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Impact of intervention for maternal and newborn care on primiparous mothers' maternal functioning in selected tertiary area

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Abstract

A first-time mother faces many physical and psychosocial changes during the postpartum period, which in turn affect her maternal functioning. To positively influence these changes, the maternal activities of mothers who have given birth should be improved by providing Maternal and Newborn Care Interventions (MNCI). The effects of the MNCI on the functioning of Primiparous mothers were investigated in a quasi-experimental pretest study with a posttest comparative group design. This study was conducted at Government Hospital. A total of 72 Primiparous mothers (control group = 36, intervention group = 36) were recruited by sequential sampling. MNCI was delivered to the intervention group as direct nursing, individual and group teaching and demonstration using audio-visual material and a training book, discussion in a "Peer Viber Support Group" and follow-up calls. A baseline assessment was conducted between 32 and 36 weeks before delivery to assess postpartum self-care knowledge, maternal knowledge of newborn care, and social support. In addition to the baseline assessment, participants' self-efficacy and maternal functional capacity were assessed six weeks after delivery. Descriptive statistics, paired t-test, independent t-test and Chi-square test were used to analyze the data. Results showed that maternal functioning significantly improved in the intervention group compared to the control group at six weeks after birth (p value 0.05). Improvements in postpartum self-care, maternal newborn care, social support and postpartum self-efficacy among Primiparous mothers were also observed six weeks after delivery (p value 0.001). This study highlighted that MNCI improved functioning in Primiparous women. Further research is recommended to determine the effectiveness of MNCI on postpartum maternal and child health outcomes in hospital and community settings.

Keywords: Maternal function, knowledge of postpartum self-care, data on the care of the mother's newborn, social support, postpartum self-efficacy

Introduction

The actions of mothers are crucial to improve the health status of mothers and newborns. Most mothers who have given birth face new challenges in the postpartum period, such as physical and psychosocial changes (Al-Zahrani *et al.*, 2021) [5]. To successfully overcome these challenges, maternal activities are central to the recovery of postpartum mothers and the development and well-being of their babies. If it is possible to improve the functioning of the mother, it is possible to achieve positive health effects for firstborns and newborns and to minimize other unwanted burdens. Maternal functioning is influenced by self-care knowledge (Khatun *et al.*, 2021) [15], newborn care knowledge (Albana, Geller, Steinkamp, & Barkin, 2020) [4], social support (Shamasbi *et al.*, 2020), and self-caring efficiency mothers (Mirghafourvand and Bagherinia, 2018) [9]. Therefore, an effective nursing intervention program must be developed to improve maternal functioning. Its effectiveness must be evaluated six weeks after birth, a critical period for mothers and babies after birth. In the postpartum period, mothers need many requirements, such as rest, support and encouragement, and the acquisition of knowledge and skills to adapt to the parental role and competence in postpartum motherhood (Barkin and Wisner, 2013) [7].

Methods and Materials

A quasi-experimental study, with a post-test comparison group, was used to determine the effect of MNCI on maternal functioning in Primiparous mothers. This design included a control group receiving routine care, while the intervention group received MNCI in addition

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to routine care. First-time mothers at 32-36 weeks of pregnancy and were singleton pregnant and attending labor and delivery at MCWH were recruited using a sequential sampling method. First, the researcher randomly selected participants to collect data for the control group. After data collection from the control group, participants were assigned to the intervention group. Women who had a cesarean section, had a known chronic disease and infectious disease, had no intention to breastfeed, and did not own a smart phone were excluded. The sample size was calculated using the formula for experimental research with continuous data (Bernard, 2000) [16] with a significance level of 0.01 and a power level of 90%. The calculated sample size was 26 participants in each group. Approximately 10 participants (40% of the sample) were included in each group due to unexpected dropouts at the postpartum intervention (Day 2 postpartum) and post-testing (six weeks postpartum). Therefore, there were 36 participants in each group and a total of 72 participants participated in this study. A written informed consent form was obtained from each participant. Data were collected individually at baseline (32–36 weeks) and postpartum assessment (6 weeks postpartum) in the control and intervention groups using self-administered structured questionnaires at the MCWH and in participants' homes. Seven instruments consisting of 131 items were used. Permission was obtained from the original manufacturers before using the pills. In order to obtain conceptual equivalence of the research instruments compared with the original instruments (English version), forward, backward and significant equivalence tests were conducted. The survey instruments used in this study are "participant pro forma", "Postpartum Self-care Knowledge Scale" (Park, 2003) [17], "Newborn Care Knowledge Questionnaire (NKQ)", revised version "Functional perinatal caregiver social support scale (F-PICSS)", "Self-Efficacy Tool for Postpartum Management", "Being a Mother-13 Scale (BaM-13)" and the "Perceived Competence Scale (PCS)". The data were analyzed using the "Statistical Package for the Social Sciences software (SPSS)" version 18. Both descriptive statistics and inferential statistics were used to analyze the data. A paired t-test was used to determine pre- and post-MNCI differences

in each group (control and intervention). An independent t-test was used to determine differences between groups (control and intervention) at six weeks postpartum. The chi-square test was used to compare the level of maternal functioning between the control and intervention groups. A high level of maternal functioning was defined by both BaM-13 and PCS scores (BaM-13 score and ≥ 136 PCS score). The level of statistical significance was determined by p value 0.05.

Results

Baseline assessment According to Table 1, no statistically significant differences were found between the groups (Exact p part; 0.05), except for the standard of living of the participants (p = 0.05). All participants of the control group and most participants (94.44%, n = 34) of the intervention group were between 18 and 35 years old. Most participants were at the high school level in both the control (50%, n = 18) and intervention groups (41.67%, n = 15). Half of the participants in both groups (n = 18) were addicts. Most of the participants family income was less than 200,000 kyat per month, of which 86.11% (n = 31) were in the control group and 91.67% (n = 33) were in the intervention group. Most of the participants, 66.66% (n = 24), lived with their spouse in the control group. However, in the intervention group, the majority of participants, 44.44% (n = 16), lived with their parents' family. Regarding history of abortion, there were 11.11% (n = 4) in the control group and 8.33% (n = 3) in the intervention group. The mean number of obstetric visits was 2.69 (SD = 1.26) in the control group and 3.22 (SD = 1.07) in the intervention group. The mean gestational age at delivery was 38.44 weeks (SD = 0.91) in the control group. 38.78 weeks (SD = 1.31) in the intervention group. The majority of participants in both control groups had an episiotomy (88.89%, approx. = 32) and the intervention group (94.44%, n = 34).

Differences between control and intervention groups at six weeks after birth

Mean differences in postpartum self-care, maternal newborn care, social support, and postpartum self-efficacy between control and intervention groups at six weeks postpartum

Variables	Control (n = 36)	Intervention (n = 36)	Mean differences	t-test	p-value
	Mean ± SD	Mean ± SD			
Postpartum self-care knowledge	10.17 ± 2.57	13.50 ± 1.59	- 3.33	- 6.61	0.000
Maternal newborn care knowledge	13.58 ± 2.70	18.58 ± 2.32	- 5.00	- 8.43	0.000
Social support	53.72 ± 8.32	65.06 ± 6.09	-11.33	- 6.60	0.000
Postpartum self- efficacy	45.50 ± 5.33	52.28 ± 5.03	- 6.78	- 5.55	0.000

According to the table, all evaluated variables increased significantly in the intervention group than in the control group (p value 0.000), confirming the effectiveness of MNCI.

Mean differences in maternal functioning, assessed by the Motherhood at 13 years and the Perceived Competence Scale, between control and intervention groups at six weeks postpartum

Variables	Control (n =36)	Intervention (n =36)	Mean Differences	t-test	p-value
	Mean ± SD	Mean ± SD			
Being a Mother-13	10.18 ± 4.73	8.25 ± 4.85	1.92	1.70	0.094
Perceived Competence Scale	119.53 ± 23.20	149.78 ± 24.99	- 30.25	- 5.32	0.000

The functioning of participating mothers was determined based on both BaM-13 and PCS scores. According to, BaM-13 score of the intervention group (mean = 8.25, SD = 4.85) was slightly better than the control group (mean = 10.18, SD

= 4.73), because the lower the score average. The mother is satisfied with her motherhood experiences. However, this was not a statistically significant difference (t = 1.70, p and > 0.05). For the PCS, the intervention group (mean =

149.78, SD = 24.99) had a higher mean score than the control group (mean = 119.53, SD = 23.20), indicating that there was a statistically significant difference between the PCS scores groups ($t = -5.32$, p value 0.001).

Comparison of levels of maternal functioning between control and intervention groups at six weeks postpartum

Groups	Maternal functioning		Chi-Square	p-value
	High level	Low level		
Control group	15 (41.67%)	21 (58.33%)	5.62	0.018
Intervention group	25 (69.44%)	11 (30.56%)		

High levels of maternal functioning were defined when participants had good levels of both BaM-13 and PCS. As shown in Table, high levels of maternal functioning were observed more in the intervention group (69.44%, $n = 25$) than in the control group (41.67%, $n = 15$) after six weeks. Chi-square statistics showed that this difference was statistically significant ($\chi^2 = 5.62$, p value= 0.05). Overall, the MNCI package was found to be effective in improving functioning among Primiparous mothers. It was shown that the functional capacity of the mothers was higher in the intervention group than in the control group.

Conclusion

The MNCI package was effective in improving functioning among Primiparous mothers because it was developed and delivered based on research evidence and theoretical literature. At MNCI, information was provided on postpartum self-care and maternal newborn care. In addition, the researchers provided social support not only during direct contact with the participants, but also via phone or Viber group. In addition, mothers' self-efficacy was promoted through health education, demonstration and video lessons based on the theory of self-efficacy-reinforcing sources. The result was a close relationship between the participants and the researchers, and the participants received the desired information and skills about the mother's activities over the phone or through a Viber group. As a result, the mothers in the intervention group felt relaxed and were able to deal with the problems they encountered during the postpartum period and cope well with their mothering activities. Therefore, the present study is useful as an empirical support for MNCI, especially to improve the functioning of foremothers. This study used a non-probability sequential sampling method to recruit study participants. Therefore, the generalization of the findings to the research area may be limited. In previous studies, postpartum assessments were performed one to two times (Two weeks or six weeks or 12 weeks or 16 weeks postpartum). In this study, the postpartum assessment was not performed until six weeks after delivery. Furthermore, this quasi-experimental study was hospital-based, so the generalizability of the results may be limited to the community. The termination of participants took place during the third session of the MNCI. To address this problem, more participants were recruited according to the desired sample size. There was a weak point in the fiber group discussion due to the problem of internet connection. Although this study had some limitations, it was concluded that the MNCI package was useful in improving the functioning of Primiparous mothers. Based on the results of this study the following are recommended:

1. The self-efficacy of first-time mothers should be strengthened through health education through an educational booklet, presentation and video presentation during postpartum hospitalization, where mothers have many demands and their maternal activities.
2. Managers of the hospital environment should provide a postpartum telephone service or an environment enabling hospital websites for mothers who need information and suggestions about their health and that of their baby.
3. Various social supports, e.g. instrumental, evaluative and emotional support should be improved in the care of pregnant women and postpartum mothers during direct care delivery.
4. Further research is recommended to determine the effectiveness of MNCI on postpartum maternal and child health outcomes in hospitals and communities.

Conflict of Interest

Not available

Financial Support

Not available

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