Medication use in the postpartum period in Slovenia with regard to breastfeeding

Uporaba zdravil in dojenje v poporodnem obdobju v Sloveniji

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Izvleček

Izhodišča: V svetu sledimo trendu naraščanja uporabe zdravil in prehranskih dopolnil v poporodnem obdobju. Najpogostejša je uporaba multivitaminskih pripravkov, železa, protibolečinskih sredstev, nesteroidnih antirevmatikov, antibiotikov, oralnih kontraceptivov, antiemetikov in antihistaminikov. Ker podatki za Slovenijo do sedaj niso bili znani, je bil namen naše raziskave zbrati podatke o jemanju zdravil in prehranskih dopolnil pri ženskah v poporodnem obdobju in ugotoviti, ali obstaja razlika v jemanju med doječimi in nedoječimi materami.

Metode: V prospektivno presečno raziskavo smo vključili 1.070 žensk po porodu v času rutinske bolnišnične oskrbe na oddelku otročnic v Porodnišnici Ljubljana med 14. oktobrom 2011 in 9. februarjem 2012. Z metodo prostovoljnega pisnega anketiranja smo zbirali podatke o jemanju zdravil in prehranskih dopolnil prve tri dni po porodu in podatke o kroničnih boleznih, boleznih med nosečnostjo, morebitnih razvadah in dojenju. Tri, šest in dvanajst mesecev po porodu smo del vprašalnika z vprašanji o jemanju zdravil in prehranskih dopolnil ter dojenju ponovili preko elektronske pošte ali po telefonu.

Rezultati: Za vsa opazovana obdobja smo zbrali odgovore za 84,4 % žensk in v končno analizo vključili 901 žensko. Tri dni po porodu je polno ali delno dojilo 96,5 % žensk, najpogosteje so jemale protibolečinska sredstva, odvajala in železo. Do tri mesece po porodu je polno ali delno dojilo 82,9 % in tri do šest mesecev po porodu 72,1 % žensk. V obeh obdobjih so najpogosteje jemale protibolečinska sredstva, vitamine in/ali minerale in folno kislino. Od šest do dvanajst mesecev po porodu je dojilo 51,5 % žensk. Poleg protibolečinskih sredstev, vitaminov in/ali mineralov so bile najpogosteje zdravljene še z antimikotiki v obliki vaginalet. V obdobju prvih treh dni in v obdobju od 3 do 6 mesecev po porodu so doječe matere jemale značilno manj zdravil in prehranskih dopolnil kot nedoječe matere.

Zaključki: Z našo raziskavo smo prvič pridobili podatke o uporabi zdravil in prehranskih dopolnil v poporodnem obdobju v Sloveniji. Pogostost jemanja zdravil in prehranskih dopolnil se je razlikovala med doječimi in nedoječimi materami. Med zdravili in prehranskimi dopolnili prevladujejo folna kislina, vitamini in/ali minerali, protibolečinska sredstva in antimikotiki v obliki vaginalet.

Abstract

Background: To date there are no known data about medication and nutritional supplements use in the postpartum period in Slovenia. We aimed to observe the proportion of mothers who were using medication and nutritional supplements, and whether there were differences among breastfeeding and non-breastfeeding mothers.

Methods: In a prospective cross-sectional study 1,070 women after delivery at the Maternity Hospital Ljubljana (Division of Gynaecology and Obstetrics, University Medical Centre Ljubljana) were

included. Data were collected through written questionnaires. The same questionnaires were given at time points of 3, 6, and 12 months after delivery.

Results: We collected all responses for 84.4 % (901/1070) of women, which were included in the final analysis Three days after delivery 96.5 % of women were breastfeeding fully or partially. The most commonly used medications during this period were analgesics, laxatives and iron supplements. In the period of up to 3 months after delivery, 82.9 % of women were breastfeeding fully or partially, whereas the number decreased to 72.4 % in the period from 3 to 6 months after delivery. Analgesics, vitamins and/or minerals and folic acid supplements were used most frequently in both periods. From 6 to 12 months after delivery 51.5 % of women were breastfeeding. Vaginally administered antifungals were the most commonly used in this time period in addition to analgesics, vitamins and/or mineral supplements. Breastfeeding mothers used less medication and nutritional supplements during the first three days and in the period from 3 to 6 months after delivery.

Conclusions: For the first time epidemiological data on the medication and nutritional supplements use in the postpartum period and the differences among breastfeeding and non-breastfeeding mothers were obtained and analysed in Slovenia. A significant difference in the frequency of medication and nutritional supplements use was observed between breastfeeding and non-breastfeeding mothers. The most frequently used were folic acid, vitamins and/or minerals, analgesics, antibiotics, and antifungals in the form of vaginal tablets.

Introduction

Postpartum period or puerperium lasts from birth to the disappearance of anatomical and physiological changes of the pregnancy. It is the period that begins three hours after birth of the placenta at the end of the fourth stage of delivery and extends to about six weeks after birth, when major physiological, social and emotional changes take place in the woman's body. At the same time healing processes and lactation with breastfeeding are taking place.

The use of medicines during breast-feeding might not always be recommended or is even dangerous; therefore, the medicines are classified into 5 groups according to the risk for infant:^{3,4}

- L1-the safest medicines without proven adverse effects to the infant;
- L2-generally safe medicines with low risk to the infant;
- L3-moderately safe medicines, no controlled studies, minimal non--threatening adverse effects possible;
- L4-possibly hazardous medicines, positive evidence of risk to a breastfed infant or to breastmilk producti-

- on, indicated only with special attention:
- L5-usually contraindicated medicines

There are no known data on the use and administration of medication and nutritional supplement use in the postpartum period in Slovenia to date. Therefore, we aimed to observe what was the proportion of mothers who were using medication and nutritional supplements, which they most commonly used and whether there were differences among breastfeeding and non-breastfeeding mothers.

The study was approved by the Slovenian National Medical Ethics Committee, under No. 58/06/11.

Materials and Methods

This was an observational prospective cross-sectional study that was conducted by questioning 1,070 women after they delivered, while they were routinely admitted to the Maternity Hospital

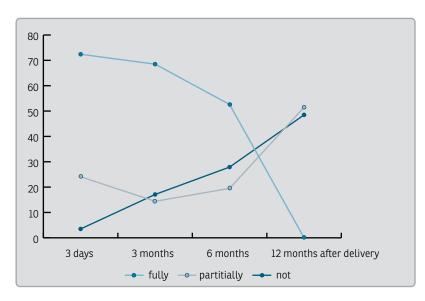


Figure 1: Breastfeeding rates by individual periods after delivery.

Ljubljana (Division of Gynaecology and Obstetrics, University Medical Centre Ljubljana). Data were collected in the period from 17 October 2011 to 9 February 2012 through written questionnaires based on the voluntary participation of women. There were no exclusion criteria. We asked 10 questions about medication and nutritional supplement use in the first 3 days after delivery, and at the same time we were able to obtain data on their chronic diseases, diseases that occurred during pregnancy, potential habits and breastfeeding. After 3, 6 and 12 months we repeated a part of the same questionnaire and surveyed the women about their medication and nutritional supplement use and breastfeeding habits, this time via e-mail or telephone. The mothers participated voluntarily and gave consent for participation and use of their answers for study purposes. No personal data were collected.

Hypertension, heart failure, chronic lung disease (asthma), chronic kidney disease, kidney stones, diabetes mellitus type 1 and 2, thyroid dysfunction, epilepsy, allergies, hepatitis, gallstones, deep vein thrombosis, addictions and other diseases according to ICD-10 classification were most common chronic diseases in mothers.

Potential habits included smoking, which was divided into smoking before pregnancy, during and immediately after it.

Regarding diseases occurring for the first time in pregnancy, we collected information about gestational diabetes, H (hypertension) without E (edema) and P (proteinuria), HELLP syndrome, proteinuria without H and E, edema without H and P, iron deficiency anemia, urinary tract infection, infection of the vagina and other conditions treated during pregnancy.

In all time periods, women were asked about medication and nutritional supplement use classified by Anatomical Therapeutic Chemical (ATC) Classification System 2012:5 folic acid (Bo3BB), vitamins and/or minerals (A11a), iron (Bo3AB), antibiotics (Jo1), analgesics (No2), non-steroidal anti-inflammatory drugs (Mo1), anticonvulsives (Ao3BB, Go₄B), antihypertensives (Co₂), diuretics (Co₃), anticoagulants (Bo₁A), medicines used to treat respiratory diseases (Ro3, Ro5), antidiabetic drugs (A10B), insulin (A10A), antidepressants (No6A), antipsychotics (No5A), drugs used to treat epilepsy (No₃A), laxatives (Ao6A), drugs for acid related disorders (Ao2A, Ao2B), sex hormones and modulators of the genital system (Go₃), thyroid hormones (Ho3), antifungals in the form of vaginal tablets (Go1AF) and others.

Additionally, they were asked about the administration of corticosteroids for fetal lung maturation (Ho2AB) and anti-D immunoglobulin (Jo6BB1). During labour and delivery oxytocin (Ho1BB), prostaglandins (Go2A), inhalation of N2O, antibiotics (Jo1DB), analgesics (No2), anaesthetics (No1A, No1B), antihypertensives (Co2) and others were used. During postpartum hospitalisation we recorded analgesics (Mo1A, No2BE),

antibiotics (Jo1), laxatives (Ao6A), folic acid (Bo3BB), vitamins and/or minerals (A11a), iron (Bo3AB), drugs for promoting milk formation (Ao3FA) and others.

Women were further divided into three different breastfeeding groups: fully, partially and not breastfeeding. We hypothesised that in the period from 6 to 12 months after delivery, none of the women were fully breastfeeding due to the transition of the baby's diet from breastfeeding to other solid foods and liquids.

Statistical analysis

The differences regarding medication and nutritional supplement use in the postpartum period (first 3 days after delivery, first 3 months after delivery, 3–6 months after delivery, and 6–12 months after delivery) among breastfeeding and non-breastfeeding mothers were evaluated with SPSS (version 19.0, Statistical Package for the Social Sciences, inc. Illinois, USA) using chi-square test. Results were statistically significant if *p* was less then 0.05.

Results

During the study period (17 October 2011 to 9 February 2012), we included 1,070 women on the second or third day after delivery at the Maternity Hospital Ljubljana (Division of Gynaecology and Obstetrics, University Medical Centre Ljubljana). For all the observed periods (first 3 months after delivery, 3–6 months after delivery, and 6–12 months after delivery) we collected responses from 84.4 % of women; therefore, 901 women were included in the final analysis.

Breastfeeding

Three days after delivery, 96.5 % (869/901) of women were breastfeeding, 72.4 % (652/901) of them fully and 24.1 % (217/901) partially (Figure 1).

Up to 3 months after delivery, 82.9 % (747/901) of women were breastfeeding, 68.5 % (617/901) of women fully and 14.4 % partially (130/901).

In the period from 3 to 6 months after delivery, the number of fully breastfeeding women decreased to 52.6 %

	Table 1: Most commonly use	d medication and	d nutritional supp	lements b	y individua	. periods (n = 901).
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After delivery	In three days	Up to three months	From 3 to 6 months	From 6 to 12 months
women using medication/	819/901	567/901	415/901	451/901
nutritional supplements	(90.9 %)	(62.9 %)	(46 %)	(50.1 %)
folic acid	83/819	160/567	63/415	43/451
	(10.1 %)	(28.4 %)	(15.2 %)	(9.5 %)
vitamins, minerals	84/819	182/567	103/415	100/451
	(10.2 %)	(32.0 %)	(24.8 %)	(22.2 %)
analgesics	640/819	285/567	159/415	214/451
	(78.1 %)	(50.3 %)	(38.3 %)	(47.4 %)
antibiotics	73/819	78/567	24/415	40/451
	(8.9 %)	(13.8 %)	(5.8 %)	(8.9 %)
antifungals*	0.0	43/567 (7.6 %)	31/415 (7.5 %)	52/451 (11.5 %)

^{*} in the form of vaginal tablets

(474/901). The number of partially and non-breastfeeding women increased to 19.5 % (176/901) and 27.9 % (251/901), respectively.

From 6 to 12 months after delivery, 51.5 % (464/901) of women were partially breastfeeding.

Medication and nutritional supplement use in the postpartum period

In the first three days after delivery 9.1% (82/901) of women used no medication and nutritional supplements. The most commonly used were analgesics, laxatives, iron and antithrombotic agents (Table 1).

Up to 3 months after delivery, analgesics, vitamins and/or mineral supplements including iron and folic acid were predominately used. Only 37.1% (334/901) of women used nothing.

The most widely used in the period from 3 to 6 months were analgesics, vitamins and/or minerals and folic acid. Nevertheless, 54.0 % (486/901) of women received nothing.

From 6 to 12 months after delivery, 49.9 % (450/901) of women used no medication and nutritional supplements.

The most commonly used were antifungals in the form of vaginal tablets in addition to analgesics, vitamins and/or minerals.

All together, most widely used were folic acid, vitamins and/or minerals, analgesics, antibiotics and antifungals in the form of vaginal tablets (Table 1). The average number of medication and nutritional supplements taken was 1.82 (range 1 to 6).

Breastfeeding and medication and nutritional supplement use in the postpartum period

In the first three days after delivery, a significant difference in the frequency of medication and nutritional supplement use was observed between breast-feeding and non-breastfeeding mothers (Table 2) (p < 0.001). The difference was also significant in the period from 3 to 6 months after delivery (p < 0.05).

If folic acid, vitamins and/or minerals were excluded from analysis, mothers who were breastfeeding used less medicinal substances in the period of up to 3 months (p < 0.001), and in the period from 3 to 6 months after delivery (p < 0.001). This difference was no lon-

Table 2: Medication and nutritional supplement use among breastfeeding and non-breastfeeding mothers by individual periods (n = 901).

After delivery	In three days	Up to three months	From 3 to 6 months	From 6 to 12 months
breastfeeding group using medication/ nutritional supplements	788/869 (90.7 %)	470/747 (62.9 %)	284/650 (43.7 %)	230/464 (49.7 %)
non-breastfeeding group using medication/ nutritional supplements	31/32 (96.9 %)	97/154 (63.0 %)	131/251 (52.1 %)	221/437 (50.6 %)
р	< 0.001	> 0.05	< 0.05	> 0.05
without any use	82/901 (9.1 %)	334/901 (37.1 %)	486/901 (54.0 %)	450/901 (50.0 %)

ger present in the period from 6 to 12 months after delivery.

Discussion

Epidemiological data on the medication and nutritional supplement use in the postpartum period and the differences among breastfeeding and non-breastfeeding mothers were obtained and analysed for the first time in Slovenia. The Maternity Hospital Ljubljana (Division of Gynaecology and Obstetrics, University Medical Centre Ljubljana) with the average of 6,000 deliveries per year (30 % of births) is the biggest maternity unit in Slovenia. Therefore we considered the collected data as representative for our country.

In the present study, 96.5 % of women were fully or partially breastfeeding in the first three days after delivery, which is 1.4 % less than in the year 2010 according to the National Perinatal Information System 2010.⁷ In foreign surveys the percentage was even lower. At the time of discharge from the hospital, 76.9 % of women were breastfeeding in the USA in 2009,⁸ 81 % in the UK in 2010,⁹ and 55.7 % in Ireland in 2008.¹⁰

Three months after delivery, 82.9 % of women were fully or partially breastfeeding, which is 9.4 % less than in the 2007 survey, 11 but approximately 50 % more than in the UK in 2010 and in Ireland in 2008. 10

In the period from 3 to 6 months after birth, 72.1 % of infants were fully or partially breastfed, which is still 15.8 % less compared to from the percentage observed in 2007.¹¹ However, we found that up to one year after birth more women were breastfeeding in comparison to the developed part of the world and less in comparison to third world countries.¹²

During the first three months our women were most frequently using mul-

tivitamin preparations, iron and analgesics. More than half of them were taking analgesics, and one-fifth antibiotics. The average number of medication taken was 1.82.

In the study conducted in Northern Ireland, antibiotics, laxatives and anti--psychotics were frequently prescribed. The average number of medication taken by the study population was 3.6, and less than 1 % of mothers received no drug treatment.14 In the USA study, mothers most commonly used non-steroidal anti-inflammatory drugs, oral contraceptives, antibiotics and medicines for the treatment of respiratory diseases in addition to multivitamins and analgesics. The average number of prescribed drugs per woman was 4.9.13 The Dutch study by Schirm et al. from 2002 demonstrated consistent results, with oral contraceptives, medicines for the treatment of respiratory diseases and antibiotics being the most frequently used medications in addition to vitamins, analgesics and iron; 67.1 % of women were taking at least one medication.15 In two Norwegian hospitals, the most frequently used medications were those acting on the respiratory system (24.6 %), antibiotics (17.5 %), nasal decongestants (8.8 %), and iron supplements (4.0 %).16 According to data from Sweden, 50.9 % of women were taking at least one medication in the early postpartum period,17 whereas in Brazil that percentage was 96.2 %.18

During the first three months after delivery, vitamins and/or minerals were used less frequently in Slovenia than in studies in the USA, Northern Ireland and the Netherlands. ¹³⁻¹⁵ But in comparison with the data from the register of births in Sweden, in our study the proportion was much higher. ¹⁷

Furthermore, in the period from 3 to 6 months after delivery, the percentage for the use of analgesics, antibiotics and

antifungals in the form of vaginal tablets in Slovenia was lower than in Norway and Sweden. During the same period, our women were also taking less vitamins and/or minerals, analgesics and antibiotics compared to women in the USA. 13

Despite the worldwide promotion of breastfeeding, there is still lack of data on the frequency of drug therapy during breastfeeding. The most extensive study conducted in 1985 originates from Norway where 25 % of breastfeeding women, whose children were aged three to five months, were taking at least one medication.¹⁹ In the study by Passmore et al., no difference could be determined between medication taken by breastfeeding or non-breastfeeding mothers in the first 3 months after delivery regarding the usage of analgesics, non-steroidal anti-inflammatory drugs, laxatives and antibiotics.14 The only difference was in the usage of antipsychotics, vitamins and iron, which was higher in the group of non-breastfeeding mothers.

In the present study, breastfeeding mothers used less medication and nutritional supplements during the first three days and in the period from 3 to 6 months after delivery.

Moreover, if folic acid, vitamins and/ or minerals were excluded from analysis, breastfeeding mothers used less medicinal substances in all periods of up to 6 months after delivery. These findings were consistent with the results by Shirm and his colleagues.¹⁵ In Northern Ireland during the first 6 months after birth more than a half (65.9 %) of all breastfeeding women had used drugs, but they used drugs less frequently than nonbreastfeeding women (79.6 %).¹⁴

As far as we know, in the available literature for the period from 6 to 12

months after delivery, there were no data about medication and nutritional supplement use among the breastfeeding and non-breastfeeding mothers. Our results have shown no statistically significant differences between the groups. Moreover, the difference was not present even when the folic acid, vitamins and/or minerals were excluded from analysis.

Conclusion

Our study demonstrated that the percentage of mothers who are breastfeeding after delivery is higher in all observation periods in comparison to the developed part of the world.

Breastfeeding mothers used less medication and nutritional supplements during the first three days and in the period from 3 to 6 months after delivery. If folic acid, vitamins and/or minerals were excluded from analysis, breastfeeding mothers used less medicinal substances during the entire period of the first 6 months. This difference was no longer present in the period from 6 to 12 months after delivery. The most frequently used were folic acid, vitamins and/or minerals, analgesics, antibiotics, and antifungals in the form of vaginal tablets. We presume that in some social and cultural environments women after delivery might frequently hesitate to use drugs during breastfeeding, stop or even decide not to breastfeed because of drug use to avoid the child's exposure. The majority of drugs can be safely used during lactation. Therefore, information about how to deal with medication remains very important in programmes to promote breastfeeding. According to the Position Statement from the European Board and College of Obstetrics & Gynaecology,²⁰ an EU-wide assessment with an information campaign to increase awareness among the public and health care professionals about the impor-

of current practice is needed together tance of proactive information sharing and counselling regarding medication use related to pregnancy and lactation.

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