



# Experiences and information needs of women who become pregnant after bariatric surgery: An interpretive descriptive qualitative study

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## ABSTRACT

**Background:** Obesity is known to negatively impact fertility and increase pregnancy related complications. Many women of childbearing age opt for bariatric surgery to lose weight in the preconception period. Physiological changes of bariatric surgery are associated with both benefits and risks for maternal and neonatal outcomes. How women understand these risks and experience pregnancy following bariatric surgery are largely unknown.

**Objective:** To explore the information needs and experiences of Australian women who become pregnant following bariatric surgery.

**Design:** An interpretive descriptive qualitative study of 11 Australian women with experiences of pregnancy following bariatric surgery participated in a private Facebook discussion group conducted in 2021. Women were recruited via targeted advertisements on social media.

**Results:** Women identified several information gaps regarding the implications of having bariatric surgery for preconception, pregnancy, and postnatal periods. Family planning, pregnancy nutrition, and breastfeeding advice were key areas of information need. Women's experiences of pregnancy following bariatric surgery included attitudes of judgement and lack of knowledge from their healthcare providers.

**Conclusions:** Healthcare professionals caring for women who have had bariatric procedures need to ensure that all women are fully informed about the risks of becoming pregnant within the first 12-months post-surgery. They should also anticipate that despite recommendations, women will become pregnant earlier than advised, and can benefit from non-judgemental and supportive care to ensure risks of poor outcomes are minimised. The findings highlight that the provision of tailored resources and education for women and their healthcare teams are needed.

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## Background

Over the last few decades there has been rapid growth in the worldwide incidence of obesity, particularly in developed countries (World Health Organization, 2018). In 2018, almost 50% of women of childbearing age in Australia were considered either overweight or obese (Australian Institute of Health and Welfare, 2020) and these rates are consistent with other high income countries such as the United States of America (USA; United Health Foundation, 2020) and the United Kingdom (UK; National Health Service, 2019).

Obesity can negatively impact fertility (Talmor and Dunphy, 2015), and is one of the most prevalent obstetric risk factors associated with a range of adverse maternal and neonatal health outcomes such as gestational diabetes, pre-eclampsia, and stillbirth (Ovesen et al., 2011; Yogev and Sheiner, 2013). Weight loss can successfully mitigate many of these obstetric health risks (Schummers et al., 2015), therefore, women of childbearing age are increasingly turning to bariatric surgery (also referred to as weight loss surgery (WLS)) to improve fertility (Vitiello et al., 2021), and to reduce adverse pregnancy outcomes (Kwong et al., 2018). Bariatric surgery is an umbrella term that can describe several procedures, the most common of which include a laparoscopic sleeve gastrectomy, Roux-en-Y gastric bypass and gastric band surgery. These surgeries work either through the reduction of gastric capacity, the promotion of early satiety, and/or limiting the absorption of calories (Fried et al., 2013). Between 2005 and 2015, there was a 144%

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increase in the number of bariatric surgeries undertaken in Australian hospitals, over three quarters of which were for women, most commonly aged between 35 and 44 years old (Australian Institute of Health and Welfare, 2017). In the USA, 80% of all bariatric surgeries conducted in the last 10 years were on women (Aly et al., 2020).

While bariatric surgery is amongst the most successful methods for weight loss, it does impart risk on subsequent pregnancies including an increase in the rate of small for gestational age infants, pre-term birth (Heusschen et al., 2021; Kwong et al., 2018), lower gestational weight gain (Heusschen et al., 2021), a potential increase in congenital defects, and neonatal intensive care unit admission (Akhter et al., 2019). Many of the obstetric risks associated with bariatric surgery are pronounced in pregnancies within the first-year post-surgery, likely due to the period of rapid weight loss (Heusschen et al., 2021). During this time, the body is in a relative state of nutritional deficiency, and many experts recommend waiting 12 to 24 months post-surgery before conception (Heusschen et al., 2021).

Fore these reasons, the provision of family planning guidance and adequate nutritional advice are important for women of childbearing age post-bariatric surgery. Few definitive guidelines exist, and unintended pregnancy is relatively common within 18 months of bariatric surgery (Goldenshluger et al., 2020). This may be in part due to insufficient information, and a lack of health support, with many women not receiving any, or inadequate family planning counselling (Damhof et al., 2019).

There are few studies exploring the information needs or experiences of women who become pregnant following bariatric surgery, with a paucity in qualitative studies. A recent scoping review identified only one complete survey study and four conference abstracts exploring the experiences of women who had been pregnant or breastfed following bariatric surgery (Sweet and Vasilevski, 2022). The minimal literature available suggests that women's information needs are not being met, and that their pregnancy experiences are consequently impacted. The survey study of Goldenshluger et al. (2020) found that women were provided with inadequate information regarding the potential effect of bariatric surgery on pregnancy outcomes, and had low rates of nutritional and medical follow up. Conference abstracts further highlight that women receive conflicting information and inadequate support, and consequently sought information online related to pregnancy post surgery [25]. Women have also reported fears of harming their babies and concerns about reversing the weight loss achieved as a result of surgery (Magdaleno et al., 2012). Tailored lactation support has been described as an area of need for these women, with reports of inadequate information and guidance about breastfeeding post-bariatric surgery from health-care providers (Crill et al., 2009). The lack of specialised care led women to become their own 'experts' in breastfeeding after bariatric surgery (Hendrix et al., 2011).

The existing literature suggests a lack of individualised information being provided to women who become pregnant post-bariatric surgery. As a result, women are likely to have sub-optimal experiences of pregnancy following bariatric surgery. As rates of bariatric surgery in women of childbearing age are rising, there is a clear need to understand their experiences and information requirements. It has been identified that many women turn to online sources of support for understanding the effects of bariatric surgery on pregnancy; this is evidenced by the availability of numerous Facebook discussion groups for individuals who have had bariatric surgery. As such, Facebook is an ideal setting for collecting data from groups with shared experiences and has been used successfully in other similarly designed studies exploring women's health information needs and expectations (Holton et al., 2019, 2018, 2016).

## Objective

The aim of this study was to understand the information needs and experiences of Australian women who have become pregnant following bariatric surgery

## Methods

### Study design

An interpretive descriptive qualitative approach was used to investigate the information needs and experiences of Australian women who became pregnant after bariatric surgery (Thompson Burdine et al., 2021). Interpretive descriptive methodology is widely used, as it orients data analysis to the understanding of the complexities of health and wellbeing (Thompson Burdine et al., 2021). Data collection occurred via the social media site Facebook. The use of online mediums is increasingly being used for research as it allows broad participation without geographical barriers (Salmons, 2016). A moderated asynchronous online discussion group was held with eligible women using a closed Facebook group specifically created for the research study. Facebook was chosen as a data collection approach as numerous Facebook groups with large member numbers exist for individuals who have experienced or are planning bariatric surgery, and topics of interest often centre on pregnancy planning and management. Facebook has broad reach, convenience, and ease of access, especially for those who already engage in Facebook groups for the purposes of seeking advice and support regarding bariatric surgery.

### Sample and recruitment

Given the nature of an asynchronous focus group, we aimed to recruit 10–20 women, which is consistent with guidance for online qualitative studies (Salmons, 2016), and other similar research (Holton et al., 2019, 2018, 2016). Women who have had a pregnancy following bariatric surgery in the past 5 years were purposively recruited using advertisements posted in April and May 2021 on eight established Australian bariatric surgery related Facebook Groups with membership numbers between 230 and 21,000. Inclusion criteria were access to a Facebook account, sufficient English reading and writing capacity, being over 18 years of age, and residing in Australia. Bariatric surgery was considered to include lap band insertion, Roux-en-Y procedure, sleeve gastrectomy, gastropasty, or gastric bypass (Australian Institute of Health and Welfare, 2017).

Advertisements were posted in Facebook groups for Australians who have had or are contemplating bariatric surgery. Interested individuals were directed to a demographic and screening questionnaire via Qualtrics to ascertain study eligibility and consent for participation. Those who met eligibility criteria were asked to provide their Facebook name and associated email address to enable researchers to invite them to the private Facebook group. The women were encouraged to create secondary Facebook alias accounts for maintaining their anonymity if desired. Fifteen women expressed interest in joining the study. Eleven women subsequently consented and joined the private Facebook group.

### Data collection

The Facebook discussion group was conducted over six weeks, between May and June 2021. A semi-structured discussion guide was used to facilitate asynchronous discussion around the information needs and experiences of women who had become pregnant after bariatric surgery. The guide covered topics including reason for surgery, information sought when making decisions, and

**Table 1**  
Semi-structured discussion guide.

| No. | Question   |
|-----|--|
| 1.  | Why did you decide to have bariatric surgery?  |
| 2.  | What made you consider bariatric surgery before becoming pregnant?   |
| 3.  | What information did you search to help with your decision to have bariatric surgery before pregnancy?   |
| 4.  | Who did you ask for advice when making the decision to have bariatric surgery before trying to become pregnant? If you asked for advice, was it helpful, why or why not? |
| 5.  | How long did you wait after having your bariatric surgery to try to get pregnant?  |
| 6.  | Who or where did you get information from about the timing of pregnancy after surgery?   |
| 7.  | What kind of information would have been useful to you when making the decision to have bariatric surgery before attempting pregnancy?                                   |
| 8.  | What was your experience of making the decision to have surgery before attempting pregnancy like?  |
| 9.  | What role did your partner play in your decision regarding bariatric surgery and pregnancy?  |
| 10. | What did other people in your life such as family and friends think about your decision regarding bariatric surgery and pregnancy?                                       |
| 11. | What was your pregnancy experience like after having bariatric surgery?  |
| 12. | What were the positive aspects of pregnancy after bariatric surgery?   |
| 13. | What were the negative aspects of pregnancy after bariatric surgery?   |
| 14. | Do you think your pregnancy experience was different than without the surgery? If so in what way?  |
| 15. | What did you have to do differently during pregnancy because of your bariatric surgery?  |
| 16. | Did you intend to breastfeed your baby before giving birth? Why or why not?  |
| 17. | What advice about breastfeeding after bariatric surgery did you get from your health professionals?  |
| 18. | Did you breastfeed your baby? Why or why not?  |
| 19. | If you did attempt breastfeeding your baby, what was your experience?  |
| 20. | What were the positive aspects of breastfeeding after bariatric surgery?   |
| 21. | What were the challenges of breastfeeding after bariatric surgery?   |
| 22. | Is there anything else you wish to share about your experiences related to bariatric surgery, pregnancy or breastfeeding?  |

breastfeeding experiences (see Table 1). Questions were posted by researchers every few days. Additional and clarifying questions were asked as needed, with daily monitoring of the group by the researchers. The women were advised that there was no pressure to answer every question and that they could withdraw from the study at any time. Women who had no or little engagement in the group discussion over an extended period were direct messaged on Facebook to offer the option to provide answers via personal message (PM) if preferred. Two women opted to answer questions this way. Data saturation was achieved at four weeks as no new ideas were generated as part of the discussion group after this time.

### Data analysis

Transcripts of the group discussion and direct messages were downloaded into Word and de-identified. Data were analysed using Braun and Clarke (2006) six steps of thematic analysis, including: (i) familiarisation with the data, (ii) generation of initial codes, (iii) identification of themes, (iv) reviewing themes, (v) definition and naming of themes, (vi) producing the report. Initial coding was undertaken using NVivo 12 by one researcher. These codes were then examined by each team member for underlying themes, and codes were re-organised, defined, and named according to theme. To enhance trustworthiness, all researchers independently reviewed the data and came to agreement regarding codes and key themes.

### Ethics

The ethical principles of informed consent, privacy, confidentiality, and voluntary participation were adhered to throughout the study. The study received ethics approval from a the Western Health Low Risk Ethics Panel (HREC/21/WH/73,264) and a the Deakin University Ethics Committee (2021–124). The multidisciplinary research team consisted of midwives, an obstetrician, and psychology researchers. This included a mix of novice and highly experienced researchers.

### Results

Participant characteristics are detailed in Table 2. Participant age ranged between 25–45 years. Many of the women were mar-

ried and had experienced at least two pregnancies. All the women had undergone bariatric surgery within the last 10 years and had a pregnancy within the last 5 years. The most common type of bariatric surgery among the women was gastric sleeve/sleeve gastrectomy. Two women who had received lap band surgery underwent additional surgery (bypass and sleeve) following removal of their lap band.

Qualitative thematic analysis resulted in two primary themes and five sub-themes, detailed in Fig. 1. These themes and sub-themes are discussed below and supported by deidentified quotes from the women.

### Theme 1: information gaps and the provision of information

The first theme explored the information needs of Australian women who became pregnant after bariatric surgery. The women described several information gaps which fell into three sub-themes: “Navigating Family Planning Advice”, “What to Eat Whilst Pregnant”, and a “Lack of Tailored Breastfeeding Advice”.

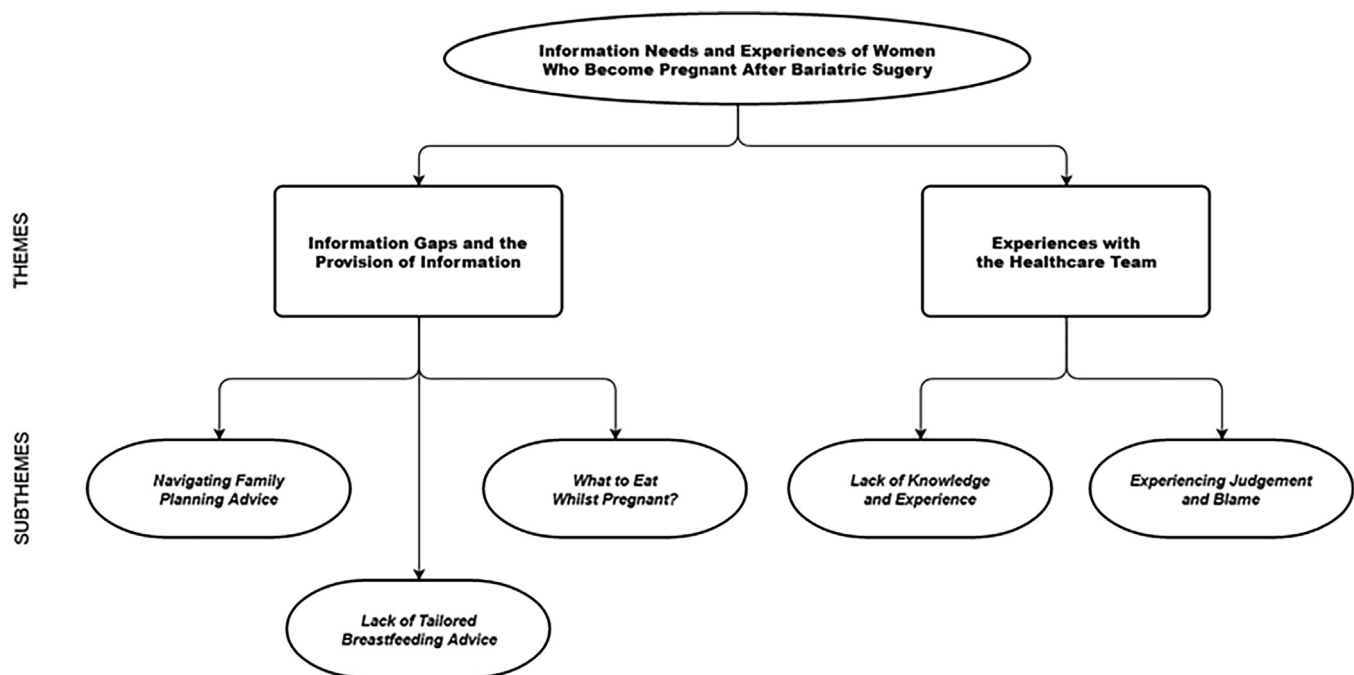
#### Navigating family planning advice

Most women reported having received advice regarding wait time before trying to conceive post-bariatric surgery, with recommendations varying between 12 and 24 months. Eight women indicated that they became pregnant prior to the recommended wait time; for one it was as early as eight weeks post-surgery. Unplanned pregnancy within 6 months after surgery was relatively common. As one woman detailed, “the surgeon gave the usual warnings about not falling pregnant before 12 months post-op [post-operation] due to health risks ... however, it happened rather accidentally and excitedly ... I was pregnant within 4 months” (P7).

Many of the women felt they were not provided with adequate information regarding either wait time to conception or family planning considerations, including contraceptive use, given the likelihood of increased fertility. Condom use was described by two women, both of whom had unplanned pregnancies at 4 months. One woman noted that the only information provided to her were “general conversations to say it would help with falling pregnant and also maintaining a healthy pregnancy” (P10). When asked whether she felt this information was sufficient for her needs, she replied, “I don’t think so.”

**Table 2**  
Demographic characteristics of the sample.

| Characteristic                               | Value                             | Number |
|--|-----------------------------------|--------|
| Age (years)                                  | 25 - 31                           | 3      |
|  | 32 - 38                           | 5      |
|  | 39 - 45                           | 3      |
| State or Territory of residence              | Queensland                        | 3      |
|  | New South Wales                   | 4      |
|  | Western Australia                 | 3      |
|  | South Australia                   | 1      |
| Relationship status at time of study         | Single                            | 1      |
|  | In a domestic partnership         | 3      |
|  | Married                           | 7      |
| Gravidity                                    | 1                                 | 4      |
|  | 2                                 | 5      |
|  | 5 or more                         | 2      |
| Time of most recent baby                     | Within 2 years                    | 5      |
|  | 3–5 years                         | 6      |
| Time of most recent bariatric surgery        | Within 3 years                    | 1      |
|  | 4–6 years                         | 8      |
|  | 7–10 years                        | 2      |
| Type(s) of bariatric surgery had in lifetime | Gastric sleeve/sleeve gastrectomy | 7      |
|  | Gastric bypass                    | 3      |
|  | Lapband                           | 2      |
|  | Roux-enY procedure                | 1      |



Two women were asked to sign contracts by their surgeons committing to avoiding pregnancy within 12 months post-surgery, but did not feel they received sufficient information regarding the reasoning behind this. Both had unplanned pregnancies within 12 months of surgery. As one suggested, “they didn’t explain why that rule was there or what would happen if you did accidentally conceive... which in hindsight is interesting/concerning” (P1). The other woman felt the contract was “odd”, indicating it felt like “fear mongering,” and commented, “knowing what I know now, it’s clear there isn’t enough research into the ‘risks’ because I was more than fine” (P7).

Of interest, some women commented that the recommendations around wait time before conceiving related more to the optimisation of weight loss rather than potential for risk of maternal or neonatal health outcomes. When asked about her thoughts and feelings regarding whether the recommended wait time was reasonable, a woman remarked, “Oh it was fine the doc [doctor] was

just trying to make sure I got the most out of my surgery” (P3). Another woman, who started trying to conceive at 6 months post-surgery, reflected:

*I always got the feeling that the surgeons main concern is that you will stretch out your new stomach and not lose the weight. At 6 months po [post-operation] I was very happy with the amount I’d lost and wasn’t as concerned about that side of things as I was in starting my family. I think mentally it takes a long time to readjust to what you can eat again, so it is probably sound advice to wait the full 12–18 months. (P9)*

One of the women (P10) expressed feelings of regret for having become pregnant “so quickly after surgery” (12 months post-surgery) due to issues with her blood sugar and reported being unaware at the time of surgery of the reasoning behind the wait time recommendation; “To be honest, I thought that [it would] just slow down my weight loss.” When asked what she would have liked to

have happened differently, she felt more information would have been helpful:

*[A] better understanding of weight loss surgery and its effects. Research on what low blood sugar can do to a baby - my son is autistic, so I'm not sure if there is a relationship between what happened and my pregnancy and birth. (P10)*

Some women indicated that their relationship status or age may have played a role in whether they were provided with information regarding family planning. A woman who had an unplanned pregnancy at 4 months post-surgery, reported being provided with no information regarding birth control by her surgeon and was only using condoms. She commented, "In fairness to my surgeon, I hadn't even met my husband when I had the surgery" (P6). When asked whether she had been advised of a possibility of increased fertility following bariatric surgery, another reported, "it wasn't discussed at all. I was 37 at bypass so probably not in the forefront of my mind or theirs" (P2). Similarly, some reported receiving no information on family planning:

*I was young and single the first time [I had surgery] so probably didn't look like I needed fertility advice ... then when I saw the other 2 [surgeons] for repairs and revisions, they likely assumed that I had already been through all of the info [information] with the last guy. (P11)*

Notably, whilst many of the pregnancies in the first-year post-surgery were unplanned, one woman described making the decision to "not try but not prevent" (P3), whilst others described actively trying to conceive. They felt that they were adequately prepared for pregnancy after receiving reassuring blood test results:

*I was advised to wait over 12–18 months. I did get my bloods test done before deciding to fall pregnant, [I waited] 6 months. I wanted to reach my goal weight and then tried and was surprised when I fell pregnant first try. (P4)*

#### *What to eat whilst pregnant?*

Most women felt that they were given insufficient, unhelpful, or contradictory advice regarding diet and nutrition whilst pregnant. Many of the women responded to an experience shared by the following woman, who commented:

*I was told the whole time to eat stuff which was not helpful for my bypass ... They told me at every appointment I had put on too much weight but to keep eating from a typical food pyramid! It was frustrating. (P2)*

Many women felt their treating health team lacked knowledge regarding diet for pregnant women who have had bariatric surgery, contributing to the information gap. A woman commented, "There was definitely a lack of knowledge on what I could and couldn't eat or in what volumes" (P1). This was echoed by others:

*I don't feel like my obstetrician was particularly informed about or interested in WLS ... I raised a concern early on about capacity and potentially not being able to get enough nutrients in for us both of us, and she did seem to gloss over and disregard it quickly. (P11)*

One participant suggested that in addition to receiving insufficient and unhelpful information, she felt she was treated like she was not being honest by her health team when asked about what she had eaten in a day:

*I was sort of treated like I was intentionally not eating by the public team because I wasn't gaining weight ... when the opposite was true, and I was actually making myself sick trying to eat more and constantly snacking. (P9)*

When asked what dietary advice or information received had been helpful, a participant reported "just being encouraged to eat what I can, when I can" (P7), whilst another woman felt consistency in advice, regular monitoring, and the ability to "spread [meals] throughout the day" (P8) were useful.

When asked what information they would have liked to have known at the time, a woman commented that she would have liked to know "how to make sure I was having enough of the right kinds of food and or supplements." Another felt she would consult with a dietician with bariatric experience in the future "rather than relying on the hospital [staff] who unfortunately did not know anything about it or what to do" (P2).

#### *Lack of tailored breastfeeding advice*

Approximately half of the women reported a lack of information and support regarding breastfeeding post bariatric surgery. A participant noted, "I wasn't given any information from the hospital regarding breastfeeding and bariatric surgery. I don't think the midwives were even aware I'd had one [bariatric surgery] to be completely honest" (P1). Another woman described a lack of overall breastfeeding information and no information relevant to her history of bariatric surgery: "I received poor support for breastfeeding and ended up exclusively pumping for 4 months which was awful" (P7).

One participant described having to turn to non-medical sources for information following an upsetting experience with her health team:

*I was told I should still be able to do it [breastfeeding] because women in third world countries can still ... most of my advice came from Facebook groups with the odd look at the breastfeeding association website and lots and lots of googling and YouTube with my first. (P9)*

When asked what information they would like to have known, many women wanted information specific to their bariatric surgery history. One wondered, "[whether] there was anything I should have done differently due to WLS" (P11), whilst another felt she would like to have had known "the kind of difficulties that can be faced specifically post WLS" (P3).

#### *Theme 2: experiences with the healthcare team*

The second theme related to the experiences that Australian women who became pregnant post-bariatric surgery had with their healthcare team. Overall, these experiences fell under two subthemes: "Lack of Knowledge and Experience", and "Experiencing Judgement and Blame".

##### *Lack of knowledge and experience*

Many women described a lack of overall confidence in healthcare workers' knowledge and experience with pregnancy following bariatric surgery; in particular, obstetricians and midwives were most frequently described as less well-informed about women who are pregnant post-bariatric surgery. Women were vocal about their experiences with midwives, with many describing variability in care received and perceived ineptitude. As one woman shared:

*Midwives were definitely the best/worst experience. Some were fantastic and were all across the WLS and really helpful, others were really rude, obnoxious and treated me (and my partner) like I had no idea what I wanted or that I had feelings or opinions. ... In hospital they would either blow off questions or be like a 'deer in the headlights' and stumble through an answer so we didn't feel confident we were getting the right information. (P9)*

As a result of the perceived lack of knowledge demonstrated by the women's healthcare teams, many expressed a desire for



a shared-care approach with ongoing involvement from their bariatric surgeon throughout the pregnancy and post-birth periods. A woman, whose son was admitted to the Neonatal Intensive Care Unit with low blood sugar after what she suspects was an incorrect diagnosis of gestational diabetes and prescription of insulin, commented “looking back I wouldn’t have trusted my maternity team ... I would’ve got my surgeon more involved” (P10).

Issues surrounding blood sugar were a concern for most women, with many describing frustration and distress at their healthcare worker’s lack of familiarity with the potential inappropriateness of the Glucose Tolerance Test (GTT). The women understood that the test was not suitable for women who have had bariatric surgery due to the risk of ‘dumping syndrome’. Dumping syndrome is characterised by symptoms including diarrhea, vomiting and tachycardia 1 to 3 h after ingesting a meal, particularly if high in sugar or carbohydrates (Ahmad et al., 2019). Women reported having done their own research, often accessing information online. However, many felt their concerns were ignored by healthcare workers. A woman stated that she “Googled and Google Scholar’d once I thought of it, then asked my obstetrician” (P11). She described feeling “disappointed” upon realising that her obstetrician was unaware of potential issues and was dismissive of her concerns.

Of those women who discussed the GTT, all reported distress as a consequence of undertaking the test. A woman described it as an “awful” experience where she “ended up on the floor in my own vomit within 30 min of it” (P1); this experience was echoed by several women. Another participant described the GTT as “dangerous” (P4), and wished she had known she did not need to do it. One woman summarised, “I dearly wish that they’d looked into my concerns when I raised them and offered me the alternative” (P11).

#### Experiencing judgement and blame

Almost all women described at least one negative experience regarding the attitudes of their healthcare workers. Surgeons, obstetricians, pediatricians, and midwives were among those specifically mentioned by women as having unsupportive, upsetting, or unhelpful attitudes. As one woman commented:

*The first OB [obstetrician] I saw was very abrupt and said I WOULD (sic) have a small baby if I fell pregnant before 12 months PO [post operation] and that I WOULD (sic) put the baby at significant risk. ... I didn’t like her attitude and the way she presented the outcomes as a fait accompli [sic]. ... It caused me undue anxiety and stress when I first found out I was pregnant. (P7)*

Whilst women generally seemed to consider their bariatric surgeon as knowledgeable, several felt their surgeons’ attitudes towards them changed after becoming pregnant. A woman recalled her surgeon becoming “cranky” (P10) with her after she fell pregnant 12 months after surgery, and another, who had an unplanned pregnancy eight weeks post-surgery causing her to feel “scared” (P8), expressed disappointment at her surgeons change in attitude: “My surgeon on the other hand wasn’t that supportive once he knew, I know it was soon after surgery, but I didn’t appreciate the treatment from him.”

Several women described experiences with healthcare workers that were so upsetting that it resulted in a lasting emotional impact. One felt the attitudes of her surgeon and obstetrician were “off putting and fairly confronting” (P7), whilst another felt her experience with midwives left her “a little traumatised and a little angry” (P9). A woman whose baby had jaundice, shared one upsetting experience with a pediatrician:

*The pediatrician literally blamed me to mine and my husband’s faces saying that it was because I was breastfeeding and have a gastric sleeve, and therefore my milk doesn’t contain enough calo-*

*ries and I’m not producing enough milk for baby. I was made to pump then and there, and he deemed it an unsatisfactory supply and sent us home with formula. I’ve never cried so much in my life. ... It damaged our experience big time, I actually felt so broken after that my husband had to take me to my GP for a referral for counselling. (P1)*

Among the positive healthcare staff interactions described by women, support, empathy, reassurance, encouragement, and an avoidance of judgement, fear-mongering, and blame were identified as important. Following her negative experience with a pediatrician, A woman shared one memorable experience with a general practitioner/obstetrician she felt went the extra mile, which was reflective of what many women wanted in their interactions with healthcare workers:

*Honestly I would kiss that man if I could ... It was obvious that he [general practitioner/obstetrician] genuinely cared about his patients. ... He actually kept up-to-date with guidelines and was mortified when we turned up with me in tears after the pediatrician run in. He sat me down and reassured me, explained some facts, and encouraged me to continue breastfeeding, but also [said] that it was ok if I didn’t. He would tell me every appointment that I was doing a good job, we would have a laugh and discuss life, or he’d recommend a book he’d just read. You were a human being with a history not just a name on a piece of paper. (P1)*

#### Discussion

The current study aimed to explore the information needs and experiences of Australian women who had a pregnancy following bariatric surgery. The results of the study indicated that women were not getting sufficient information relevant to the complexities of pregnancy after bariatric surgery, particularly regarding the ways bariatric surgery may impact on their pregnancy, family planning, diet, and breastfeeding. Additionally, many women experienced judgement and blame, and voiced frustration with uninformed or inexperienced healthcare workers.

Many of the women perceived the recommendation to delay pregnancy was due to ensuring optimisation of weight loss rather than pregnancy related risks. This is a concern, as the maternal and neonatal risks associated with pregnancy following bariatric surgery are well documented (Akhter et al., 2019; Al-Nimr et al., 2019) and should be discussed following bariatric surgery (Harreiter et al., 2018). Unintended pregnancy was relatively common in the group, suggesting that contraception and family planning advice may have been inadequate. The results were consistent with findings demonstrating that this group of women require detailed advice for making well informed decisions regarding optimal timing of pregnancy following bariatric surgery (Goldenshluger et al., 2020; Mengesha et al., 2018). The lack of advice given may be due to surgeon uneasiness with conversations regarding contraception and poor knowledge about family planning considerations (Damhof et al., 2019; Mengesha et al., 2018). Consideration should be given to formalising contraceptive counselling as part of the work-up for WLS with women. Interestingly, some of the women were well informed of the risks, but still actively tried to conceive within 12 months post-surgery. This concurs with existing literature showing that 4% of participants tried to conceive within the first-year of bariatric surgery (Menke et al., 2017). As bariatric surgery is increasingly being used to address fertility issues or improve chances of a healthy pregnancy (Hult et al., 2019) it is not unexpected that at least some women will actively try to conceive in the early post-surgery period, or will experience unintended pregnancy due to early reversal of prior fertility problems (Vitiello et al., 2021).

Participants in the current study reported experiencing judgemental attitudes when they became pregnant prior to the specified recommended time. For women wishing to become pregnant quickly, experiences may be improved if healthcare providers undertake a shared-decision making framework, a collaborative approach where the provision of advice occurs in the context of an individual's needs, risks, and circumstances (Megregian and Nieuwenhuijze, 2018; Vitiello et al., 2021). A shared decision making approach that is free of judgement is likely to result in better care experiences and outcomes for women (Shay and Lafata, 2015).

Women identified information gaps and inconsistencies regarding diet and nutrition whilst pregnant. As bariatric surgeries often alter nutrient absorption, pregnant women can experience nutritional deficiencies that can negatively impact neonatal growth and development (Falcone et al., 2018). Maternal dietary supplementation can reduce these risks; however, compliance is often variable (Faria et al., 2019; Slater et al., 2017). As such, ongoing nutritional follow up and adequate dietary and supplementation advice are essential for pregnant women with histories of bariatric surgery (Walędziak et al., 2021). This aspect of care was missing for the women in the study. They described frustration at receiving contradictory advice and expressed a desire for more informed maternity care providers, or specialised support from dietitians with knowledge to provide tailored pregnancy advice for bariatric patients. Studies of pregnant women (Goldenshluger et al., 2020) and general bariatric surgery patients have similarly shown that more and longer-term nutritional guidance is required post-operatively (Coulman et al., 2020).

Women in this study also described a lack of support and advice specific to breastfeeding after bariatric surgery from healthcare providers. Adequate nutritional intake is important in the postnatal period when women are breastfeeding (Keikha et al., 2017) to avoid nutritional deficiency (Falcone et al., 2018; Romanelli, 2021). Women with bariatric surgery histories have reported early discontinuation of breastfeeding due to nutritional concerns (Hendrix et al., 2011) and inadequate milk supply (Crill et al., 2009), therefore, more needs to be done to promote successful breastfeeding initiation and maintenance in this group. A recent systematic review showed that women who had bariatric surgery could successfully breastfeed if nutrient deficiencies were successfully managed and corrected (Adsit and Hewlings, 2021). Without access to tailored support, women often turned to online sources for information, as reported in other studies (Crill et al., 2009; Hendrix et al., 2011). This is problematic as online sources of information are often variable in quality (Sayakhot and Carolan-Olah, 2016) and do not provide the specific guidance (Skouteris et al., 2017) that women would especially benefit from (Hendrix et al., 2011).

The need for individualised care was a key finding of this study across all phases of the women's experiences including pre-conception, antenatal, and postnatal periods. Lack of experience and knowledge of healthcare providers such as obstetricians, dietitians, pediatricians, and midwives were a source of frustration for women. The limited understanding of healthcare providers was perceived to be a contributor to women's experiences of feeling unheard, especially when women knew that certain advice such as having a GTT would impact them negatively. There is a strong need for healthcare providers to be educated on how to effectively guide and support women of childbearing age who have had bariatric surgery (Goldenshluger et al., 2020; Hendrix et al., 2011).

#### Strengths and limitations

Whilst the current study provides unique insight into the information needs and experiences of Australian woman who have had a pregnancy following bariatric surgery, it is not without lim-

itations. The sample size was small and may have been influenced by self-selection bias, limiting generalisability of the findings. Facebook proved a successful study modality, able to reach women from across Australia. Engagement in the group did however drop off noticeably after the fourth week. This may have been because women were more motivated and provided detailed comments covering many key areas in the initial phase of the data collection period, and thus answers to later posts would have been repetitive. It is recommended that future studies reduce the length of data collection.

#### Conclusions

All women, irrespective of relationship status or age, should be provided with accurate information on both the benefits and risks of bariatric surgery on pregnancy to ensure informed decision making. It needs to be made clear that recommendations regarding wait time to conception relate to risk mitigation and not weight loss optimisation. Women who do decide to become pregnant earlier than recommended should be carefully monitored but treated respectfully and without judgement. Specialist dietetic advice and support from a lactation consultant would be of particular benefit for women who become pregnant after bariatric surgery. The development of tailored resources for health care providers and women is also necessary to improve the experiences and meet the information needs of those who become pregnant following bariatric surgery.

#### Declarations

##### Ethical approval

The study received ethics approval from a Western Health Low Risk Ethics Panel (HREC/21/WH/73,264) and the Deakin University Ethics Committee (2021–124).

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##### Clinical trial registry and registration number (if applicable)

Not applicable.

#### Declaration of Competing Interest

Not applicable.

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