PERINATAL JOURNAL

Original Article

Perinatal Journal 2025; 33(2):93-100

https://doi.org/10.57239/prn.25.03320011

Comparison of newborn care knowledge, parenting attitudes, parental role confidence, and expected number of children before and after pre-parenting education among university students in south Korea

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Abstract

This study aimed to provide foundational evidence for the development of low birth rate policies by examining the effects of pre-parenting education on university students' knowledge of neonatal care, parenting attitudes, parental role confidence, and expected number of children. The study included 42 university students enrolled in Healthy Parenting Recipe, an online pre-parenting education program developed in 2024 in D City, South Korea. Healthy Parenting Recipe is a general education course designed to enhance students' knowledge and skills related to parenting and strengthen their confidence in the parental role. Significant improvements were observed after the pre-parenting education in students' knowledge of neonatal care, recognition of the importance of caregiving, engagement in infant care, parental role confidence, and expected number of children. These findings indicate that pre-parenting education enhances university students' confidence in their parental role, reduces perceived challenges in child-rearing, and positively influences reproductive intentions, potentially contributing to an increase in the expected number of children.

Keywords: Low fertility, Offspring, Parenting, University students, Attitude

Introduction

In 2024, South Korea recorded a total fertility rate (TFR) of 0.75 births per woman, the lowest in the world [1]. Among the multifactorial causes of low fertility, the challenges of child-rearing have been consistently emphasized. In response, the Korean government and local municipalities have implemented pre-parenting education programs targeting prospective parents as a strategy to mitigate the declining birth rate [2,31].

Pre-parenting education provides unmarried young adults—potential future parents—with opportunities to reflect on the meaning of parenthood while acquiring essential child-rearing skills. Such programs not only prevent parenting difficulties but also enhance individuals' confidence in managing potential challenges [3]. Nevertheless, findings from the 2024 *National Survey on Perceptions of Marriage, Childbirth, and Parenting* revealed that 68.7% of unmarried men and women with no intention of having children cited "difficulties of child-rearing" as their primary reason [4]. This reluctance to assume parenting roles often stems from limited opportunities for structured education or observational learning related to child-rearing before and after childbirth [5].

University students, in particular, are in early adulthood, a developmental stage characterized by identity formation and preparation for social participation, including career development and future family planning [6]. Providing pre-parenting education during this critical period can foster knowledge, skills, and confidence for effective parenting, thereby promoting future parental competence.

Parental competence refers to the ability to successfully fulfill parenting roles, encompassing not only knowledge and skills but also confidence and attitudes [7]. Higher levels of parental competence are associated with adaptive parent–child interactions that reduce behavioral problems and promote healthy child development [8,33]. Conversely, lower competence may result in permissive or authoritarian parenting styles, inadequate responses to child behaviors, and increased parenting stress [9]. Parental competence can be assessed through indicators such as

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knowledge of newborn care, parenting attitudes, and confidence in parenting roles.

Knowledge of newborn care reflects an understanding of caregiving behaviors and skills essential for maintaining infant health and well-being [10]. Accurate knowledge forms the foundation of effective parenting. Parents with greater knowledge of newborn care tend to exhibit higher confidence, lower stress, and more appropriate caregiving behaviors [10]. In contrast, inadequate knowledge may lead to feelings of inadequacy, guilt, or fear in fulfilling parental roles [11]. Therefore, acquiring practical knowledge through pre-parenting education is essential, as it directly influences child growth and development.

Parenting attitude encompasses the emotional bonds, behaviors, and values expressed during child-rearing [12]. Key components include recognition of caregiving importance, the level of parental involvement, prioritization of child needs, and balance between parenting responsibilities and career aspirations [5]. When parents maintain a balanced perspective, they respond sensitively to infant cues, establish secure attachment, and experience reduced parenting stress, all of which foster positive parenting attitudes [13,32]. Lower parenting stress is also associated with higher fertility intentions [14], underscoring the need for pre-parenting education that promotes supportive and positive parenting attitudes.

Parenting confidence refers to the self-perceived ability to nurture, discipline, and manage child-rearing challenges [15]. Sanderson et al. [16] demonstrated that parents with higher confidence actively seek parenting knowledge and participate more fully in caregiving, while Dorsey et al. [17] reported that confident parents are more likely to adopt desirable parenting behaviors and foster positive developmental outcomes in children. Conversely, low parenting confidence is associated with heightened anxiety and greater difficulty in performing parenting roles [18].

The expected number of children—the number of children individuals intend to have in the future—serves as a key indicator of fertility intentions [19]. In Korea, the expected number of children among men and women of reproductive age increased from 1.56 in 2021 [20] to 1.8 in 2024 [2], reflecting a modest positive shift in attitudes toward marriage and childbirth [4]. Given that fertility expectations are closely associated with parenting attitudes and intentions [4], it is critical to determine whether positive values fostered through pre-parenting education translate into actual fertility behavior, which has direct implications for national low-fertility policies.

Despite the increasing recognition of pre-parenting education, most existing programs in Korea remain short-term, fragmented, and one-time interventions that lack systematic design and longitudinal continuity [21]. Furthermore, limited research has comprehensively examined the effects of such programs on parental competence—including knowledge of newborn care, parenting attitudes, and confidence—while also considering changes in fertility expectations.

Therefore, this study aimed to evaluate the impact of a structured pre-parenting education program on university students, focusing on improvements in newborn care knowledge, parenting attitudes, parenting confidence, and expected number of children. The findings are expected to provide foundational evidence for developing effective low-fertility policies targeting prospective parents.

Methods

Study design

A quasi-experimental single-group pretest–posttest design was employed to evaluate the effectiveness of pre-parenting education among university students.

Participants

The study included undergraduate students enrolled in the elective course *Healthy Parenting Recipe* at K University in D City, South Korea, during the fall semester of 2024. The *Healthy Parenting Recipe* was developed in 2024 by D City as a pre-parenting education program for university students [20].

Prior to the first week of classes, students completed a self-administered questionnaire via a Google survey link. Of the 99 students who registered for the course, 78 participated in the pretest survey. Following

completion of the 13-week course, a posttest survey was administered. Among the 78 participants, 36 withdrew voluntarily, leaving 42 students who completed the posttest. All responses were complete and valid and were included in the statistical analysis. No significant differences in general characteristics were observed between participants who withdrew and those who completed the study.

Table 1. Weekly class topics of the healthy parenting recipe course

Week	Session 1	Session 2	Session 3
1. Course Orientation and Human Understanding	Introduction to the course and objectives	Understanding self and others	Understanding relationships and respect for diversity
2. Understanding Emotions and Depression	Understanding postpartum depression	Coping strategies for depression	Human respect in a diverse society
3. Understanding Infants and Young Children	Understanding infant temperament	Infant and young child growth and development	Promoting healthy infant–child interactions
4. Family and Couple Relationships	Building healthy families	Couple's communication skills	Couple relationships and transition to parenthood
5. Preparation for Pregnancy and Childbirth	Managing reproductive health and infertility prevention	Healthy pregnancy and prenatal care	Coping with the discomforts of pregnancy as a couple
6. Childbirth and Postpartum Care	Birth preparation and delivery process	Types of delivery and pain management	Postpartum recovery and family adaptation
7. Newborn Care I	Basic newborn care	Newborn bathing and umbilical cord care	Thermal regulation and jaundice management
8. Newborn Care II	Reading newborn cues	Understanding newborn sleep and feeding patterns	Recognizing abnormal signs (e.g., fever, colic)
9. Infant Health and Nutrition	Breastfeeding and formula feeding	Complementary feeding and weaning	Immunizations and preventive health management
10. Parenting Attitudes and Attachment	Parenting attitudes and sensitivity	Attachment formation in early childhood	Preventing dysfunctional parent–child relationships and child abuse
11. Promoting Child Health and Safety	Growth, development, and safety management	Prevention of accidents and injuries	Parenting stress management and emotional regulation
12. Work–Life Balance and Low Fertility Awareness	Work–life balance for parents	Understanding social issues related to low fertility	Family support systems and community resources
13. Integration and Reflection	Strengthening parenting confidence	Reflection on parenthood and caregiving values	Future planning for a healthy family and well-being

Pre-parenting education

The course is structured into four domains: (1) self and family, (2) healthy pregnancy and childbirth, (3) understanding infants and young children, and (4) infant and child health management. In this study, the 13-week course was delivered remotely through a learning management system, with three sessions per week, each lasting 25–35 minutes. The specific weekly topics are presented in Table 2.

Instruments

Knowledge of newborn care

Knowledge of newborn care was measured using the instrument originally developed by Seo [8] and revised by Lee and Lee [21]. This self-report questionnaire consisted of 16 items covering feeding, organizing the infant's environment, jaundice, identification and care of abnormal symptoms, and

umbilical cord management. Each item was scored dichotomously (0 = incorrect, 1 = correct), yielding a total score ranging from 0 to 16, with higher scores indicating greater knowledge of newborn care. The reliability of the tool was KR-20 = 0.24 in Lee and Lee's [22] study, and the same reliability (KR-20 = 0.24) was obtained in this study.

Parenting attitudes

Parenting attitudes were assessed using the instrument developed by Won [3] and revised by Lee and Lee [22]. The instrument comprised 13 items across four subdomains: maternal career priority, recognition of caregiving importance, parental involvement with infants, and prioritization of infant needs. Each item was rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with total scores ranging from 13 to 65. Higher scores indicated more positive parenting attitudes. Cronbach's α was both 0.62 in Lee and Lee's [22] study and the present study. Subdomain reliabilities were: recognition of caregiving importance (α = 0.74), parental involvement with infants (α = 0.96), maternal career priority (α = 0.74), and prioritization of infant needs (α = 0.50).

Parenting confidence

Parenting confidence was measured using the Parenting Sense of Competence Scale (PSCS), originally developed by Gibaud-Wallaton [23] and adapted by Kim [24]. The instrument comprised 17 items, each rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Total scores ranged from 17 to 85, with higher scores indicating greater parenting confidence. Cronbach's α in the present study was 0.73.

Expected number of children

The expected number of children was assessed with a single-item question: "How many children would you like to have?" Response options were "none," "one," and "two or more." For statistical analysis, responses were dichotomized into two groups: 0–1 child versus two or more children

Ethical consideration

Participants were informed of the study's purpose and objectives and assured that withdrawal would not result in any disadvantages. Informed consent was obtained before participation.

Data analysis

Data were analyzed using IBM SPSS Statistics version 29.0 (IBM Corp., Armonk, NY, USA).

Descriptive statistics were used to summarize participants' general characteristics, knowledge of newborn care, parenting attitudes, parenting confidence, and expected number of children. Differences in mean scores for knowledge of newborn care, parenting attitudes, and parenting confidence between pre-and post-intervention were evaluated using paired t-tests.

Changes in the distribution of the expected number of children before and after the intervention were analyzed using the chi-square (χ^2) test.

Results

General characteristics of participants

The mean age of the participants was 22 years. Of the total, 12 (28.6%) were male and 30 (71.4%) were female. Regarding academic year, 22 students (52.4%) were freshmen or sophomores, while 20 (47.6%) were juniors or seniors. The majority of participants (n = 34, 81.0%) reported having no religious affiliation.

Comparison of Knowledge of Newborn Care, Parenting Attitude, and Parenting Confidence Before and After the Pre-parenting Education

The mean score for knowledge of newborn care increased significantly following the intervention ($t = -6.993$, $p < 0.001$). The mean parenting attitude score also increased after the program ($t = -3.156$, $p = 0.003$). Among the subdomains of parenting attitude, recognition of caregiving importance increased significantly after the program ($t = -3.532$, $p = 0.001$), and parental involvement with infants also showed a significant improvement ($t = -3.254$, $p = 0.002$). Parenting confidence increased significantly following the program ($t = -4.873$, $p < 0.001$) (Table 2).

Table 2. Comparison of knowledge of newborn care, parenting attitude, and parenting confidence before and after the pre-parenting education

(*N* = 42)				
Categories	**Pretest**	**Posttest**	**T**	***p***
	M ± SD			
Knowledge of newborn care	9.86 ± 1.69	12.21 ± 1.47	-6.993	〈 0.001
Parenting attitude	46.76 ± 4.54	49.69 ± 5.09	-3.156	0.003
Recognition of caregiving importance	20.16 ± 2.65	21.50 ± 2.29	-3.532	0.001
Parental involvement with infants	7.42 ± 1.98	8.40 ± 1.39	-3.254	0.002
Prioritization of infant needs	10.02 ± 1.68	10.47 ± 1.92	-1.248	0.219
Maternal career priority,	9.14 ± 2.07	9.30 ± 2.32	-0.492	0.626
Parenting confidence	27.21 ± 4.53	30.43 ± 4.10	-4.873	〈 0.001

Comparison of the Expected Number of Children Before and After the Pre-parenting Education

A significant association was observed between the expected number of children before and after the pre-parenting education program ($\chi^2 = 21.509$, $p < 0.001$) (Table 3).

Table 3. Comparison of the expected number of children before and after the pre-parenting education

(*N* =42)					
Categories		**Expected number of children (pretest)**		**χ^2**	***P***
		0–1	**≥ 2**		
		n (%)			
Expected number of children (posttest)	0–1	16 (38.1)	2 (4.8)	21.509	〈 0.001
	≥ 2	4 (9.5)	20 (47.6)		

Discussion

Participants' knowledge of newborn care increased significantly after the pre-parenting education program. This finding aligns with previous studies [16,25], which reported that pre-parenting education improved parenting knowledge among university students. These results confirm that pre-parenting education is an effective intervention for enhancing students' understanding of newborn care. The neonatal period is a critical developmental stage that establishes the foundation for lifelong growth and the development of basic trust. Parents with greater knowledge of newborn care are better equipped to understand infants' needs and behaviors and to respond appropriately to health-related issues [26]. Moreover, previous research has demonstrated that students with higher levels of parenting knowledge tend to report a higher expected number of children [1]. A higher expected number of children reflects more positive perceptions of marriage and childbirth, which influence actual fertility behavior. Therefore, pre-parenting education programs should provide comprehensive information about newborn care to improve students' understanding of child-rearing and to foster positive perceptions of childbirth and parenting.

Significant improvements were also observed in two subdomains of parenting attitude—recognition of the importance of caregiving and parental involvement with infants. This finding is consistent with Ryu's [27] study, which reported that pre-parenting education significantly improved the same aspects of parenting

confidence among young adults. These positive changes may be attributed to the program content, including sessions on “reading newborn cues” and “newborn care.” Infants’ early experiences are profoundly shaped by the quality of parental caregiving. When parents recognize the importance of caregiving and are highly engaged with their infants, they develop greater sensitivity to infant cues, enabling them to interpret and respond promptly and appropriately [28]. Such sensitivity fosters infants’ sense of trust and security and plays a critical role in personality development. Therefore, pre-parenting education programs should emphasize the importance of caregiving and incorporate components that strengthen sensitivity and responsiveness to infant cues. Enhancing these skills can ultimately promote optimal growth and development in children.

Furthermore, the number of participants who reported expecting two or more children increased significantly after the program. Although few studies have directly examined changes in fertility expectations following pre-parenting education, this result suggests that the program positively influenced students’ perceptions of marriage, childbirth, and child-rearing. Previous studies have shown that pre-parenting education significantly affects attitudes toward childbirth [29] and enhances awareness of parenthood [30]. Similarly, Do [19] found that individuals with more positive perceptions of marriage and childbirth tend to report a higher expected number of children. Given that the expected number of children reported by university students reflects deliberate consideration of fertility intentions, it is critical to create supportive social environments that facilitate the translation of these intentions into actual childbirth.

This study is significant in demonstrating the effectiveness of pre-parenting education in enhancing parenting knowledge and confidence among university students within the context of Korea’s persistent low birth rate. The program helped reduce perceived difficulties in child-rearing and fostered positive parenting attitudes and fertility expectations. However, this study employed a single-group pretest–posttest quasi-experimental design; therefore, the influence of external variables on the outcomes could not be fully ruled out.

Conclusion

This study demonstrated that a pre-parenting education program for university students was effective in improving knowledge of newborn care, parenting attitudes, and parenting confidence, as well as in increasing the expected number of children.

These findings suggest that pre-parenting education can serve as an effective strategy to prepare future parents for child-rearing and to promote positive perceptions of childbirth and parenting. By enhancing students’ understanding of newborn care and fostering confidence in parenting roles, such programs may contribute to reducing perceived parenting difficulties and, ultimately, to addressing Korea’s persistently low birth rate.

Conflicts of interest

The authors declare no conflict of interest.

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