.6)
Moderate	271(27.1)
High	213 (21.3)
Total	**1000 (100)**

Table 4 showed that half (53.7%) of the study sample did not know about the appropriate time for exercise per day during the postpartum period. Only 33.3% of the study sample had knowledge regarding the timing of exercise per day. Additionally, 52.5% and 53.7% of the study sample lacked knowledge regarding the frequency and severity of postpartum exercise practices, respectively. Concerning exercise equipment, 92.2% of the women had no idea about it. Furthermore, 60.6% of the study sample were unaware that warm-up and cool-down exercises should be done before and after exercise practices. The majority of the study sample think that exercise practices are safe during the postpartum period. The same percentage mention that the community needs puerperal exercise classes.

Table 4: Mothers' knowledge regarding puerperal exercise practices.

Variables		F (%)
Time per day (minutes a day)	20–30	333 (33.3)
	40- 60	130 (13)
	None	537(53.7)
Frequency of exercise practice /week	1–2 times	165 (16.5)
	3–4 times	310 (31)
	None	525 (52.5)
Severity of exercise	Mild -intensity	201 (20.1)
	Moderate-intensity	262 (26.2)
	None	537 (53.7)
Exercise equipment	Free weights	5 (0.5)
	Balance ball	5 (0.5)
	Treadmill	68 (6.8)
	None	922 (92.2)
Warm up before exercise	No need	300 (30)
	5 min	94 (9.4)
	None	606 (60.6)
Cool up after exercise	No need	300 (30)
	5 min	94 (9.4)
	None	606 (60.6)

Table 5 showed that 100% of the study sample identified neglect and lack of time as their main barriers. Additionally, 98.7%, 72.5%, and 45.4% of the study sample reported feeling very tired and uncomfortable, lacking information, and not liking exercising, respectively. The rate of mothers who face barriers related to having a husband and childcare responsibilities for puerperal exercise was 80.9% and 83.4%, respectively.

Table 5: Barriers to puerperal exercise practice among mothers

Variables	Yes F (%)	No F (%)
Neglecting	1000(100)	0.0(0)
Lack of time	1000(100)	0.0(0)
Feels very tired & uncomfortable	987 (98.7)	13 (1.3)
Does not like exercising	454 (45.4)	546 (54.6)
Lack of information	725 (72.5)	275 (27.5)
Family barriers (Husband)	809 (80.9)	191 (19.1)
Family barriers (Child care activity)	834 (83.4)	166 (16.6)

More than one answer for each item

Table 6 indicates the association between the age group of the study sample and their overall knowledge regarding puerperal exercise. The results show a statistically significant association between the postnatal mothers' age and their overall knowledge (P-value < 0.001). Moderate knowledge was more prevalent among mothers aged ≥30 years (81.2%), while low knowledge was most common in the 21–30 age group (36.5%). Interestingly, the highest proportion of high knowledge was observed in the <20 age group (23.4%). This suggests variation in knowledge levels across age groups without a consistent increasing or decreasing trend. Table 7 indicates the association between the educational level of the study sample and postnatal mothers' overall knowledge regarding puerperal exercise. The results show a very highly statistically significant association between educational level and overall knowledge (P < 0.001). The percentage of mothers with low knowledge decreased as education level increased from 74.7% among illiterate participants to only 24.4% among those with a college degree. In contrast, the percentage of mothers with high knowledge increased markedly with education, from 17.1% (illiterate) to 59.8% (college). This indicates that overall knowledge regarding puerperal exercise increases with higher levels of education.

Table 6: Association between age groups of the study sample with postnatal mothers' overall knowledge regarding puerperal exercise

Variables	< 20 F (%)	21-30 F (%)	=30 + F (%)	Total F (%)	P- Value
Low	15 (2.9)	99 (36.5)	0 (0.)	114 (11.4)	**< 0.001**
Moderate	380 (73.6)	143 (52.8)	173 (81.2)	696 (69.6)	
High	121 (23.4)	29 (10.7)	40 18.8)	190 (19)	
Total	**516 (51.6)**	**271 (27.1)**	**213 (21.3)**	**1000 (100)**	

Table 7: Association between educational level of the study sample with postnatal mothers' overall knowledge regarding puerperal exercise.

Variables	Illiterate F (%)	Primary F (%)	Secondary F (%)	Institute F (%)	College F (%)	Total F (%)	P- Value
Low	127 (74.7)	209 (71.3)	137 (38.7)	23 (22.8)	20 (24.4)	516 (51.6)	**< 0.001**
Moderate	14 (8.2)	74 (25.3)	152 (42.9)	18 (17.8)	13 (15.9)	271 (27.1)	
High	29 (17.1)	10 (3.4)	65 (18.4)	60 (59.4)	49 (59.8)	213 (21.3)	
Total	**170 (17.0)**	**293 (29.3)**	**354 (35.4)**	**101 (10.1)**	**82 (8.2)**	**1000 (100)**	

DISCUSSION

Puerperal exercise is often overlooked in Iraq and the Kurdistan region, with women in the postpartum period lacking sufficient knowledge on the subject. This study aimed to assess women's knowledge and attitudes towards puerperal exercise, revealing that the majority were young, multigravida, and had secondary education.

The study participants identified walking as a type of puerperal exercise, but there was limited awareness about other essential components, including muscle strengthening, relaxation techniques, breathing exercises, stretching, pelvic floor exercises, and abdominal exercises. The importance of these exercises, along with walking, is highlighted by the American College of Obstetricians and Gynecologists (ACOG) and Majeed et al. (2022) as beneficial for both pregnancy and the postpartum period [10, 11].Despite the recognized benefits of postnatal exercise, the study found low awareness among women regarding its advantages, such as promoting quick postnatal recovery, improving body awareness, posture, coordination, and preventing excess weight gain. This is evident in the results presented in Table 6, where 11.4% of participants demonstrated low overall knowledge, with the highest proportion (36.5%) found among women aged 21–30 years. These results align with those of another study conducted by Sundaramurthy et al. (2020), where their study sample showed a lack of awareness of the full benefits of postnatal exercise, with only 3-5% being aware of its advantages [12]. On the other hand, the results of the present study contrast with existing literature highlighting the effectiveness of postnatal exercise in muscle reactivation, maternal well-being, body awareness, and weight management [9, 10]. This indicates that postnatal mothers require information regarding perinatal exercise classes. Recognizing the minimal risks and confirmed benefits of exercise during pregnancy, it is crucial to encourage postnatal exercise for behavior modification and habit alteration. Dudonienė & Kuisma (2023) concluded in their study that healthcare professionals encourage women to be active and educate them about potential benefits and forms of exercise during pregnancy and the postpartum [13].Concerns arise regarding the lack of information about the timing, frequency, and intensity of puerperal exercises, as well as the equipment used. Additionally, warming up and cooling down practices lack attention in women's postpartum exercise routines, agreeing with other studies. The results of postnatal mothers' knowledge regarding postpartum exercise, as reported by Meeral (2015), indicate that in her study, 44 out of 60 participants (74%) had inadequate knowledge regarding postpartum exercise practices in the pretest phase [14].Although the majority of participants express a positive attitude towards puerperal exercise, various barriers hinder their engagement. These obstacles include neglect, lack of time, fatigue, family responsibilities, insufficient information, and personal preferences. These results align with those of another study conducted in a rural area of Kulasekharam, Kanyakumari district, Tamil Nadu, by Vishnu & Aazmi (2019), which reported that the majority of mothers had a positive attitude towards postnatal exercise [15]. Also, findings are further supported by Mbombiet et al. (2017), who demonstrated that 72 percent of postpartum women were not exercising due to discomfort, exhaustion, and a lack of educational programs at clinics and hospitals [5].Despite positive attitudes, participants have low general knowledge about puerperal exercises, with social media, midwives, nurses,

and television being the primary sources of information. These results were supported by findings of studies conducted by Majeed et al., (2022), Alharbi et al., (2019), and Alharqi et al., (2018), which reported that the principal sources of information on postpartum exercises mentioned by participants were social media, television, magazines, and books [11, 16, 17].The findings of the study suggest a significant association between the age of postnatal mothers and their overall knowledge of puerperal exercise, as determined by statistical analysis. Additionally, the study highlights a significant relationship between the level of education and postnatal mothers' overall knowledge of puerperal exercise. Previous research conducted by Sakar et al. (2014), Vishnu & Aazmi (2019), Mistry et al. (2019), Kumari1 and Prasanna, (2022), and Sabiri (2018) has shown that factors such as education level and age group influence puerperal exercise [5, 18, 19, 20]. However, Mbada et al. (2016) and Mistry et al. (2017) reported that there was no statistically significant association between education level and postnatal mothers' overall knowledge of puerperal exercise [21, 22].The low level of knowledge about puerperal exercise among Kurdish women may be attributed to the lack of structured maternal health education programs during the antenatal and postnatal periods. Additionally, cultural norms, limited access to professional guidance, and insufficient promotion of physical activity by healthcare providers further contribute to this knowledge gap.

Limitations of this study include the small sample size and the use of a single hospital setting, which may limit the generalizability of the findings. Additionally, since the data were collected through interviews, responses may have been influenced by social desirability bias, with participants potentially giving answers they believed were expected. Despite these limitations, the study provides valuable insights into the knowledge gaps and barriers faced by Kurdish women regarding postpartum exercise.

CONCLUSION

The study highlights the concerning lack of knowledge among Kurdish women in the Kurdistan Region of Iraq about postpartum exercise, potentially due to inadequate health education resources. The results emphasize the need for educational materials tailored to the cultural context, healthcare provider training, and community-wide awareness initiatives to address the knowledge deficit and promote postpartum health and exercise.

CONFLICT OF INTEREST

The author reports no conflict of interest.

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