Effect of Maternal and Newborn Care Intervention on Maternal Functioning of Primiparous Mothers

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ABSTRACT

Primiparous mother is confronted with many physical and psychosocial changes during the postpartum period which consequently affect her maternal functioning. To deal with these changes positively, the maternal functioning of postpartum mothers should be enhanced by the provision of maternal and newborn care intervention (MNCI). A quasi-experimental research pretest post-test comparison group design was used to study the effect of MNCI on the maternal functioning of primiparous mothers. This study was conducted in Mandalay Central Women's Hospital, Myanmar. A total of 72 primiparous mothers (control group=36, intervention group=36) were recruited by consecutive sampling. The MNCI was given to the intervention group in the form of direct nursing care, individual and group teaching and demonstration using audio-visual materials and an educational booklet, discussion in "Peer Viber Support Group" and follow-up telephone calls. Baseline assessment was done at antenatal 32nd to 36th weeks to assess postpartum self-care knowledge, maternal newborn care knowledge, and social support. At six weeks postpartum, self-efficacy and maternal functioning of participants were assessed in addition to baseline assessment. Descriptive statistics, paired t-test, independent t-test, and Chi-square test were used to analyze the data. The results showed that maternal functioning was significantly improved in the intervention group than the control group at postpartum six weeks ($p < 0.05$). The improvement was also found in postpartum self-care knowledge, maternal newborn care knowledge, social support, and postpartum self-efficacy of primiparous mothers at postpartum six weeks ($p < 0.001$). This study highlighted that the MNCI was effective in enhancing the maternal functioning of the primiparous mothers. Further studies are recommended to determine the effectiveness of the MNCI upon health outcomes of postpartum mothers and babies in hospitals and community settings.

Keywords: maternal functioning; postpartum self-care knowledge; maternal newborn care knowledge; social support; postpartum self-efficacy

INTRODUCTION

Maternal functioning is a fundamental matter for improving the health outcomes of mothers as well as newborns. During the postpartum period, most primiparous mothers face new challenges like physical and psychosocial changes (Al-Zahrani et al., 2021). To overcome these challenges successfully, maternal functioning is central in the recovery of primiparous postpartum mothers and the development and well-being of their babies. If maternal functioning can be improved, positive health outcomes of primiparous mothers and newborns can be attained and other undesirable burdens can be minimized. Maternal functioning is affected by self-care knowledge (Khatun et al., 2021), newborn care knowledge (Albanese, Geller, Steinkamp, & Barkin, 2020), social support (Shamasbi et al., 2020), and self-efficacy of mothers (Mirghafourvand & Bagherinia, 2018). Therefore, an effective nursing intervention program for improving maternal functioning should be developed. Its effectiveness should be assessed six weeks after birth, a critical period for postpartum mothers and babies.

During the postpartum period, mothers need many requirements such as to take a rest, support, and encouragement and learn to obtain information and skills to be able to adapt to the parenting role and competency in postpartum maternal functioning (Barkin & Wisner, 2013). Common physical problems during the postpartum period are

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loss of sleep, feeling stressed, physical exhaustion, sore nipples, breast tenderness, backache and weight control (Declercq et al., 2014). Although physical problems that were found in the postpartum period are often accepted as temporary or minor, these conditions progressively lead to impairment in mothers' maternal functioning. In addition, mothers encounter social and psychological changes as they have to take a mother role and to meet the physical and emotional needs of their babies (Fahey & Shenassa, 2013).

Another considerable issue is the prevalence of maternal death is greater in the postpartum period compared with antenatal and delivery periods in Myanmar (Ministry of Health & Sports, 2018a). However, scientific literatures highlighted that postpartum mothers are paid less attention in postnatal care by comparison with antenatal or delivery periods (Finlayson, Crossland, Bonet, & Downe, 2020). Therefore, intervention that can adequately support postnatal care is really required and it is believed that providing structured intervention on postnatal care can reduce the morbidity and mortality of mothers and newborns.

In Myanmar, only half of the mothers took antenatal, intranatal and postnatal care services from the skilled healthcare providers. Regarding postnatal services, although four postnatal follow-up visits are recommended for postnatal mothers in the essential package of postnatal care, only one fourth of the mothers took four postnatal visits and one third of mothers did not take any postnatal visit in rural areas of Myanmar (Mon, Phyu, Thinkhamrop, & Thinkhamrop, 2018). Locally, in the urban areas, nearly one third to half of mothers did not utilize postnatal care services (Milkowska-Shibata et al., 2020).

To be a healthy mother both physically and emotionally, mothers need to have adequate self-care knowledge. Khatun et al. (2021) proved that improving maternal functioning was significantly associated with increased postpartum self-care knowledge. Newborn care knowledge is also necessary for mothers to take care of their babies. Newborn care activities like cuddling, breastfeeding, soothing and bathing are new experiences and difficult for the primiparous mothers in the early postpartum. Having adequate knowledge about newborn care can raise a mother's capability regarding infant care and it is important for reducing false beliefs and misconceptions about newborn care (Shrestha et al., 2016).

According to the findings of previous studies, 76.2% of mothers did not know about the postnatal danger signs and neonatal health risks. Moreover, malpractice which can cause undesirable but avoidable problems both in mothers and babies, such as dietary restriction and unhealthy traditional practice have been practiced in modern society (Mon et al., 2018). This is a very risky condition because 44% of maternal death and 35% of neonatal death were due to delay in seeking appropriate health care on time (Ministry of Health & Sports, 2018a, 2018b).

Likewise, social support plays a major role in promoting maternal functioning of postpartum mothers. However, only 23.2%, 29.5% and 34.1% of postpartum mothers had high level of social support from their husband, parents and their friends in Myanmar (Myo, Hong, Thepthien, & Hongkrailert, 2021). According to finding of previous studies, telephone-based intervention (Khatun et al., 2021) and peer support (Shorey et al., 2019) were effective in supporting mothers and using these kinds of support are relevant in the improvement in digital socialization.

In addition, self-efficacy of mothers is another requirement to promote maternal functioning. According to scientific evidence, there was a positive and significant correlation between self-efficacy and maternal functioning (Fathi, Mohammad-Alizadeh-Charandabi, & Mirghafourvand, 2018). There are four main sources of information that are critical for enhancing self-efficacy of an individual, namely performance accomplishment, vicarious experiences, verbal persuasion and emotional arousal. Among those kinds of sources, performance accomplishments (can be achieved by over passing difficulty through learning from personal experience) and vicarious experience (can be derived by observing others' behavior, e.g., breastfeeding, burping, neonatal bathing) (Bandura, 1977) mainly depend on the effort of the primiparous mothers themselves. However, verbal persuasion, and emotional arousal of the primiparous mothers mainly depend on the support of health care providers by health education, counseling, showing video clips, telephone call and developing social networking for peer group. Traditionally, some kinds of interventions such as health education, counseling and showing the video clip are given to increase self-efficacy of primiparous mothers. However, the contents should be more structured as well as ways of giving information should be more supplementary and interactive.

To solve the presented problems, the MNCI focused on postpartum self-care, maternal newborn care, social support and self-efficacy by means of group and individual teaching, interactive discussion, constructive feedback, and reflection is necessary for the primiparous mothers. Although national strategies are set for maternal and newborn care services globally, researchers have been developing and evaluating the intervention program to provide more specific, practical and cost-effective intervention program. In Myanmar, intervention studies focusing on maternal functioning remains limited; therefore, this study aims to identify the effect of the MNCI on maternal functioning of primiparous mothers.

Maternal and Newborn Care Intervention (MNCI)

The MNCI was designed based on the Information-Motivation-Behavioral Skills (IMB) model (Fisher & Fisher, 1992), Bandura's self-efficacy theory (Bandura, 1977), and O'Cathain and colleagues' key actions of intervention program development (O'Cathain et al., 2019).
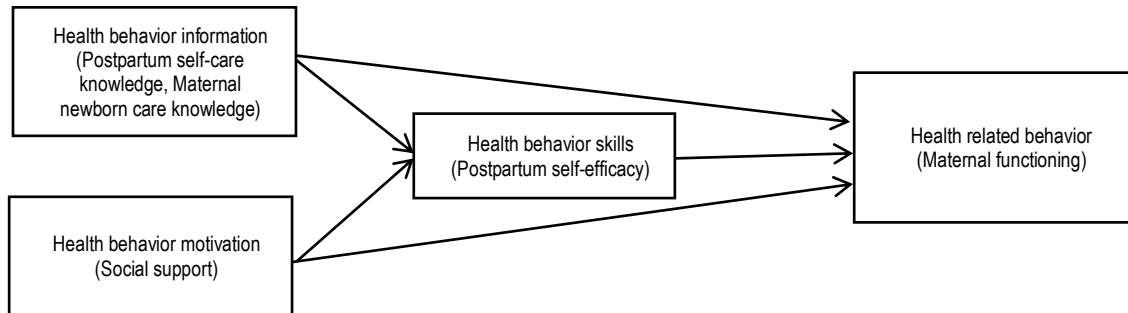

Figure 1. The Information-Motivation-Behavioral Skills (IMB) Model of Maternal Functioning
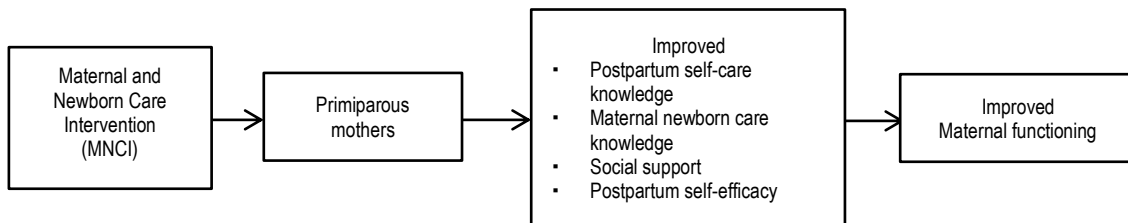

Figure 2. Conceptual framework of the study

The researchers provided the first session of the MNCI intervention to all pregnant women with 32nd – 36th week gestations (3rd trimester) at the examination room of antenatal care unit (ANCU) of Mandalay Central Women's Hospital (MCWH) as group education (2 to 3 participants) by using discussion and demonstration methods with the aid of video clips and booklets. Video clips were shown using the mobile telephone. Researchers shared five video clips (breastfeeding, burping, cord care, danger signs of newborn and danger signs of postpartum mothers) to every participant. However, other video clips such as family planning, swaddling the baby, and how to solve breast problems were shared to some participants based on the request.

Second session of MNCI was provided for each pregnant woman at the next follow-up (two weeks after first contact) using the same teaching methods. The participants who did not attend the second session were contacted via telephone to handle the participants' dropout.

On postpartum second day, monitoring and supportive intervention (which means providing direct nursing care based on the needs of individual postpartum mothers such as assisting in breastfeeding, burping, diapering and clothing the baby, teaching about good position and attachment during breastfeeding, burping, thermal care, umbilical cord care and safety of the baby) was given to the primiparous postpartum mothers individually in the Maternity Unit-3 of MCWH as the third session of MNCI. All the face-to-face intervention sessions lasted approximately 45 to 60 minutes in duration. Four participants dropped out in the third session because of home delivery. Therefore, another four participants were replaced to meet the determined sample size.

As fourth and fifth sessions of intervention, two phone calls were made at postpartum second and four weeks to identify the needs and provide supportive postpartum care. In addition, to get support for postpartum mothers, "Peer Viber Support Group" was provided to share experiences of their difficulties. In the Viber group, participants shared their experiences with each other, and researchers gave suggestions based on the presented issues. Researchers also shared video clips and information (e.g., causes of constipation in babies, causes of crying babies and postpartum nutrition) via the Viber group.

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METHOD

A quasi-experimental research, pretest post-test comparison group design was used to determine the effect of MNCI on maternal functioning of primiparous mothers. This design involved a control group which received routine care while the intervention group received MNCI in addition to routine care.

Primiparous mothers who were 32nd – 36th weeks pregnant with single fetus and who take antenatal care and delivered at the MCWH were recruited via consecutive sampling method. Firstly, the researcher consecutively selected participants to collect data for the control group. After collecting data from the control group, participants for the intervention group were selected. The woman who had indication for cesarean session, known history of chronic diseases and infectious disease, no intention to breastfeed and did not have a smart mobile phone were excluded.

Sample size was calculated by using the formula for experimental study with continuous data (Bernard, 2000) setting a significance level of 0.01 and 90% power level. The calculated sample size was 26 participants in each group. About 10 participants (40% of sample) were added in each group for unforeseeable dropouts at postpartum intervention (postpartum 2nd day) and posttest (postpartum six weeks) (Pan & Zhan, 2020). Therefore, there were 36 participants in each group, and a total of 72 participants were included in this study. Approval from the Institutional Review Board (IRB) of University of Nursing, Mandalay and permission from the authorized persons from the MCWH were obtained for data collection. A written informed consent form was taken from each participant. Data was collected individually for baseline (antenatal 32nd – 36th weeks) and postpartum assessment (postpartum six weeks) in the control and intervention groups using self-administered structured questionnaires in the MCWH and the participants' home.

A total of seven instruments consisting of 131 items were used. Permission from the original authors was obtained prior to use the instruments. Forward translations, backward translation and meaning equivalence checking were done to achieve the conceptually equivalent of research instruments (Myanmar version) in comparison with the original instruments (English version). Research instruments which were used in this study are "Pro forma of participants", "Postpartum Self-care Knowledge Scale" (Park, 2003), "Newborn Care Knowledge Questionnaire (NKQ)" (Shrestha et al., 2015), revised version of "Functional Perinatal Infant Care Social Support Scale (F-PICSS)" (Leahy-Warren, Mulcahy, & Lehane, 2019), "Postpartum Management self-efficacy tool" (Shin, Kim, & Kwon, 2000), "Being a Mother-13 Scale (BaM-13)" (Matthey, 2011), and "Perceived Competence Scale (PCS)" (Rutledge & Pridham, 1987).

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. Paired t-test was used to determine differences within each group (control and intervention) between the pre and post MNCI. Independent t-test was used to determine differences between groups (control and intervention) at postpartum six weeks. The chi-square test was used to compare the level of maternal functioning between the control and intervention groups. High level of maternal functioning was determined based on both the score of BaM-13 and PCS (<9 of BaM-13 score and ≥ 136 of PCS score). The level of statistical significance was set at $p < 0.05$.

RESULT

Baseline Assessment

According to Table 1, statistically significant differences did not find between the groups (Exact $p > 0.05$) except living status of the participants ($p < 0.05$). All the participants from the control group and the majority of participants (94.44%, n = 34) from the intervention group were 18 to 35 years old. Most participants were in the middle school level both in the control group (50%, n = 18) and intervention groups (41.67%, n = 15). Half of the participants from both groups (n = 18) were dependent. Most participants' family income was less than 200,000 Kyats per month in which 86.11% (n = 31) was in the control group and 91.67% (n = 33) was in the intervention group. Most participants, 66.66% (n = 24) lived with their husbands in the control group. However, in the intervention group, majority of participants, 44.44% (n = 16) lived with their parent's family. About the history of miscarriage, control group had 11.11% (n = 4) and intervention group had 8.33% (n = 3). The mean antenatal care visit 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 the time of delivery was 38.44 weeks (SD = 0.91) in the control group and 38.78 weeks (SD = 1.31) in the intervention group. Most participants had episiotomy both in the control group (88.89%, n = 32) and intervention group (94.44%, n = 34) (Table 1).

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Table 1. Homogeneity of the Control and Intervention Groups at Baseline Assessment

Variables	Categories	Control (N = 36)	Intervention (N = 36)	T or χ2	p value
Age group	< 18 Years	-	1(2.78)	2.057	0.493
	18 to 35 Years	36(100)	34(94.44)		
	>35 Years	-	1(2.78)		
Level of education	Can read and write	-	1(2.78)	1.749	0.850
	Primary school	3(8.33)	4(11.11)		
	Middle school	18(50)	15(41.67)		
	High school	14(38.89)	14(38.88)		
	Graduate	1(2.78)	2(5.56)		
Occupation	Own business	7(19.44)	14(38.88)	6.976	0.710
	Government employee	2(5.56)	1(2.78)		
	Company employee	2(5.56)	2(5.56)		
	Manual worker	7(19.44)	1(2.78)		
	Dependent	18(50)	18(50)		
Family income (Kyat/month)	< 200,000	31(86.11)	33(91.67)	0.563	0.710
	200,000 – 500,000	5(13.89)	3(8.33)		
Living status	Live with husband	24(66.66)	13(36.12)	7.893	0.018
	Live with husband's family	6(16.67	7(19.44)		
	Live with my parent's family	6(16.67)	16(44.44)		
History of miscarriage	Yes	4(11.11)	3(8.33)	0.158	1.000
	No	32(88.89)	33(91.67)		
Number of antenatal care visit (times)	1	4(11.11)	-	9.488	0.084
	2	16(44.44)	10(27.78)		
	3	8(22.22)	14(38.89)		
	4	5(13.89)	7(19.44)		
	5	1(2.78)	4(11.11)		
	6	2(5.56)	1(2.78)		
Gestational age at the time of delivery (Weeks)	37	5(13.89)	4(11.11)	3.193	0.613
	38	15(41.67)	14(38.89)		
	39	11(30.55)	10(27.78)		
	40	5(13.89)	5(13.89)		
	42	-	3(8.33)		
Episiotomy	Yes	32(88.89)	34(94.44)	0.727	0.674
	No	4(11.11)	2(5.56)		
	Possible score range				
Postpartum self-care knowledge	0 – 18	8.22 ± 2.56	7.78 ± 1.91	-8.38	0.408
Maternal newborn care knowledge	0 – 23	12.14 ± 2.62	13.14 ± 2.44	-6.68	0.098
Social support	19 – 76	51.94 ± 8.44	55.06 ± 6.52	-4.35	0.084

Differences from Baseline to Postpartum Six Weeks

From baseline to postpartum six weeks, mean scores of all assessed variables (postpartum self-care knowledge, maternal newborn care knowledge and social support) showed statistically improvement in both the control and intervention groups (p < 0.001). However, more improvement was found in the intervention group than the control group (Figure 3. A, B, C).
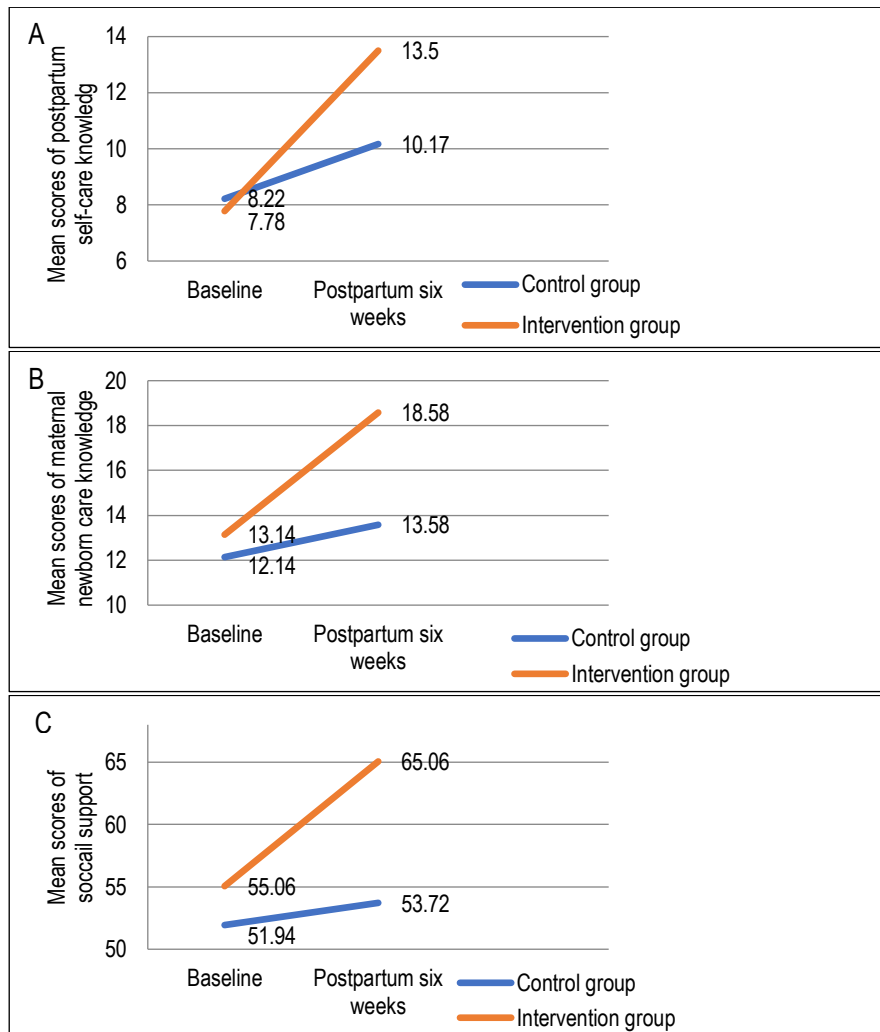
Figure 3. Differences in Self-Care Knowledge (A), Maternal Newborn Care Knowledge (B), and Social Support (C) Within the Control and Intervention Groups from Baseline to Postpartum Six Weeks

According to figure 3(A, B and C), from baseline to postpartum six weeks, mean scores of all assessed variables (postpartum self-care knowledge, maternal newborn care knowledge and social support) showed statistically improvement in both the control and intervention groups ($p < 0.001$). However, more improvement was found in the intervention group than the control group.

C. Differences between the Control and Intervention Groups at Postpartum Six Weeks

Table 2. Mean Differences of Postpartum Self-Care Knowledge, Maternal Newborn Care Knowledge, Social Support, and Postpartum Self-Efficacy Between the Control and Intervention Groups at Postpartum Six Weeks

Variables	Control (n = 36) Mean ± SD	Intervention (n = 36) Mean ± SD	Mean differences	t-test	p-value
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 Table (2), all the assessed variables increased significantly in the intervention group than the control group ($p < 0.000$) which confirmed that the effectives of the MNCI.

Table 3. Mean Differences of Maternal Functioning which was Assessed by Being a Mother-13 and Perceived Competence Scales Between the Control and Intervention Groups at Postpartum Six Weeks

Variables	Control (n =36) Mean ± SD	Intervention (n =36) Mean ± SD	Mean Differences	t-test	p-value
Being a Mother-13	10.17 ± 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

Maternal functioning of participants was decided based on both the score of BaM-13 and PCS. According to Table (3), the BaM-13 score of the intervention group (Mean = 8.25, SD = 4.85) had a slight improvement than the control group (Mean = 10.17, SD = 4.73) as the lower the score means the greater the mother is satisfied with her motherhood experiences. However, this was not statistically significant different (t = 1.70, p > 0.05).

Concerning the PCS, the intervention group (Mean = 149.78, SD = 24.99) had a larger mean score than the control group (Mean = 119. 53, SD = 23.20), which indicated that there was a statistically significant difference of PCS scores between the groups (t = - 5.32, p < 0.001).

Table 4. Frequency Distribution of Levels of BaM-13 and PCS

Variable	Control (n = 36) Number	(%)	Intervention (n = 36) Number	(%)
Level of BaM-13				
Good	19	52.78	27	75.00
Not good	17	47.22	9	25.00
Level of PCS				
Good	15	41.67	26	72.22
Not good	21	58.33	10	27.78

In the current study, the level of BaM-13 was categorized as good when the participants had < 9 of BaM-13 score and not good for those who had ≥ 9 of BaM-13 scores. Level of PCS was classified as good in which the participant had ≥ 136 of PCS scores and not good for < 136 of PCS scores. According to table (4), the good level of BaM-13 was larger in the intervention group (75%, n = 27) than that of the control group (52.78%, n = 19). In PCS, the good level was higher in the intervention group (72.22%, n = 26) when compared with the control group (41.67%, n = 15).

Table 5. Comparison of Levels of Maternal Functioning Between the Control and Intervention Groups at Postpartum Six Weeks

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

High level of maternal functioning was decided when the participants had both good levels of BaM-13 and PCS. As shown in table (5), high levels of maternal functioning were more identified in the intervention group (69.44%, n = 25) than that of the control group (41.67%, n = 15) at postpartum six weeks. The Chi-square statistics showed that this difference was statistically significant ($\chi2$ = 5.62, p < 0.05). In conclusion, the MNCI package was found to be effective in improving maternal functioning of primiparous mothers. It was shown that high level of maternal functioning was greater in the intervention group when compared to that of the control group.

DISCUSSION

MNCI Effect on Postpartum Self-Care Knowledge

Both groups' mean scores of postpartum self-care knowledge increased from baseline to postpartum six weeks. However, comparing postpartum self-care knowledge mean scores at postpartum six weeks revealed that the intervention group had significantly higher than the control group (t = - 6.61, p < 0.001). The result obtained from the current study was consistent with the study done in Indonesia (Khatun et al., 2021). That study used "Nurse-led postpartum self-care (NLPPSC)" intervention which included two sessions of postpartum education and two phone calls in which each lasted three to five minutes for reinforcement at postpartum two and six weeks. Finding of the current study was in line with the

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result of a quasi-experimental study done in Peru. In that study, a total of 86 adolescent mothers were studied to determine the effect of an educational intervention on knowledge about self-care practice during the postpartum period (Otilia, Teodora, & Sabina, 2008). Similarly, in the study of Korea, increased self-care knowledge was found in the immigrant women after receiving the education program (Jeon & Hwang, 2013). Effects of educational intervention were found in current study and reviewed studies which highlighted that providing educational intervention was effective in every population including adolescent and immigrant mothers. This is consistent with the description of Raghupathi and Raghupathi (2020), health education promotes knowledge, reasoning and other capabilities that can improve health. Likewise, postnatal education had a significant influence on mothers' perception on postpartum self-care. It is recommended that education during the postpartum period about self-care is useful for mothers to be competent mothering and the contents of the education should be based on needs of postpartum mother (Indriyani, 2015).

MNCI Effect on Maternal Newborn Care Knowledge

The mean scores of both groups' maternal newborn care knowledge increased from baseline to postpartum six weeks. Though, at the postpartum six weeks comparison, the intervention group's mean score was better than that of the control group and this difference was statistically significant (t = - 8.43, p < 0.001). This finding is similar with a study conducted in India which studied the effect of prenatal education program upon knowledge about newborn care. That study highlighted that a key strategy to enhance the mothers' knowledge and practice for caring for their baby is providing prenatal educational (Al-ageswari, Dash, & Felicia, 2019). Likewise, a quasi-randomized controlled trial was conducted in New York to determine the effect of pediatrician-led newborn class of first-time mothers. In that study, the intervention group had higher knowledge score than the control group and this difference was statistically significant (p < 0.001)(Gozali et al., 2020).Since professional-led class was found effective for enhancing the knowledge of mothers, educational classes should be organized and delivered by health care professionals. Also, postnatal education is a central strategy to pass the newborn care knowledge and skills to the mother and family as women are more receptive to the maternal and newborn care information than before delivery of their babies (Shrestha et al., 2016). According to the findings of previous studies, health education was used mainly to improve knowledge of mothers and it was given both antenatal and postnatal period. Therefore, health education should be given as a prioritized action though there may be different lengths of hospital stay of the postpartum mothers.

MNCI Effect on Social Support

Primiparous mothers who received the MNCI package had higher social support score when compared to mothers who received routine maternal care only and the mean score difference of social support was statistically significant between the groups (t = - 6.60, p < 0.001). Finding of the current study was consistent with the result of the previous study done in Colombia in which the mean score of the intervention group was significantly higher than the score of the control group (p < 0.001). That study tested the effect of the multimodal nursing intervention strategy in which social support was one of the study outcomes (Vargas-Porras et al., 2020). Findings of the previous social support study that was conducted in the postnatal period recommended that social network availability is required for new mothers to obtain both formal support and informal support (Leahy-Warren et al., 2019) during the perinatal period. In the current study, social network, "Peer viber support group" was provided for primiparous mothers for obtaining formal and informal support. Mothers who got support from their husband and family members felt comfort and calm and increased in their exclusive breastfeeding (Pakilaran, Rasni, Rosyidi Muhammad Nur, & Wijaya, 2022).

MNCI Effect on Self-Efficacy

In the current study, the intervention group had a significantly higher postpartum self-efficacy mean score than the control group (t = - 5.55, p < 0.001). This showed that the MNCI was effective to improve the postpartum self-efficacy of primiparous mothers. In the randomized controlled trial (RCT) conducted in Iran, 68 women were examined to determine the effect of counseling with skill training approach in which four counseling sessions was provided to the intervention group. In that study, maternal self-efficacy of intervention group's mean score was significantly higher than the control group (p < 0.05) (Karami, Esmaeilpour, Malakouti, & Mirghafourvand, 2020) which was in line with the result of the current study. In the study done in Columbia, 66 primiparous (n = 33 in the control group and n = 33 in the intervention group) were studied to evaluate the effect of "multimodal nursing intervention" in which total eight-session of intervention was given by home-based and telephone-based. Maternal self-efficacy of the intervention group measured at postpartum 16 weeks (Mean = 78.48, SD = 2.53) was significantly greater than the score of the control group (Mean = 71.27, SD = 5.11) (p = 0.000) (Vargas-Porras et al., 2021) which was conformed with the result of the current study although assessment time of the Columbia study was rather later (postpartum four months) than that of the current study, postpartum six weeks.

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MNCI Effect on Maternal Functioning

When maternal functioning of the primiparous mothers was categorized into high level and low level based on the BaM-13 and PCS scores, the number of participants with high level of maternal functioning was greater in the intervention group (69.44%) than that of the control group (41.67%). The Chi-square test result revealed that this difference was statistically significant ($\chi2$ = 5.62, p < 0.05). This is similar to the work of Kordi and colleague in which the percentage of maternal role attainment of the intervention group measured by PCS and other instruments was increased significantly than that of the control group due to the maternal role promotion program (p = 0.019) (Kordi, Fasanghari, Asgharipour, & Esmaily, 2017). This study was a two-group pre-test post-test clinical trial studied with 67 pregnant women in which three sessions of group training at antenatal 34, 35 and 36 weeks and one session of individual training at postpartum first day and four sessions of phone calls were provided.

In the current study, only postpartum maternal functioning of mothers was assessed to determine the effectiveness of the MNCI package. However, in the study conducted by WHO in Jamaica, Kenya, and Malawi, lower level of maternal functioning was found in the women who attended the antenatal care than those who attended the postpartum care levels and women with demographic risk factors were more likely to have lower maternal functioning levels (Cresswell et al., 2020). Therefore, assessing the maternal functioning of pregnant women and intervention to improve the maternal functioning of pregnant women is necessary and it should not be paid less attention.

The result of RCT conducted in Iran which involved 68 postpartum women showed that four sessions of counseling using the "Skills Training Approach" were effective in increasing the maternal functioning of postpartum women (Chamgurdani et al., 2020) that was alike with the finding of the current study. Finding of the current study was supported by another study done in Indonesia which showed that NLPPSC program was effective in enhancing the maternal functioning of first-time mothers (Khatun et al., 2021). In accordance with the above reviewed studies, maternal functioning of mothers can be promoted by provision of the intervention. In providing the intervention, training content, training time and duration and training method were important. The MNCI package was developed by considering those factors. Therefore, the effectiveness of the MNCI was found in enhancing maternal functioning of primiparous mothers.

CONCLUSION

To sum up, the MNCI package was effective to improve the maternal functioning of the primiparous mothers since it was developed and provided based on research evidence and theoretical literature. In the MNCI, information about postpartum self-care and maternal newborn care was given. Besides, social support was provided by the researchers not only during the direct contact with the participants but also via telephone call or Viber group. Moreover, self-efficacy of mothers was promoted by the way of health education, demonstration and video assisted teaching based on the theory of self-efficacy enhancing sources. As a result, there was a close relationship between the participants and the researchers, and participants accessed the information and the skills they wanted regarding maternal functioning via the telephone calls or Viber group. Consequently, the mothers from the intervention group felt relaxed and had capability to solve their encountered problems and perform their maternal functioning well during the postpartum period. Therefore, this study is beneficial as an empirical support regarding MNCI especially in enhancing maternal functioning of primiparous mothers.

In this study, non-probability, consecutive sampling method was used to recruit the study participants. Therefore, generalizability of finding in the study area might be limited. In the previous studies, postpartum assessments were done one to two times (at postpartum two weeks or six weeks or 12 weeks or 16 weeks). In the current study, postpartum assessment was done at postpartum six weeks only. Moreover, this quasi-experimental study was hospital based, so generalizability of finding might be limited to community settings. There was participant's dropout in the third session of the MNCI. To solve this issue, additional participants was recruited to meet the desired sample size. The fiber group discussion had a weak point because of the internet connection problem. Although, there was some limitations in this study, as a conclusion, the MNCI package was beneficial in enhancing the maternal functioning of the primiparous mothers.

According to the findings of this study, the following issues are recommended: 1) self-efficacy of the primiparous mothers should be strengthened via health education using educational booklet, demonstration and video show during the postnatal hospitalization period in which mothers have many demands regarding on their maternal functioning, 2) the administrators of hospital settings should provide an enabling environment by providing telephone hot line services or hospital website for postpartum mothers who need information and suggestions for their health and their babies, 3) different kinds of social support such as informational, instrumental, appraisal and emotional support should be boosted up in the caring of pregnant women and postnatal mothers during provision of direct care services, and 4) further studies are recommended to determine the effectiveness of the MNCI upon health outcomes of postnatal mothers and babies in hospitals and community settings.

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