

# Short interpregnancy interval: circumstance or choice?

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## ABSTRACT

**Introduction** Despite the knowledge of pregnancy risks attributable to inadequate birth spacing, over one-third of pregnancies occur within 18 months of a preceding birth. In this qualitative study we sought to interview women with a short interpregnancy interval (sIPI) to explore their knowledge of contraception and birth spacing and their experience of counselling on these themes.

**Methods** We conducted in-depth interviews with women with a sIPI (live-birth less than 18 months prior to conception of current pregnancy) at Royal Prince Alfred Hospital and Canterbury Hospital in Sydney, Australia. Women were recruited at the second antenatal visit or day 3 postpartum. Interviews were recorded and transcribed. The six-phase thematic analysis framework described by Braun and Clarke was used to perform qualitative data analysis.

**Results** Twenty women were interviewed (IPI range: 3–18 months). The three central themes that arose were that perceptions of IPIs are shaped by individual circumstances, a lack of information from healthcare providers (HCPs) on IPI and contraception limited women's ability to make informed decisions, and that reproductive life planning is an important element of pregnancy care.

**Conclusions** In this study, women with a sIPI did not feel informed about birth spacing, had poor knowledge of reliable contraceptives, and remained at risk of further closely spaced pregnancies. There was a desire among women with a sIPI to receive clear and consistent education on these topics. HCPs need to do more to educate women in the antenatal and postnatal period to help them space their pregnancies appropriately.

## INTRODUCTION

The interpregnancy interval (IPI) is defined as the spacing between a live birth and the date of conception of the subsequent pregnancy.<sup>1,2</sup> A number of retrospective cohort analyses and meta-analyses from North

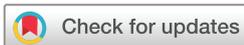
## Key messages

- ▶ Women with a short interpregnancy interval did not feel informed about birth spacing, and had poor knowledge of reliable contraceptives.
- ▶ Counselling on these topics by healthcare providers is often omitted or inaccurate.
- ▶ There is a strong desire among this group for better education from healthcare providers on these issues.

America and Israel have linked short IPIs (sIPIs) of less than 12–18 months to a number of adverse perinatal outcomes including preterm birth, small for gestational age, and an increased risk of infant death.<sup>2–9</sup> Some studies which matched women as their own controls have questioned the causality of a sIPI for these poor outcomes, arguing that sIPIs may simply reflect differences in socioeconomic status and lifestyle choices.<sup>10,11</sup> However, regardless of causality, sIPI remains a strong predictor of adverse outcomes.<sup>2–9</sup>

Acknowledging these poor outcomes, the World Health Organization (WHO) recommends that women wait 24 months after a live birth before trying to conceive again.<sup>2</sup> Despite these recommendations, over one-third of pregnancies in the United States occur within 18 months of a preceding birth, while in a recent Australian study 21% of women reported an IPI of 12 months or less.<sup>12,13</sup> Importantly up to 55% of sIPIs are the result of unintended pregnancies (UIPs), rising to more than 70% if conceived in the first 12 months' postpartum.<sup>12,14</sup>

Little is known about women's views surrounding birth spacing. One Australian study found that some women thought it was ideal to have a sIPI, while a British study on women's knowledge



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and perceptions on postnatal contraception found misconceptions around the time to return to fertility and recommended pregnancy spacing among participants.<sup>13 15</sup>

In this study we sought to investigate what women with a IPI of less than 18 months understand about healthy birth spacing, and explore their knowledge of contraception and their experience of healthcare provider (HCP) counselling on IPI.

## METHODS

### Study design and location

We conducted semi-structured, in-depth interviews with women with a sIPI, defined as an interval of 18 months or less between a live birth and the date of conception of the subsequent pregnancy, excluding pregnancies ending in miscarriage and abortion. This formed the qualitative arm of a mixed-methods study on the prevalence, associations and understanding of IPIs. The quantitative data are published elsewhere.<sup>13</sup> A qualitative approach was chosen to enable detailed exploration of participants' understanding of these topics.<sup>16</sup>

Interviews were conducted at Royal Prince Alfred Hospital and Canterbury Hospital, in Sydney, Australia. These hospitals have a combined birth rate of approximately 8000 deliveries per year and service an economically and ethnically diverse population.<sup>13</sup>

### Recruitment

The primary investigator (PI) used purposive sampling to recruit women who had a sIPI. Eligible women were identified at their initial consultant obstetrician visit (around 20 weeks' gestation). This timing was chosen to capture a heterogeneous population, before women are separated into high- and low-risk models of care. Women with sIPIs were identified by calculating the IPI for each non-primiparous woman booked into the clinic. Eligible women were then approached to participate in the study by the PI (RAMT), an obstetric registrar.

A protocol amendment was subsequently added to allow the PI to recruit women from the postnatal ward at day 3 postpartum due to the difficulty in the PI attending the relevant clinic. Inclusion and exclusion criteria are outlined in [table 1](#).

Interviews were conducted until data saturation was achieved.<sup>17</sup> Participants signed a consent form agreeing

to partake in the study and received an Australian dollar \$25 participation voucher.

### Data collection

Interviews were conducted by the PI. Women recruited antenatally were generally interviewed on the day of recruitment in clinic, or at a mutually suitable time in the antenatal period. Women recruited postnatally were interviewed on the post-natal ward before discharge.

Participants were asked 17 predefined questions ([box 1](#)) to ensure relevant areas were covered while allowing flexibility in content. Interviews were conducted face-to-face in a private room, and lasted approximately 20–30 min. They were recorded on a handheld device before being transcribed and de-identified by the PI.

### Patient involvement statement

Patients were not involved in setting the research design or interpretation.

### Data analysis

The six-phase thematic analysis framework described by Braun and Clarke was used to perform qualitative data analysis.<sup>18</sup> The PI immersed herself in the data, listening to the audio-recordings and reading and re-reading transcripts. From this immersion, initial codes were generated by the PI and then discussed collectively with other team members to search for themes within the data which could be defined and named.

### Ethical consideration

Ethical approval was obtained via the Sydney Local Health District (SLHD) Ethics Office (Protocol X16-0135).

## RESULTS

Twenty-four eligible women were approached to take part in the study between 26 September 2016 and 2 February 2020. Four women declined to participate. Twenty interviews were subsequently performed. Participant characteristics are outlined in [table 2](#).

The three themes that arose are that perceptions of IPIs are shaped by individual circumstances, a lack of information from HCPs on IPI and contraception limited women's ability to make informed decisions,

**Table 1** Study inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>▶ Fluency in English</li> <li>▶ Age &gt;16 years</li> <li>▶ A short Interpregnancy Interval (<math>\leq 18</math> months between a live birth and the date of conception of the subsequent pregnancy)</li> <li>▶ Willingness to partake in the study</li> </ul>	<ul style="list-style-type: none"> <li>▶ Previous pregnancy ended in miscarriage/abortion</li> <li>▶ &lt;3 days postpartum at time of recruitment</li> <li>▶ For postpartum recruitment, women with a poor obstetric outcome during current admission (eg, neonatal death/severe maternal illness)</li> </ul>

**Box 1** Semi-structured interview questions

1. How old are you?
2. What is your ethnicity?
3. What is the highest qualification you completed?
4. How many children do you have?
5. How many children do you intend to have?
6. How were the children born?
7. Did you have any miscarriages or terminations between the last pregnancy and this one?
8. Would you say you planned this current pregnancy?
9. If this was unplanned, what factors do you think contributed to your getting pregnant?
10. Were you given any advice about when to have your next pregnancy?
11. What do you think is the ideal spacing between pregnancies?
12. Did you use contraception between these last two pregnancies?
13. Have you ever used contraception before?
14. Do you feel informed about contraceptive options available to you?
15. Do you know what type of contraceptive methods are safe with breastfeeding?
16. Do you feel like contraception is easily accessible to you?
17. Any further statements?

and that reproductive life planning is an important element of pregnancy care.

**Perceptions of IPIs are shaped by individual circumstances**

Sentiments about a sIPI were mixed and many felt that an ideal IPI 'depends on the individual'. However, nearly all suggested that an IPI of 18 months or more was preferable. Among those that had planned their most recent pregnancy, the majority had positive sentiments about their sIPI citing reasons such as advancing maternal age and career planning (Quote 1a). Some women felt that their personal circumstances had dictated they choose a sIPI, and would have spaced their pregnancies further had their situation been different (Quote 1b) (table 3).

Among those who had not planned their pregnancy, the majority also reflected favourably on their situation; however, some women with a very sIPI (less than 6 months) admitted to finding their most recent pregnancy difficult to accept (Quote 1c). In those who had not planned their pregnancy, multiple reasons were cited for having a sIPI. Many reported irregular or absent periods or believed that they would not be able to fall pregnant until their 'normal cycle' resumed. Few couples in this group were using contraception and in many cases women displayed a fatalistic approach to pregnancy, alluding to the fact that they knew they could fall pregnant but 'ignoring' that fact (Quotes 1d, 1e).

**Table 2** Participant characteristics

Characteristic	Participants (n)
Interview location	
Royal Prince Alfred Hospital	17
Canterbury Hospital	3
Timing of recruitment	
Second visit	8
Day 3 postpartum	12
Age (years)	
<20	0
20–24	2
25–29	4
30–34	10
35–39	2
≥40	2
Ethnic background	
Anglo-Australian	2
African	1
East Asian	4
Middle Eastern	3
Oceanian	3
South Asian	5
South-East Asian	2
Highest level of education	
Secondary school	3
Diploma	3
Bachelor degree	8
Masters degree	6
Living children at time of interview (n)	
1	5
2	6
3	7
4	2
Interpregnancy interval (months)	
≤3	3
4–6	3
7–9	3
10–12	6
13–15	3
16–18	2
Planned pregnancy?	
Planned pregnancy	8
Unplanned pregnancy*	12

\*Women who expressed ambivalence towards the most recent pregnancy were recorded as 'unplanned'.

Some respondents reported that they had used contraception between pregnancies, but that it failed, though in these instances all reported using less reliable

**Table 3** Participant quotes

Theme	Quotes
Perceptions of IPIs are shaped by individual circumstances	<ul style="list-style-type: none"> <li>▶ Quote 1a) Interview 12: "It was kind of 'mini-planned', so we always wanted a second child, but because of our age – because we're dinosaurs in the fertility world, we thought we need to hurry up and have a second baby." [42 years, 9-month IPI]</li> <li>▶ Quote 1b) Interview 5: "I would have liked to have waited another year, but I think it was because I wanted to get back to the workforce, but not leave one child." [21 years, 8-month IPI]</li> <li>▶ Quote 1c) Interview 20: "I was very tired and it was very difficult to accept it you know." [34 years, 3-month IPI]</li> <li>▶ Quote 1d) Interview 10: "When I had a C-section [with] my first son I was exclusively breastfeeding. I was not getting periods, and maybe I was ignoring that fact that I could be pregnant." [27 years, 3-month IPI]</li> <li>▶ Quote 1e) Interview 6: "We were advised about contraception, but we've never taken it before, so we thought we'd be fine." [38 years, 9-month IPI]</li> <li>▶ Quote 1f) Interview 18: "It took about a year to conceive with the other two, so we thought, we'll get started now, and then it just happened straight away. So yeah I was a bit shocked when it happened, that I found out I was pregnant, as I thought it was going to take at least 6 months." [34 years, 11-month IPI]</li> </ul>
A lack of information from HCPs on IPI and contraception limited women's ability to make informed decisions	<ul style="list-style-type: none"> <li>▶ Quote 2a) Interview 1: "So just to clarify, so nobody talked to you about the short pregnancy interval?" "No. No one talked to me about anything". [40 years, 3-month IPI]</li> <li>▶ Quote 2b) Interview 7: "Yeah definitely about contraception but I don't think anyone really said anything about how...like any recommendations on waiting a certain amount of time." "Where did the contraception advice come from?" "Hospital. From the midwife and GP as well." [28 years, 15-month IPI]</li> <li>▶ Quote 2c) Interview 19: "In the hospital, I think the recommendation was one doctor said give it about 15 months after a caesarean, and then another said 18, and then one of the GPs I saw said 6 months would be fine. So we did get different opinions." [31 years, 13-month IPI]</li> <li>▶ Quote 2d) Interview 10: "They said [in the hospital] you have to go for a 6-week check-up and they're going to guide you for further children." [27 years, 3-month IPI]</li> <li>▶ Quote 2e) Interview 1: "Did your GP chat to you about contraception at your 6-week check for the baby?" "Yeah, yeah he did, yep that's why I said I was going to go back on the injection, but we were just waiting for the normal period cycle to happen. Yeah, he said to wait for that first." [40 years, 3-month IPI]</li> <li>▶ Quote 2f) Interview 10: "I didn't go for a 6-week check-up then. Maybe if I had have gone, I would have been taking something for that, but I was so fully concentrating on my son that I didn't go for a 6-week check-up." [27 years, 3-month IPI]</li> <li>▶ Quote 2g) Interview 1: "I was breastfeeding at the time and I didn't use contraception. I was thinking when you're breastfeeding, it's preventing to make you pregnant." [29 years, 10-month IPI]</li> <li>▶ Quote 2h) Interview 6: "Another thing, in the antenatal classes they did talk about breastfeeding and getting pregnant again. I think they needed more information that when you start weaning that you can fall pregnant more easily; I think that needs to be made clearer." [38 years, 9-month IPI]</li> </ul>
Reproductive life planning is an important element of pregnancy care	<ul style="list-style-type: none"> <li>▶ Quote 3a) Interview 10: "I think there should be one pamphlet or one information pack related to I guess to the spacing between children, so that constantly you have to keep things on your mind that you can fall pregnant." [27 years, 3-month IPI]</li> <li>▶ Quote 3b) Interview 11: "Maybe GPs have to be more aware. You know when the women go to the GP, it's better for them to get the information and make them aware." [29 years, 10-month IPI]</li> <li>▶ Quote 3c) Interview 18: "When do you think would be the best time to receive counselling on birth spacing and contraception? Antenatally or postnatally?" "Gosh it's probably a bit of both I guess, because postnatally, you're...focusing on baby, but um gosh, I don't know for me, it's probably when I was ready to start again, or like a bit before that ... I don't know when or how you'd do that." [34 years, 10-month IPI]</li> <li>▶ Quote 3d) Interview 12: "I would go to my local GP and see what she would recommend, [as] if I had to go it my own, I wouldn't know." [42 years, 9-month IPI]</li> <li>▶ Quote 3e) Interview 6: "Do you plan on using any contraception after this pregnancy?" "Um, probably still not. We're still happy to be pregnant again if that's the case". [38 years, 9-month IPI, no previous contraception use]</li> </ul>

The participant's age and IPI are given for each quote. The interviewer's questions are in roman type. GP, general practitioner; HCP, healthcare provider; IPI, interpregnancy interval.

forms of contraception such as condoms. Others had found it difficult to conceive their first child (though none had required fertility treatment) and were under the impression it would be difficult to conceive again, and therefore did not take contraceptive precautions (Quote 1f).

#### **A lack of information from HCPs on IPI and contraception limited women's ability to make informed decisions**

Women did not feel informed about IPI, with few reporting having received information during their previous pregnancy (Quotes 2a, 2b). Those with whom it was discussed often could not clearly recall the information that they received, but recall was better among

women who had been advised to space their pregnancies due to complications such as requiring a caesarean section (CS). In a number of instances, women reported receiving conflicting information on the recommended IPI post-CS (Quote 2c).

More women recalled receiving information about contraception during their previous pregnancy, citing a variety of sources: antenatal clinic, during hospital admission, postnatal midwifery visits, and general practitioner (GP) (Quote 2b). However the numbers that recalled receiving information in hospital were small, and several women reported the sum of the contraceptive advice they received was that their GP

would discuss contraception with them at the 6-week visit (Quote 2d). Unfortunately many women reported that their GP subsequently failed to discuss contraception or gave them inaccurate information about when they should start it (Quote 2e). Furthermore, not all women interviewed made it to their GP for a 6-week visit, with some saying that by that point they were so 'caught up' in being a mother that contraception was not their focus (Quote 2f).

Only one woman knew which forms of contraception were safe to use with breastfeeding, with the rest simply stating they didn't know. Several women appreciated that lactational amenorrhoea was a form of contraception, but few appeared to understand that it is not a reliable method unless all the criteria are met. Individuals who conceived while breastfeeding felt that women needed to be alerted to its limitations as a contraceptive method (Quotes 2g, 2h).

### Reproductive life planning is an important element of pregnancy care

There was a strong feeling that the importance of adequately spacing children and the risks of a sIPI needed to be discussed routinely with all women during pregnancy (Quote 3a). Women specifically wished for clear, consistent information from HCPs. Some women felt GPs needed to be more aware of the risks of sIPI so that they could better counsel their patients (Quote 3b).

Views on the best time to counsel women on these topics were varied. Some women felt the antenatal period was most appropriate as they would be too overwhelmed in the immediate postpartum period to take on any further information. In contrast, others felt that postpartum was the ideal time to discuss these topics, as it was when they would be most receptive to the counselling (Quote 3c).

Encouragingly, many women reported future plans for contraception with long-acting reversible contraception (LARC) or permanent forms of contraception, the majority saying they would see their GP to discuss their options (Quote 3d). The women who revealed concrete plans appeared determined not to be 'caught' out again with another sIPI or unplanned pregnancy. Others however, seemed undaunted by the risk of having another sIPI, again displaying a fatalistic approach towards family planning. Many had still not given contraception any thought and a number of those that had intended to continue to use non-reliable forms of contraception (Quote 3e).

## DISCUSSION

This study found that among women interviewed with an IPI of less than 18 months there were women for whom the pregnancy was 'unintended' and those for whom a sIPI was a choice, but neither group felt well informed about ideal birth spacing. Thus HCPs do not appear to be educating women on this topic,

findings supported by another Australian study which found that more than 50% of women could not recall receiving any information on IPI from HCPs.<sup>13</sup>

Among women who had a sIPI who reported an UIP, there appeared a degree of 'health apathy', in that many women were aware that they could be at risk of unintended pregnancy, but did not act on that risk, reflecting the fact that new mothers are focused on raising a child and may not have the time to attend to their own health needs. This group represents individuals for whom targeted intervention and education could reduce UIP in the future. Gemmill *et al* estimated that by preventing UIPs, the proportion of sIPIs would be reduced from 35% to 23%.<sup>12</sup> Immediate postpartum LARC is an attractive option to reduce UIPs that has been shown to be acceptable to women and cost-effective.<sup>15 19–22</sup>

With regard to contraception, women with sIPIs felt contraception was readily accessible but the majority appear not to access it for a variety of reasons, including a lack of awareness of available options (particularly LARC) and misconceptions around time to return of fertility. This aligns with an Australian study that reported only 44.2% of women received contraceptive advice after their previous pregnancy.<sup>13</sup> While it is reassuring that women with a sIPI feel they can discuss contraception with their GP, studies have shown that up to 57% of women report unprotected intercourse before 6 weeks' postpartum and 10%–40% of women do not attend their postpartum visit.<sup>22 23</sup> Therefore it cannot be always assumed that contraception counselling and provision will occur at the GP, leaving women at risk of unintended pregnancy. This is particularly pertinent knowing that those at the highest risk of a sIPI have the lowest rates of postpartum follow-up.<sup>22</sup>

Overall the study identified that women would benefit from more information about healthy birth spacing and contraception to reduce the risk of unintended sIPIs. The responses suggested women will vary in their receptiveness to such counselling depending on the stage of their reproductive journey. The Centers for Disease Control and Prevention in the US recommends the use of a 'reproductive life plan' (RLP) in which women are routinely screened for their pregnancy intentions in the short- and long-term, and their risk of conceiving.<sup>24</sup> RLPs have been found to be acceptable to HCPs and target populations, offering a brief and cost-effective counselling tool that could easily be performed in the antenatal period.<sup>25–27</sup> Women identified as requiring contraception can then receive appropriate antenatal counselling, an approach that has been shown to be feasible and acceptable to women in a recent British study.<sup>28</sup>

### Limitations and reflexivity

A number of limitations may reduce the transferability of our findings in this study. Participants may not be representative of the wider antenatal population,

particularly given that we were limited to women fluent in English. Furthermore, many women in this study had UIPs and could represent a small subset of women who missed the opportunity to receive adequate counselling. The exclusion of women interviewed postnatally who had a poor birth outcome also limits transferability, as negative outcomes may influence a woman's perceived need for postnatal education on IPI and contraception. Interviewing women at different time points in their pregnancy also makes interpretation of the data more complex, and may reduce the dependability of results, which is important in establishing trustworthiness in the data.

The impact of the research team being composed of HCPs whose day-to-day roles include educating women on contraception and birth spacing is important to reflect on. Themes highlighting deficits in these areas may have been more noticeable to us, and in cases of inadequate counselling leading to sIPI, we may have been inclined to interpret the responses of women with more regret than they themselves felt.

We must also be mindful of the influence of recall and social-desirability bias. Women may have been reluctant to share negative sentiments about their pregnancy with the interviewer as a doctor, or reported inaccurate recollection of their original pregnancy intentions. Furthermore, 'plannedness of pregnancy' was assessed by a single question when it is increasingly known to be a complex, non-binary concept.<sup>29</sup> During interviews, the PI encouraged women with an ambiguous response to this question to explore their own sentiments about 'plannedness'. However, in an attempt to define their answer for the purposes of data collection, the PI may have influenced women's eventual conclusion affecting the credibility of the data.

## CONCLUSIONS

In this study, women with a sIPI did not feel informed about birth spacing, had poor knowledge of reliable contraceptives, and remained at risk of further closely spaced pregnancies be they intended or unintended. There was, however, a strong desire among the women in this study to receive clear and consistent education on these topics. It is therefore essential that we integrate the discussion about birth spacing and contraception throughout a woman's pregnancy journey, and empower HCPs to deliver evidence-based information to create a patient-centred decision-making process which allows women to make informed decisions.

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**Patient consent for publication** Not applicable.

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