ANZJOG

DOI: 10.1111/ajo.13535

ORIGINAL ARTICLE

Patient acceptability, continuation and complication rates with immediate postpartum levonorgestrel intrauterine device insertion at caesarean section and vaginal birth

Natasha Wojcik[1], Leah Watkins[2] and Rachael Nugent[3]

[1]Department of Obstetrics and Gynaecology, Sunshine Coast University Hospital and Health Service, Sunshine Coast, Queensland, Australia

[2]Department of Obstetrics and Gynaecology, Sunshine Coast University Hospital and Health Service, Sunshine Coast, Queensland, Australia

[3]University of the Sunshine Coast, Sunshine Coast, Queensland, Australia

Correspondence: Dr Leah Watkins, Department of Obstetrics and Gynaecology, Sunshine Coast University Hospital and Health Service, Sunshine Coast, Queensland, Australia. Email: leah.watkins@health.qld.gov.au

Conflicts of Interest: The authors report no conflicts of interest.

Received: 6 August 2021;
Accepted: 3 April 2022

Funding information
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Abstract

Background: Immediate postpartum long-acting reversible contraception (LARC) has been shown to reduce unintended pregnancy but uptake of this type of contraception in Australia is low compared to European counterparts.

Aims: To assess self-reported continuation rates, complications and satisfaction in patients having immediate postpartum hormonal intrauterine device (IUD) inserted at caesarean section (CS) or after vaginal birth (VB).

Materials and methods: Retrospective cohort study of all patients with immediate postpartum hormonal IUD insertion over three years at a tertiary maternity service. Primary outcomes were patient satisfaction, continuation and expulsion rates. Secondary outcomes were reason for discontinuation, patient-reported complications, attendance for postpartum check with a general practitioner (GP) and rate of unplanned pregnancy. Simple descriptive statistics were used to analyse the data.

Results: One hundred and ninety-three women had a hormonal IUD inserted and 143 consented to involvement (CS $n = 79$; VB $n = 64$). Six and 12 months continuation rates for CS were 60.8% and 54.4%, and VB were 46.9% and 39.1%. The most common reasons for removal were: pain (34.5%), heavy or irregular bleeding (25.9%) and partial expulsion (24.1%). Expulsion was more likely after VB (34.1%) than CS (10.1%), (odds ratio 2.72; 95% CI 1.07–6.90; $P = 0.036$). There were 60.8% of women post-CS and 56.3% of women post-VB who were satisfied with their decision to have immediate postpartum insertion and most women attended routine postpartum follow-up with their GP (89.5%).

Conclusion: Immediate postpartum hormonal IUD insertion in this cohort is associated with higher rates of expulsion and lower satisfaction rates compared to those documented in the literature for delayed postpartum insertion cohorts.

KEYWORDS

postpartum, intrauterine contraceptive device, contraception

INTRODUCTION

Despite widespread availability of contraception, an estimated 50% of Australian women will have an unplanned pregnancy.[1] Those postpartum are particularly at risk, with 10–44% of pregnancies in the first year after childbirth being unintended.[2] Australia's low rate of long-acting reversible contraception (LARC) usage contributes to this high rate of unplanned pregnancy.[3]

The levonorgestrel intrauterine system (LNG-IUS) is a progesterone-only hormonal intrauterine device (IUD) which provides highly effective contraception for five years from insertion. Both the Royal College of Obstetricians and Gynaecologists[4] and the American College of Obstetricians and Gynecologists[5] support immediate postpartum IUD insertion as a safe and effective option for contraception. The World Health Organization Medical Eligibility Criteria lists postpartum LNG-IUS as a criteria two – advantages generally outweigh risks.[6]

There are many advantages of immediate LARC insertion at delivery. Previous research has established that 40–75% of patients who plan to have an IUD inserted in the delayed postpartum phase (traditionally at six weeks) do not obtain it.[7] Furthermore, up to 53% of patients do not attend a postpartum visit at all,[8,9] and even if they do attend, more than 50% are already sexually active within six weeks postpartum.[10]

While these considerations make immediate postpartum insertion convenient and timely, the risks need to be considered. Immediate postpartum insertion is not associated with higher rates of perforation or infection compared to delayed insertion at four weeks postpartum,[11] but a Cochrane meta-analysis of four randomised control trials found immediate IUD insertion had more than four times higher relative risk of spontaneous expulsion compared with insertion at six weeks postpartum (odds ratio (OR) 4.89; 95% CI 1.47–16.32).[12] However, despite the higher expulsion rate with immediate postpartum IUD insertion cohorts, due to the low rates of attendance at postpartum follow-up for insertion, those who underwent immediate insertion were still more likely to have an IUD *in situ* at six months compared to delayed insertion (4–6 weeks after childbirth) (OR 2.04; 95% CI 1.01–4.09).[12]

It should be noted that the Cochrane meta-analysis only included 210 patients and called for further research on the topic. Our health service offers immediate postpartum insertion of the hormonal IUD at caesarean section (CS) or in the birth suite after vaginal birth (VB). Given this, we have designed a retrospective audit via a phone survey to assess patient satisfaction, continued usage and complications.

Various definitions of immediate postpartum insertion have been used, ranging from within ten minutes of delivery of the placenta,[12] up to any insertion prior to hospital discharge after delivery.[5] For the purposes of this study, immediate postpartum insertion is defined as insertion of the hormonal IUD within two hours of delivery of the placenta, in line with hospital policy that the IUD should be inserted as soon as possible after delivery.

METHODS

This was a retrospective study of self-reported patient satisfaction, continuation rates and complications after immediate postpartum hormonal IUD insertion. In terms of insertion technique following VB, a Sims' speculum was inserted and the cervix visualised and then grasped with sponge forceps. The LNG-IUS was removed from the insertion device and the area at the base or wings of the device was grasped with sponge forceps, taking care to avoid the area containing the active hormonal component. Holding on to the cervix with one hand, the IUD was placed at the uterine fundus and the strings cut. For insertion at time of CS, the IUD was similarly removed from the insertion device and grasped with sponge forceps. The strings were trimmed and the device was inserted at the uterine fundus. After removal of the sponge forceps, the operator palpated the IUD in the correct position and then guided the strings through the cervix.

All patients who had a hormonal IUD inserted at the time of CS or within two hours of delivery of the placenta at VB over 28 gestational weeks at a tertiary maternity service between March 2017 and March 2020, were sought to be contacted via telephone and asked to engage in the study. All calls were made by authors one and two during March 2021. Patients who consented to involvement were asked the phone survey questionnaire. For patients reporting complications, these were further explored as appropriate to clarify the exact nature of their symptoms. For instance, those patients reporting device 'malposition' as a complication were asked to explain what symptoms they experienced which led them to think that their device was malpositioned. Patients who were uncontactable initially were sent a text message advising them of the study and were followed up with additional phone calls.

The primary outcomes of the study were self-reported patient satisfaction, continuation rates and rate of IUD expulsion. Secondary outcomes were the reason for discontinuation of usage, other patient-reported complications (not reasons for removal), attendance for postpartum check with a general practitioner (GP) at 6–8 weeks postpartum and rate of unplanned pregnancy. The study was reviewed by The Prince Charles Hospital Ethics Committee (TPCH ID 63472).

RESULTS

One hundred and ninety-three women had postpartum hormonal IUD inserted in the time period and attempts were made to contact all patients. One hundred and three patients had a hormonal IUD inserted at the time of CS. Seventy-nine (76.7%) were successfully contacted and consented to involvement in the study. Ninety patients had a hormonal IUD inserted immediately after VB, of which 65 were successfully contacted and 64 (68.7%) consented to involvement. Table 1 shows the continuation rates of IUD usage at

TABLE 1 Outcomes post-LNG-IUD insertion

	LNG-IUS insertion at CS *n* = 79	LNG-IUS insertion post-VB *n* = 64	Total cohort *N* = 143
Total with LNG-IUS still *in situ*	42 (53.2)	20 (31.2)	62 (43.3)
6 months continuation rates	48 (60.8)	30 (46.9)	78 (54.5)
12 months continuation rates	43 (54.4)	25 (39.1)	68 (47.6)
LNG-IUS removed by health professional	26 (32.9)	28 (63.6)	54 (37.8)
LNG-IUS removed by patient	3 (3.8)	1 (2.3)	4 (2.8)
Device expulsion	8 (10.1)	15 (34.1)	23 (16.1)
Patient had a review with GP at 6–8 weeks postpartum	75 (94.9)	53 (82.8)	128 (89.5)

CS, caesarean section; GP, general practitioner; LNG-IUD, levonorgestrel intrauterine device; VB, vaginal birth.

six months, 12 months and at the time of phone follow-up. Almost 94.9% of patients who had a CS saw their GP for a review within 6–8 weeks postpartum, as opposed to 82.8% of those post-VB.

Table 2 shows the patients' stated reasons for removal of the hormonal IUD. Some women reported more than one reason for removal, eg pelvic pain and irregular bleeding. Patients who reported a perception of malposition causing pain or discomfort as a reason for removal were separately recorded from patients who reported that the hormonal IUD was said by their health professional to be visible coming through the cervix.

Other patients who continued usage of the hormonal IUD still reported complications they felt were caused by the device. These are separately recorded in Table 3. Only 60.8% of women who had a hormonal IUD inserted at CS and 56.3% of women who had hormonal IUD insertion post-VB reported overall satisfaction with immediate postpartum insertion (Table 4).

DISCUSSION

Similar to other studies, we found low rates of infection and no cases of perforation, but higher rates of partial and complete expulsion with immediate postpartum placement compared to interval insertion.[12] The rate of device expulsion in this study was 10.1% post-CS and 34.1% post-VB, with partial expulsion rates of 10.1% and 9.4% respectively. Documented rates of expulsion in the literature widely vary, from 3.7% in one study of 36 000 patients across six low- and middle-income countries,[13] to 38% in one North American study,[14] as well as a 29.8% spontaneous expulsion rate and 31% partial expulsion rate in a Scandinavian study.[15]

Two recent meta-analyses of postpartum IUD expulsion have compared rates by timing of insertion and mode of birth. Both found higher rates of expulsion with immediate vs interval

TABLE 2 Patient-stated reasons for removal by health professional or self-removal (percentages as a total of all removed devices)

	LNG-IUS insertion at CS *n* = 29	LNG-IUS insertion post-VB *n* = 29	Total cohort *N* = 58
Pain/discomfort	9 (31)	11 (37.9)	20 (34.5)
Patient perception of malposition: pain/discomfort attributed to malposition	4 (13.8)	7 (24.1)	11 (19)
LNG-IUS coming through cervix: partial expulsion	8 (27.6)	6 (20.7)	14 (24.1)
Patient or partner reporting discomfort from strings	3 (10.3)	2 (6.9)	5 (8.6)
Heavy/irregular bleeding	7 (24.1)	8 (27.6)	15 (25.9)
Desiring pregnancy	1 (3.4)	1 (3.4)	2 (3.4)
Fell pregnant with LNG-IUS *in situ*	1 (3.4)	1 (3.4)	2 (3.4)
Patient reporting mood disturbance/lethargy/generally unwell with device	6 (20.7)	4 (13.8)	10 (17.2)
Infection	0	1 (3.4)	1 (1.7)
Other reason	1 (3.4) patient felt they had not consented to insertion	Dyspareunia 1 (3.4), persistent postpartum hypertension 1 (3.4)	3 (5.2)

CS, caesarean section; LNG-IUD, levonorgestrel intrauterine device; VB, vaginal birth.

TABLE 3 Other patient-reported complications (not reasons for removal)

Complication	LNG-IUS insertion at CS *n* = 79	LNG-IUS insertion post-VB *n* = 64	Total cohort *N* = 143
Pain	4 (5.1)	4 (6.3)	8 (5.6)
Dysmenorrhoea	1 (1.3)	1 (1.6)	2 (1.4)
String discomfort	3 (3.8)	2 (3.1)	5 (3.5)
Malposition	4 (5.1)	0	4 (2.8)
Pain for partner during intercourse	0	1 (1.6)	1 (0.7)
Heavy/irregular bleeding	13 (16.5)	6 (9.4)	19 (13.3)
Patient reporting mood disturbance/lethargy/generally unwell/bloating	2 (2.5)	4 (6.3)	6 (4.2)
Infection	0	2 (3.1)	2 (1.4)
Acne	1 (1.3)	0	1 (0.7)
Strings lost	5 (6.3)	0	5 (3.5)

CS, caesarean section; LNG-IUD, levonorgestrel intrauterine device; VB, vaginal birth.

postpartum placement (adjusted risk ratio 6.17[16] and 5.27[17]) and higher expulsion rates with placement after VB (27.4%) vs after CS (3.8%). This was echoed in our results, with patients 2.72 times more likely to experience expulsion with insertion post-VB compared with CS (OR 2.72; 95% CI 1.07–6.90; *P* = 0.036). Notwithstanding the higher expulsion rates observed with immediate postpartum placement, cost–benefit analysis suggests that there are still considerable cost savings to be gained from attempted immediate postpartum IUD placement.[18] These cost savings persist despite the higher expulsion rate and are largely attributed to avoiding the costs associated with an unintended pregnancy.[18] Indeed, research suggests that expulsion rates would have to exceed 38% for immediate postpartum placement to no longer be cost-saving and greater than 52% to no longer be cost-effective – higher than documented expulsion rates observed in this audit.[18]

At the time of the study, 43.3% of the participants contacted no longer had their hormonal IUD in place. The median time to removal was 2.5 months and mean time to removal was 4.80 months, consistent with data outlining IUD discontinuation rates to be highest in the first year following insertion.[19]

The six and 12 months continuation rates for the entire cohort were 54.5% and 47.6% (Table 1). Six and 12 months continuation rates for immediate postplacental insertion of IUDs within the literature are generally greater than 80% and 60%, respectively;[15,20–26]

TABLE 4 Overall satisfaction with immediate postpartum insertion

Satisfied	LNG-IUS insertion at CS *n* = 79	LNG-IUS insertion post-VB *n* = 64	Entire cohort *N* = 143
Yes	48 (60.8)	36 (56.3)	84 (58.7)
No	24 (30.4)	18 (28.1)	42 (29.4)
Unsure	7 (8.9)	10 (15.7)	17 (11.9)

CS, caesarean section; LNG-IUD, levonorgestrel intrauterine device; VB, vaginal birth.

however, studies differ in design, IUD type, mode of delivery and timing of insertion. Most studies have focused on the copper IUD (Cu-IUD).[16,17] Few randomised controlled trials have looked exclusively at continuation rates of the LNG-IUS inserted immediately postpartum[26,27]and these were limited by sample size[27] and high loss to follow-up.[26]

Studies by Cooper[15] and Heller[23] looked at 12 months continuation rates for immediate postpartum IUD insertion following VB and CS respectively. Most women chose the hormonal IUD (73% and 88% respectively). They demonstrated 12 months continuation rates at 79.6% and 85% respectively; however, both studies had close patient follow-up and offered device reinsertion if a device was expelled or partially expelled. Given that our study was a retrospective audit, this was not possible, but it seems this population would benefit from close follow-up to characterise the time and rate of expulsions more rigorously and offer reinsertion of IUD if appropriate.

As would be expected from the low continuation rates, overall satisfaction was lower in our cohort than other studies which have reported 80–98.3% of patients would recommend immediate postpartum IUD placement to a friend.[15,28] The lower satisfaction of women in this cohort may have been due in part to the financial loss and inconvenience incurred if the device was expelled. This is because patients were responsible for the cost of their own device initially as well as arranging and funding reinsertion. Conversely, when there is no cost to the patient coupled with close patient follow-up, most women who experience device expulsion following immediate postpartum placement will opt for device reinsertion and report higher overall satisfaction.[15]

It is of concern that two patients in the study had an unplanned pregnancy with the hormonal IUD *in situ*. One patient had correct placement of the IUD at time of pregnancy confirmed by ultrasound, and underwent device removal and termination of pregnancy. The second woman continued with the pregnancy but there was no record of ultrasound confirming correct positioning

of IUD at time of conception and she was subsequently lost to follow-up. This rate of device failure is higher than the documented cumulative pregnancy rate of 0.33 per 100 woman-years of use,[29] but given the low numbers involved in this study, the significance of this result is of questionable validity. Future research into immediate postpartum hormonal IUD insertion should consider device failure and resultant unintended pregnancy as an outcome, as this outcome is not described in current evidence owing to small study numbers,[12] short follow-up time frames,[16,17,24,27] or not considering the outcome.[12,16,17]At worst, a 2% device failure rate with immediate postpartum insertion is still considerably less than the 10–44% of women who present with a repeat pregnancy in the 12 months following childbirth.[2]

Attendance at a postpartum check with a GP was higher in our cohort than reported in the literature.[9] This may reflect the fact that the population served by our health service is generally English-speaking and with good health literacy.[30] The 2015 Cochrane review found that despite the higher risk of expulsion with immediate postpartum insertion, the low rates of attendance at postpartum follow-up still resulted in higher rates of IUD usage at six months with immediate insertion vs delayed.[12] However, in our population, with such high rates of postpartum follow-up attendance and high rates of expulsion with low overall patient satisfaction, this may not be the case, particularly post-VB. In regions of Australia and New Zealand with low health literacy and poor healthcare attendance, immediate postpartum insertion may still result in higher continuation rates than delayed postpartum insertion (in line with the findings from the 2015 Cochrane review[12]), and that the likelihood of attendance for postnatal review should be considered when offering immediate postpartum insertion.

Unfortunately, the public obstetric health service in this region is not funded for long-term postpartum care, which is routinely managed by GPs or midwives in the community. Given the high rates of attendance for postpartum review demonstrated in this audit, it would be reasonable to encourage up-skilling of primary care physicians in IUD insertion in this community in order to improve uptake of postpartum IUD in this population.

This study is subject to several limitations, the most important of which was the lack of a control group. To mitigate this and render results relevant, attempts were made to compare outcomes with those reported in the literature throughout the discussion. In addition, the audit did not control for factors that may have influenced expulsion rates and therefore patient satisfaction and continuation. These included clinician experience, insertion technique[15] and patient demographics such as age, parity and breastfeeding status.

The retrospective design of this study gives rise to possible recall bias from participants and as such, the data need to be interpreted with caution. Given that the purpose of this research was to understand patient satisfaction with their hormonal IUD, the complications recorded were any patient-reported complications, not only those verified by healthcare professionals.

As immediate postpartum hormonal IUD insertion is relatively new to our health service, the study numbers are low. Furthermore, we were not able to contact all patients for follow-up, although the follow-up rate is in line with other studies on immediate postpartum insertion which have reported follow-up rates of 52–85%.[13,27]

Immediate postpartum hormonal IUD insertion is associated with higher rates of self-reported partial and complete expulsion in this cohort when compared to the documented rates observed with delayed insertion cohorts in the literature. Likewise, immediate postpartum hormonal IUD insertion is associated with higher rates of expulsion following VB compared to CS which is consistent with the published data on this topic.[12] While the low rates of infection and perforation speak to the safety of immediate postpartum insertion, the diverse complications reported by women choosing this method affirm the need to appropriately counsel women about the risks. This study provides useful information for counselling women in an Australian context with regard to immediate postpartum IUD insertion.

ACKNOWLEDGMENTS

Open access publishing facilitated by University of the Sunshine Coast, as part of the Wiley - University of the Sunshine Coast agreement via the Council of Australian University Librarians.

REFERENCES

1. Claringbold L, Sanci L, Temple-Smith M. Factors influencing young women's contraceptive choices. *Aus J Gen Pract* 2019; **48**(6): 389–394. https://doi.org/10.31128/AJGP-09-18-4710.
2. Mwalwanda C, Black K. Immediate post-partum initiation of intrauterine contraception and implants: A review of the safety and guidelines for use. *Aust N Z J Obstet Gynaecol* 2013; **53**(4): 331–337. https://doi.org/10.1111/ajo.12095.
3. Mazza D, Harrison C, Taft A *et al*. Current contraceptive management in Australian general practice: An analysis of BEACH data. *Med J Aust* 2012; **197**(2): 110–114. https://doi.org/10.5694/mja11.11599.
4. Royal College of Obstetricians and Gynaecologists. Best practice in postpartum family planning: Best practice paper no 1. 2015: Royal College of Obstetricians and Gynaecologists. [Accessed 4 July 2021.] Available from: https://www.rcog.org.uk/en/guidelines-research-services/guidelines/bpp1/
5. American College of Obstetricians and Gynecologists' Committee on Obstetric Practice. Committee opinion number 670: Immediate postpartum long-acting reversible contraception. *Obstet Gynecol* 2016; **128**(2): e32–e37. https://doi.org/10.1097/AOG.0000000000001587.
6. *World Health Organisation. Medical eligibility criteria for contraceptive use*. 5th ed. [internet]. Geneva: World Health Organization; 2015. PMID: 26447268.
7. Gurtcheff SE, Turok DK, Stoddard G *et al*. Lactogenesis after early postpartum use of the contraceptive implant: a randomized controlled trial. *Obstet Gynecol* 2011; **117**(5): 1114–1121. https://doi.org/10.1097/AOG.0b013e3182165ee8.
8. Oliver L, Wood M, Frawley C *et al*. Retrospective audit of postnatal attendance for Aboriginal and Torres Strait Islander women attending a community-controlled health service in north Queensland. *Aust Fam Physician* 2015; **44**(4): 243–247. PMID: 25901410.

9. Simmons KB, Edelman AB, Li H *et al*. Personalized contraceptive assistance and uptake of long-acting, reversible contraceptives by postpartum women: a randomized, controlled trial. *Contraception* 2013; **88**(1): 45–51. https://doi.org/10.1016/j.contraception.2012.10.037.
10. Cwiak C, Cordes S. Postpartum intrauterine device placement: a patient-friendly option. *Contracept Reprod Med* 2018; **3**(1): 1–5. https://doi.org/10.1186/s40834-018-0057-x.
11. Faculty of Sexual and Reproductive Healthcare. Contraception after pregnancy [Internet]. United Kingdom: Faculty of Sexual and Reproductive Healthcare. 2017 [updated 2020 Oct; cited 2021 July 4]. [Accessed 4 July 2021] Available from: https://www.fsrh.org/standards-and-guidance/documents/contraception-after-pregnancy-guideline-january-2017/
12. Lopez LM, Bernholc A, Hubacher D *et al*. Immediate postpartum insertion of intrauterine device for contraception. *Cochrane Database Syst Rev* 2015; **26**(6): CD003036 https://doi.org/10.1002/14651858.
13. Makins A, Taghinejadi N, Sethi M *et al*. FIGO postpartum intrauterine device initiative: complication rates across six countries. *Int J Gynaecol Obstet* 2018; **143**(1): 20–27. https://doi.org/10.1002/ijgo.12600.
14. Goldthwaite L, Sheeder J, Hyer J *et al*. Postplacental intrauterine device expulsion by 12 weeks: a prospective cohort study. *Am J Obstet Gynecol* 2017; **217**(6): 674.e1–674.e8. https://doi.org/10.1016/j.ajog.2017.08.001.
15. Cooper M, McGeechan K, Glasier A *et al*. Provision of immediate postpartum intrauterine contraception after vaginal birth within a public maternity setting: Health services research evaluation. *Acta Obstet Gynecol Scand* 2020; **99**(5): 598–607. https://doi.org/10.1111/aogs.13787.
16. Jatlaoui T, Whiteman M, Jeng G *et al*. Intrauterine device expulsion after postpartum placement: a systematic review and meta-analysis. *Obstet Gynaecol* 2018; **132**(4): 895–905. https://doi.org/10.1097/AOG.0000000000002822.
17. Averbach S, Ermias Y, Jeng G *et al*. Expulsion of intrauterine devices after postpartum placement by timing of placement, delivery type and intrauterine device type: a systematic review and meta-analysis. *Am J Obstet Gynecol* 2020; **223**(2): 177–188. https://doi.org/10.1016/j.ajog.2020.02.045.
18. Washington C, Jamshidi R, Thung S *et al*. Timing of postpartum intrauterine device placement: a cost-effectiveness analysis. *Fertil Steril* 2015; **103**(1): 131–137. https://doi.org/10.1016/j.fertnstert.2014.09.032.
19. Bachofner M, Blickenstorfer K, Hutmacher J *et al*. Intrauterine device continuation rates and reasons for discontinuation in a Central European clinic with a high standard of care and ultrasound follow-up: a retrospective cohort study. *Eur J Contracept Reprod Health Care* 2018; **23**(6): 407–414. https://doi.org/10.1080/13625187.2018.1539164.
20. Aznar R, Reynoso L, Montemayor G, Giner J. Post-placental insertion of IUDs. *Contracept Deliv Syst* 1980; **1**(2): 143–148. PMID:12336241.
21. Cohen R, Sheeder J, Arango N *et al*. Twelve-month contraceptive continuation and repeat pregnancy among young mothers choosing postdelivery contraceptive implants or postplacental intrauterine devices. *Contraception* 2016; **93**(2): 178–183. https://doi.org/10.1016/j.contraception.2015.10.001.
22. Eggebroten J, Sanders J, Turok D. Immediate postpartum intrauterine device and implant program outcomes: a prospective analysis. *Am J Obstet Gynecol* 2017; **217**(1): 51.e1–51.e7. https://doi.org/10.1016/j.ajog.2017.03.015.
23. Heller R, Johnstone A, Cameron S. Routine provision of intrauterine contraception at elective cesarean section in a national public health service: a service evaluation. *Acta Obstet Gynecol Scand* 2017; **96**(9): 1144–1151. https://doi.org/10.1111/aogs.13178.
24. Levi E, Stuart G, Zerden M *et al*. Intrauterine device placement during cesarean delivery and continued use 6 months postpartum: a randomized controlled trial. *Obstet Gynecol* 2015; **126**: 5–11. https://doi.org/10.1097/AOG.0000000000000882.
25. Wasim T, Shaukat S, Javed L, Mukhtar S. Outcome of immediate postpartum insertion of intrauterine contraceptive device: experience at tertiary care hospital. *J Pak Med Assoc* 2018; **68**(4): 519–525. PMID: 29808038.
26. Whitaker A, Endres L, Mistretta S, Gilliam M. Postplacental insertion of the levonorgestrel intrauterine device after cesarean delivery vs. delayed insertion: a randomized controlled trial. *Contraception* 2014; **89**(6): 534–539. https://doi.org/10.1016/j.contraception.2013.12.007.
27. Chen B, Reeves M, Hayes J *et al*. Postplacental or delayed insertion of the levonorgestrel intrauterine device after vaginal delivery: a randomized controlled trial. *Obstet Gynecol* 2010; **116**(5): 1079–1087. https://doi.org/10.1097/AOG.0b013e3181f73fac.
28. De Sisto C, Handler A, Haider S *et al*. Women's informed choice and satisfaction with immediate long-active reversible contraception in Georgia. *Contracept Reprod Med* 2018; **3**: 19 https://doi.org/10.1186/s40834-018-0073-x.
29. Committee on Practice Bulletins-Gynecology, Long-Acting Reversible Contraception Work Group. Practice bulletin no.186. Long-acting reversible contraception: implants and intrauterine devices. *Obstet Gynecol* 2017; **130**(5): e251–e269.
30. Australian Bureau of Statistics [Internet]. Australia: National health survey: health literacy; 2018 [cited 2021 Jul 7]. Available from: https://www.abs.gov.au/statistics/health/health-conditions-and-risks/national-health-survey-health-literacy/latest-release#data-download