http://www.cjmb.org

Open Access Original Article

Crescent Journal of Medical and Biological Sciences
Vol. 6, No. 4, October 2019, 481–486
eISSN 2148-9696

The Effect of Early Oral Feeding on Post-caesarean Pain: A randomized Clinical Trial

Zahra Rashidi[1], Sina Valiee[2], Daem Roshani[3], Roonak Shahoei[4*]

Abstract

Objectives: Caesarean section is one of the most common gynecological surgeries of women. In the traditional method, the patients are prohibited by the surgeon from eating and drinking until the presence of bowel sounds or the passage of flatus after caesarean section surgery. The aim of this study was to determine the effect of early oral feeding on post-caesarean pain in patients undergoing caesarean section.

Materials and Methods: This clinical trial was conducted on126 women with repeat caesarean deliveries referring to hospital in Divandareh in the northwest of Iran from 2016 to 2017. The samples were randomly divided in to groups of intervention (early feeding) and control (routine feeding). The severity of pain was recorded before and 6, 12, 18, and 24 hours after the intervention. Data analysis was conducted using SPSS version 21.0. Descriptive statistics and analytical statistics, including t test, paired t-test and repeated measures ANOVA were used. The $P<0.05$ was considered statistically significant.

Results: The mean pain severity in the intervention group was significantly lower compared to the control group at 6, 12, 18, and 24 hours after the intervention ($P<0.001$).

Conclusions: Early feeding turned out to reduce the severity of post-caesarean pain.

Keywords: Pain, Caesarean, Oral feeding

Introduction

Caesarean section is one of the most common gynecological surgeries of women (1). The World Health Organization estimates that the expected standard caesarean rate would rise up to 5%-15% per year (2); this rate is 47.9% in Iran (3).

Side effects of caesarean can affect the health of mother and child (4). Common complications include pain, thrombose and embolism, increased hospitalization days, reduced mobility of the mother, and maternal and infant mortality (5, 6). The causes and sites of pain in the caesarean section can be different, the most important of which is tissue damage caused by a surgical incision that stimulates pain receptors (7). Inadequate management of post-caesarean pain causes undesirable physiological complications such as acute and chronic effects through stimulation of sympathetic system, coagulation disorder, postoperative immunosuppression, increased wound healing time (8), and psychological complications such as unpleasant sensory, emotional and mental experience in the patient. Central nervous system and environmental disorder can be mentioned as a psychological disorder (9). Additionally, improper pain management imposes additional burden on care providers (10). Therefore, taking some measures to reduce pain can increase the satisfaction and comfort of patients during the hospitalization, the ultimate consequence of which is reducing maternal and neonatal problems (11).

Currently, various pharmaceutical and non-pharmacological methods are used to relieve pain after surgery. Among pharmaceutical methods, analgesics, especially narcotics, are commonly used. These drugs have side-effects such as respiratory depression, urinary retention, nausea, vomiting and hemodynamic changes (12). Non-pharmacological methods do not have the majority of such side effects. In general, nowadays, using non-pharmacological treatments has become quite common in pain control, and there are currently over 23 non-pharmacological pain relief methods, including aromatherapy, heat therapy, and hypnosis (13). The results of studies on the use of non-pharmacological methods have shown reduced use of analgesics and related complications (14). Starting oral feeding early after abdominal surgery, including caesarean delivery, can affect the amount of pain as a non-pharmacological intervention (15,16).

Received 16 Mat 2018, **Accepted** 16 October 2018, **Available online** 7 November 2018

[1]School of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran. [2]Clinical Care Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran. [3]Department of Statistics and Epidemiology, School of Medicine, Kurdistan University of Medical Sciences, Sanandaj, Iran. [4]Clinical Care Research Center, School of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran

***Corresponding Author:** Roonak Shahoei, Tel: 00989183712759, Email: rshaho@yahoo.com

After a caesarean section, the patient is to receive 2-3 L of intravenous fluid for 12-24 hours and start feeding at 12-24 hours after surgery. Then, the normal diet begins after the return of bowel function (bowel movements or passage of flatus) (17).

In the traditional approach, the patients are kept NPO (noting by mouth) until the return of bowel function (bowel sounds or passage of flatus) after caesarean section, which is mainly due to the risk of developing ileus. Long-term fasting after caesarean section is one of the most unpleasant factors that affect mothers both physically and mentally (18).

It seems that the early onset of oral feeding causes a reduction in the response to stress and body tension. The functioning of the organs, including the digestive system, is minimized, facilitating recovery. Moreover, the reduction of fasting time after surgery can reduce post-surgical use of opioids and postoperative pain, increase patient satisfaction and decrease hospitalization time after surgery (19). Pain relief helps nurses to manage pain and care for mother and her baby in cases where the mother suffers from a lack of energy in providing required care for the newborn (15).

In new method, the early onset of feeding has been emphasized as a way to relieve pain and to provide patient comfort and satisfaction in post-caesarean situations (20). This method can be proposed as a nursing care technique in post-caesarean section in order to reduce pain.

Studies have reported different findings regarding the effect of early onset of feeding on postoperative pain after caesarean section (21). In different studies, the time and the way to start feeding after abdominal surgeries, including caesareans, have been reported. Adeli et al reported that the pain level after caesarean was not significantly different between two groups of early feeding (4 hours after surgery) and late feeding (12 hours after surgery) (15). However, the results of a study by Izbizky et al indicated that post-caesarean pain was lower in the early feeding group compared to the control group (22). Razmjoo et al stated that the pain level in the early feeding group was significantly lower than that in the late feeding group (1). The early onset of feeding can prevent the release of protein reserves, improve and accelerate wound healing (10), reduce the length of hospital stay and improve mental health (23).

The new care methods introduce the early onset of oral feeding in order to relieve pain and to provide patient comfort and satisfaction during post-caesarean period (15-20). This method can be suggested as one of the nursing care techniques in the post-caesarean section in order to reduce pain. The aim of this study was to determine the effect of early oral feeding on post-caesarean pain.

Materials and Methods

This study was a randomized clinical trial that was conducted from November 2016 to May 2017. This clinical trial was conducted in an Iranian governmental hospital (Emam Khomaini). This hospital is located in Divandareh, Kurdistan province in the northwest of Iran. The research population was comprised of women with repeat caesarean sections who were admitted to the obstetric ward of the hospital for elective caesarean section. The sample size included 126 multiparous pregnant women, 63 women in the intervention group and 63 women in the control group (Figure 1).

The inclusion criteria for participation in this study were: having a singleton pregnancy, being at 38-42 weeks of gestation, having repeat caesarean sections (history of at least one previous caesarean section), having normal baby and having spinal anesthesia, not having any medical conditions or obstetric disorders (diabetes, anemia, hypertension, cardiovascular, vascular, kidney, lung, gastrointestinal, Thyroid, immune disorders, infectious diseases, psychiatric disorders, metabolic disorders, electrolyte and irritable bowel syndrome). The exclusion criteria included participants' unwillingness to continue the study.

The first researcher referred to the obstetric ward of the hospital, examined the clinical record of pregnant women who had repeat caesarean sections, and selected eligible patients. The study was explained to the women and they were included in the study if they were willing to participate. The informed consent was obtained from the participants. Then, they were assigned randomly to intervention and control groups based on a 1:1 ratio. Randomization was done by one of the researchers, who did not have a role in the intervention. A simple randomization method was used. For this purpose, envelope was used. After training the mothers, the pain severity of the patients was measured at 6, 12, 18, and 24 hours after caesarean.

Data was collected using a questionnaire with two parts, the first part was related to demographic data and the second part was related to the measurement of pain. For measuring the severity of pain, the visual analogue scale (VAS) was used. This scale is a 10-cm line graded from 1 to 10 where zero does not show any pain and 10 indicates extremely severe pain.

The rate and timing of narcotics, antibiotics, and laxatives were the same in the two groups after caesarean. The obstetrician and also the spinal anesthesia were the same for all caesarean sections. The patients in the intervention group (early onset of feeding) were placed in semi-sitting position for 6 hours after surgery. The severity of pain was measured and then 30 mL was initially given to the mother as oral feeding, equal to half a cup of tea with 4 cubes of dissolved sugar. Then, the volume was doubled after an hour if it was tolerated and no nausea and vomiting occurred and the patients who tolerated had 60 mL of the fluids. After this time, based on the dietary intake of the patients and according to the hospital diet, such as soup, juice, and yogurt, the patient received a

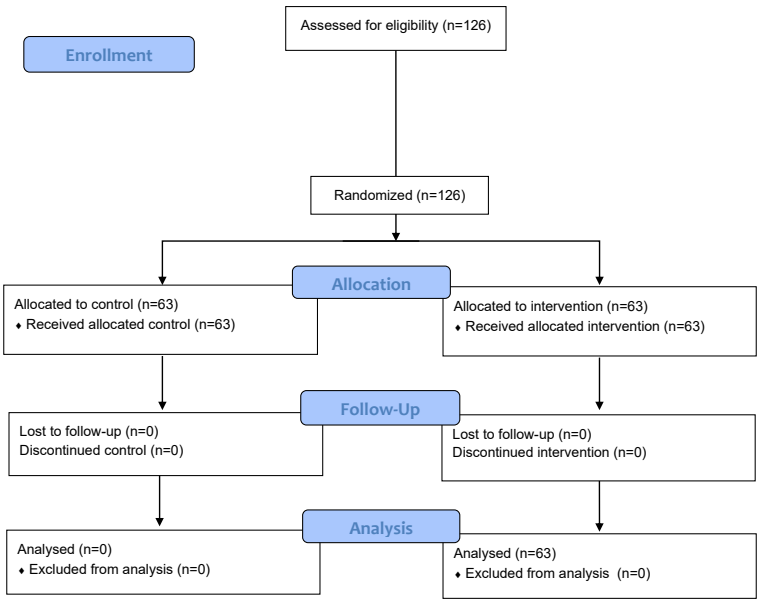

Figure 1. CONSORT Flow Diagram of the Trial.

minimum fluid intake of 1500 mL per 24 hours. Maternal pain was evaluated at 6, 12, 18, 24 hours after caesarean.

The patients in the control group received routine care. This means that they stayed in the supine position for 12 hours and were kept NPO. The pain was evaluated in the same way in both control and intervention groups. Data analysis was conducted using SPSS version 21.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics and analytical statistics, including *t* test, paired *t* test and repeated measures ANOVA were used. The $P<0.05$ was considered statistically significant.

Results

The results of the study showed that the mean age of the participants was 29.4 years and the age range was 26-35 years. The mean duration between two caesarean sections was 1-5 years. Additionally, 34.36% of patients were overweight according to body mass index. There was no significant difference between the two groups in terms of demographic data (Table 1).

There was a significant difference between the two groups in the severity of pain before at the beginning of the intervention and 6, 12, 18, and 24 hours after the intervention ($P<0.001$). The mean pain severity in the intervention group was 9.30, 6.85, 4.71, and 3.15 at 6, 12, 18, and 24 hours after caesarean, respectively (Figure 2). The mean pain severity in the control group was 12.01, 8.71, 5.58, and 4.07 at 6, 12, 18, and 24 hours after caesarean, respectively (Table 2).

Discussion

Based on the results of the present study, the severity of pain in the intervention group (early feeding) turned out to be significantly lower compared to the control group (routine feeding group) at the beginning and 6, 12, 18, and 12 hours after caesarean. The mean pain severity of the control group was higher compared to the intervention group prior to caesarean, which is quite normal because no intervention had been implemented at that time.

Some studies also confirmed that early onset of oral nutrition can reduce pain after caesarean section (15,22,24). However, Nantasupha et al (25), Kramer et al (26) and Hur et al (16) stated that early onset of feeding had no effect on post-caesarean pain.

The results of the study showed that the mean shoulder pain severity decreased significantly in the intervention group after intervention; however, the pain was mild in 6 hours in both groups. The patients underwent spinal anesthesia in the present study. In a study by Zirak et al, regarding the shoulder pain after caesarean section with general anesthesia, the prevalence of shoulder pain was significantly correlated with the surgeon in caesarean section, so the incidence of right shoulder pain was reported at a moderate level (27). Several surgeons performed the surgeries included in the study by Zirak et al, while the surgery was performed by a single obstetrician in the present study.

The results of the study showed that the mean overall pain severity in the intervention group decreased significantly after intervention. Adeli et al, in a study entitled "the comparison of the effects of feeding 4 and 12 hours after caesarean section under general anesthesia", stated that the mean pain severity in the early feeding group turned out to be significantly lower compared to the routine feeding group (15). Moreover, Izbizky et al in a study entitled "the comparison of early and late nutrition

Table 1. Demographics Characteristics of Subjects in 2 Groups

Variable	Intervention Group (Early Feeding)	Control Group (Routine Feeding)	*P* Value
Age	29.39±5.96	29.49±6.19	0.59
Job			
Employee	8 (6.4)	18 (14.3)	
Housewife	53 (42.1)	43 (34.1)	0.17
Student	2 (1.6)	2 (1.6)	
Education			0.71
Illiterate	16 (12.7)	14 (11.1)	
Primary school	33 (26.2)	36 (28.6)	
Diploma	12 (9.5)	9 (7.1)	
Academic degree	2 (1.6)	4 (3.2)	
Residence			0.02
Urban	24 (19)	37 (29.4)	
Rural	39 (31)	26 (20.6)	
Tobacco use			
Yes	8 (69.3)	7 (5.6)	0.78
No	55 (43.7)	56 (44.4)	
No. of pregnancies	2.33±0.69	2.76±0.89	0.02
Abortion history			
Yes	15 (11.9)	10 (7.9)	0.26
No	48 (38.1)	53 (42.1)	
No. of previous caesarean sections	1.09±0.46	1.36±0.54	0.54
A history of stillbirth			0.30
Yes	11 (8.6)	7 (5.6)	
No	52 (41.3)	56 (44.4)	
Pregnancy status			0.83
Wanted	46 (36.5)	47 (37.3)	
Unwanted	17 (13.5)	16 (12.7)	
BMI	26.47±4.06	27.36±2.42	0.64

and post-caesarean delivery on patients' satisfaction" stated that the mean pain severity in the early feeding group was lower than that in the routine feeding group (22). Burrows et al reported that the severity of pain in the early feeding group was lower compared to the control group (24). The present study was consistent with the above-mentioned studies.

However, these findings were not consistent with the results of a study by Nantasupha et al. They evaluated the effects of the conventional diet schedule, early feeding, and early feeding with domperidone on post-caesarean diet tolerance, according to which the pain score was not significantly different in the three groups (25). The result of a study by Hur et al on the effect of early onset of feeding in gastric cancer patients showed that the pain level in the two groups was not significantly different (16). In addition, Kramer et showed that there was not a significant difference between two groups (26). The results of the above-mentioned studies were not consistent with the current study.

Some of the reasons for the inconsistency between the findings of Nantasupha et al and the current study might be pharmacological intervention in the third group, where domperidone was added to the diet of the mentioned group. Additionally, the patients in the control group received a fluid regime 18 to 24 hours after surgery, but the patients in the early feeding group received a soft diet and then received a diet of liquids 3 to 8 hours after the surgery. Therefore, the two studies were quite different in terms of the diet and the implementation process.

The present study, like some other studies (15,18,23), showed that initiating feeding early after caesarean delivery could be a safe way for patients. The discrepancies in the results of studies can be due to differences in the method of administration and their goals, so the time to start early feeding and type of diet are different in studies. Moreover, geography, surgeons, different anesthesia

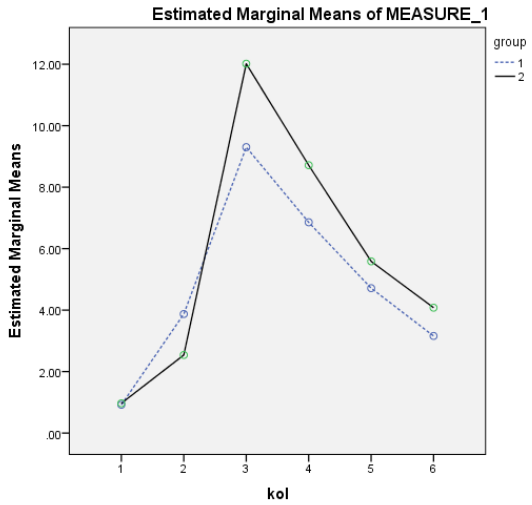

Figure 2. Mean Pain Severity in the Intervention and Control Group (1: Early Feeding Group, 2: Routine Feeding Group).

Table 2. Comparison of Mean Pain Severity and Standard Deviation at the Beginning, 6, 12, 18, and 24 Hours After Caesarean in 2 Groups

Time	Intervention Group (Early Feeding) Mean ± SD	Control group (Routine Feeding) Mean±SD	*P* Value
Beginning of intervention	0.87±3.09	0.53±1.31	0.001
6 hours after caesarean	9.30±2.95	12.01±1.69	0.001
12 hours after caesarean	6.85±3.25	8.71±3.05	0.001
18 hours after caesarean	4.71±3.23	5.58±2.31	0.001
24 hours after caesarean	3.15±2.81	4.07±1.79	0.001

techniques used for caesarean, and different analgesic drugs administered for post-caesarean pain can explain the causes of differences.

One of the limitations of this study is the small sample size, therefore, future similar studies are recommended to recruit a larger sample. In some cases, the expression of the severity of pain despite the training of the samples may not be correct because various factors may affect the sample's expression. It is suggested that the results of this study should be considered for abdominal surgeries and other gynecological surgeries.

Conclusions

It can be stated that the use of early feeding can affect the pain severity in patients undergoing caesarean section. Therefore, using it as an alternative method in comparison with routine diet (feeding 12 hours after surgery) can reduce the pain in mothers.

Conflict of Interests

Authors have no conflict of interests.

Ethical Issues

This study was approved by the Ethics Committee and Research Council of Kurdistan University of Medical Sciences, Iran (IR.MUK.REC.1395/354). This study was also registered in the Iranian Registry of Clinical Trials (identifier: IRCT2013090314556N1; http://en.irct.ir/trial/14167). Moreover, the participants were informed about the aim of study and they signed written consent form in their official language (Persian) prior to the study. Additionally, we were committed to keeping all the participants' information confidential.

Financial Support

The research project was financially supported by Kurdistan University of Medical Sciences.

Acknowledgments

This study was derived from a thesis project approved by Kurdistan University of Medical Sciences, Iran. The researchers hereby appreciate the Research Council of the School of Nursing and Midwifery in addition to Research Deputy, Research Council and Ethics Committee of Kurdistan University of Medical Sciences and mothers participated in this study..

References

1. Razmjoo N, Adeli M, Tara F, Ebrahimzadeh S. Effect of Early Post Caesarean Feeding on Wound Healing. Q Horizon Med Sci. 2013;19(2):83-8. [Persian].
2. Zahedi M, Asemani O, Mahmoodian H. A psychometric evaluation of an instrument for measuring residents' attitude towards caesarean vs. natural vaginal delivery. Iranian Journal of Medical Ethics and History of Medicine. 2015;8(4):58-71. [Persian].
3. Betrán AP, Ye J, Moller AB, Zhang J, Gülmezoglu AM, Torloni MR. The Increasing Trend in Caesarean Section Rates: Global, Regional and National Estimates: 1990-2014. PLoS One. 2016;11(2):e0148343. doi:10.1371/journal.pone.0148343
4. Hadi N, Hanid AA. Lavender essence for post-cesarean pain. Pak J Biol Sci. 2011;14(11):664-667.
5. Booth JL, Harris LC, Eisenach JC, Pan PH. A Randomized Controlled Trial Comparing Two Multimodal Analgesic Techniques in Patients Predicted to Have Severe Pain After Cesarean Delivery. Anesth Analg. 2016;122(4):1114-1119. doi:10.1213/ane.0000000000000695
6. Naz F, Bagum A. Analysis of maternal complications in cesarean section. Ann King Edw Med Univ. 2016;11(3):239-241. doi:10.21649/akemu.v11i3.1010
7. Mahmoody T. Comparing the effects of intraperitoneal bupivacaine, morphine and dexamethasone on post caesarean section pain after elective caesarean section under general anesthesia [MSc thesis]. Qazvin: Qazvin University of Medical Sciences; 2016. [Persian].
8. Olapour A, Behaeen K, Akhondzadeh R, Soltani F, Al Sadat Razavi F, Bekhradi R. The Effect of Inhalation of Aromatherapy Blend containing Lavender Essential Oil on Cesarean Postoperative Pain. Anesth Pain Med. 2013;3(1):203-207. doi:10.5812/aapm.9570
9. Kainu JP, Sarvela J, Tiippana E, Halmesmaki E, Korttila KT. Persistent pain after caesarean section and vaginal birth: a cohort study. Int J Obstet Anesth. 2010;19(1):4-9. doi:10.1016/j.ijoa.2009.03.013
10. Miller TE, Thacker JK, White WD, et al. Reduced length of hospital stay in colorectal surgery after implementation of an enhanced recovery protocol. Anesth Analg. 2014;118(5):1052-1061. doi:10.1213/ane.0000000000000206
11. de Brito Cancado TO, Omais M, Ashmawi HA, Torres ML. Chronic pain after cesarean section. Influence of anesthetic/surgical technique and postoperative analgesia. Rev Bras Anestesiol. 2012;62(6):762-774. doi:10.1016/s0034-7094(12)70177-0
12. Ebrahimi Houshyar A, Hosein Rezaie H, Jahani Y, Kazemi M, Monfared S. Comparison of two methods of aromatherapy with lavender essence and Transcutaneous Electrical Nerve Stimulation (TENS) on cesarean postoperative pain. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2015;18(146):6-12. doi:10.22038/ijogi.2015.4422
13. Najar SH AM, Abaspur Z, Haghighizadeh M. The effect of massage on pain after caesarean hands and feet. Journal of Illam University of Medical Sciences. 2013;20(4):39-48. [Persian].
14. Oshvandi K, Shiri FH, Fazel MR, Safari M, Ravari A. The effect of pre-warmed intravenous fluids on prevention of intraoperative hypothermia in cesarean section. Iran J Nurs Midwifery Res. 2014;19(1):64-69.
15. Adeli M, Shamayian Razavi N, Kabiriyan M, Razmjoo N, Tara F. Comparison of Oral Intake Profiles at 4 and 12 Hours Following Caesarean Section under General Anesthesia. Journal of Torbat Heydariyeh University of Medical Sciences. 2013;1(3):7-15. [Persian].
16. Hur H, Kim SG, Shim JH, et al. Effect of early oral feeding after gastric cancer surgery: a result of randomized

clinical trial. Surgery. 2011;149(4):561-568. doi:10.1016/j.surg.2010.10.003
17. Al-Ghareeb SA, Ahmad ER, Turki HA. Effect of Early Oral Hydration on Post Caesarean Outcomes. J Am Sci. 2013;8(9):70-78.
18. Masood SN, Masood Y, Naim U, Masood MF. A randomized comparative trial of early initiation of oral maternal feeding versus conventional oral feeding after cesarean delivery. Int J Gynaecol Obstet. 2014;126(2):115-119. doi:10.1016/j.ijgo.2014.02.023
19. Adeli M, Razmjoo N, Tara F, Ebrahimzadeh S. The effect of early post cesarean feeding on women's satisfaction. J Family Reprod Health. 2010;4(2):79-82.
20. Osland E, Yunus RM, Khan S, Memon MA. Early versus traditional postoperative feeding in patients undergoing resectional gastrointestinal surgery: a meta-analysis. JPEN J Parenter Enteral Nutr. 2011;35(4):473-487. doi:10.1177/0148607110385698
21. Yaghmaei M, Arbabi Kalati F, Mokhtari M, Behzadian A. Comparison of oral intake profiles at 2 and 8 hours following cesarean section under spinal anesthesia. Zahedan Journal of Research in Medical Sciences. 2010;11(4):43-51. [Persian].
22. Izbizky GH, Minig L, Sebastiani MA, Otaño L. The effect of early versus delayed postcaesarean feeding on women's satisfaction: a randomised controlled trial. BJOG. 2008;115(3):332-338. doi:10.1111/j.1471-0528.2007.01591.x
23. Jalilian N, Ghadami MR. Randomized clinical trial comparing postoperative outcomes of early versus late oral feeding after cesarean section. J Obstet Gynaecol Res. 2014;40(6):1649-1652. doi:10.1111/jog.12246
24. Burrows WR, Gingo AJ Jr, Rose SM, et al. Safety and efficacy of early postoperative solid food consumption after cesarean section. J Reprod Med. 1995;40(6):463-467.
25. Nantasupha C, Ruengkhachorn I, Ruangvutilert P. Effect of conventional diet schedule, early feeding and early feeding plus domperidone on postcesarean diet tolerance: A randomized controlled trial. J Obstet Gynaecol Res. 2016;42(5):519-525. doi:10.1111/jog.12942
26. Kramer RL, Van Someren JK, Qualls CR, Curet LB. Postoperative management of cesarean patients: the effect of immediate feeding on the incidence of ileus. Obstet Gynecol. 1996;88(1):29-32. doi:10.1016/0029-7844(96)00131-7
27. Zirak N, Soltani G, Pakravan S, Taherzadeh M, Mashayekhi Z. Evaluation of the prevalence of shoulder pain after caesarean with general anesthesia. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2011;14(3):8-12. [Persian].