# An Observational Cross-sectional Study of Expectant Mothers in Western Australia: To Understand Perceptions of Delivery Mode of Education and Exercise Physiotherapy-led Antenatal Classes

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## ABSTRACT

Antenatal physiotherapy-led education and exercise classes moved from face-to-face to telehealth delivery in 2022 due to coronavirus disease restrictions. The aim of this study was to describe the experiences of mothers who participated in (face-to-face and telehealth) antenatal education and/or exercise classes. An observational cross-sectional design was employed, which incorporated the development of an online Qualtrics survey, containing a total of 51 items with eight open-ended questions. Surveys were emailed to participants who took part in antenatal education and/or exercise classes at two public maternity hospitals in Western Australia. Overall, 202 surveys were distributed, and 44 (22%) surveys were returned with 41 (20%) complete responses. Of the 41 responses, 17 (89%) were satisfied with the face-to-face classes and 30 (77%) were satisfied with the telehealth classes. Results highlighted that participants preferred face-to-face classes, despite noting the convenience of telehealth. Three themes were derived from the open-ended questions: "difficulties with the classes", "lack of connection and support", and "class convenience and enjoyment". The reasons for the difficulties and lack of connection included challenges with technology whereas class enjoyment was related to the classes continuing during periods of isolation. In conclusion, participants were more satisfied with face-to-face, versus online telehealth classes. Future research investigating experiences with a hybrid model of delivery, to increase accessibility of antenatal classes for women, is recommended.

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## INTRODUCTION

On 11 March 2020, the World Health Organization (2020) declared Coronavirus Disease 2019 (COVID-19) a global pandemic and, in response, medical professionals turned to telehealth to deliver a range of services, including physiotherapy-led antenatal classes that were traditionally delivered face to face (Aksoy Derya et al., 2021; Dantas et al., 2020). Antenatal physiotherapy-led education and exercise classes aim to improve expectant mothers' birthing outcomes and optimise maternal physical wellbeing (Çankaya & Şimşek, 2021; Hassanzadeh et al., 2020). The mandated transition to medical service delivery via telehealth was introduced rapidly in Western Australia (WA) and the effectiveness of online class delivery remains largely unexplored.

Typical physiotherapy-led antenatal classes include topics such as pregnancy-safe exercises, massage and relaxation techniques, pelvic floor muscle exercises, pain management during labour, and post-partum bladder and bowel care (Çankaya & Şimşek,

2021; Hassanzadeh et al., 2020; Pelaez et al., 2014). These classes aim to create a safe environment for pregnant women to exercise and receive education about exercise guidelines during their pregnancy (Cilar Budler & Budler, 2022; Hill et al., 2017). For example, some studies have suggested that exercise during pregnancy, including perineal massage, has positive effects on maternal health, such as improved fitness, reduced reports of lower back pain, improved activation of pelvic floor muscles, and subsequently reduced urinary incontinence (Álvarez-González et al., 2021; Kalisiak & Spitznagle, 2009; Woodley et al., 2020). Moreover, participation in face-to-face antenatal education classes can foster connection to others, build confidence in the education women are receiving, and provide inclusivity for partners (Silva-Jose et al., 2022; Spiby et al., 2022; Wright et al., 2021).

Telehealth rapidly increased as a mode of physiotherapy delivery in 2020, as it enabled a reduction in the spread of COVID-19 through accessing health services from home (Aksoy Derya et al., 2021; Campo et al., 2023; De Simone et al., 2022). Delivering physiotherapy services via telehealth has been described as a transformation to care and will outlive the pandemic due to its accessibility to deliver services to more people (Campo et al., 2023). However, online delivery of medical services is associated with additional risks, such as data security, and relies on a person's computer literacy, access to equipment, and education levels for successful delivery (Dantas et al., 2020; Houser et al., 2023).

Pregnancy is associated with many changes in maternal psychological, physical, and social health and COVID-19 posed many threats to maternal wellbeing with a large number of appointment cancellations, uncertainty of disease progression, and reduced support from family and friends (Chen et al., 2022). Although digital and online physiotherapy services did not provide a solution for all challenges, telehealth enabled allied health professionals to continue service provision and alleviate healthcare burdens during the pandemic (Aksoy Derya et al., 2021; Dantas et al., 2020).

Few studies have previously considered understanding the participant experience in telehealth physiotherapy-led antenatal classes. This is despite many physiotherapy interventions during pregnancy showing positive benefits to improving labour outcomes such as reducing caesarean birth rate and improving postpartum recovery time (Álvarez-González et al., 2021; Barakat et al., 2012; Price et al., 2012). Additionally, the majority of previous literature has focused on face-to-face midwifery-led classes (Spiby et al., 2022; Wright et al., 2021) with a lack of literature exploring the effectiveness of telehealth physiotherapy-led antenatal classes during COVID-19. Physiotherapy-led antenatal classes have a strong focus on maternal physical health through promoting the benefits of regular exercise as stated in the American College of Obstetricians and Gynecologists (2020) guidelines. These guidelines highlight the potential benefits of exercise to improve maternal cardiorespiratory fitness, reduce bodily pain and disability, and prevent depressive symptoms, with physiotherapy-led antenatal classes serving as an adjunct to midwifery-led education. Therefore, the aim of this study was to compare the experiences of expectant mothers who participated in face-to-face physiotherapy-led antenatal classes with those who participated via telehealth across two public hospitals in WA during COVID-19.

## METHODS

### Study design and ethics

This study utilised an observational cross-sectional survey design. The survey was developed by the research team and included both numerical and open-ended responses and followed the CROSS checklist for reporting survey studies (Sharma et al., 2021). This design was selected due to a current lack of literature regarding physiotherapy-led antenatal classes and the specific impact of COVID-19 on class delivery. This study was approved by the Women and Newborn Health Service Ethics Committee (reference: RGS0000005607). Reciprocal ethical approval was granted through the University of Notre Dame Australia (reference 2023-001F).

### Setting and participant recruitment

Participants were recruited from two public maternity hospitals serviced by the Women and Newborn Health Service in WA and were identified through an online patient registry that holds details for women attending the antenatal class(es) between December 2021 and 2022. Women were invited to the antenatal class(es) if they planned to deliver their baby at one of the public maternity hospitals, including women who lived in the metropolitan and regional areas. In WA, women can deliver at Women and Newborn Health Service sites if they live within the hospital catchment, are living regionally with a complex pregnancy, or have no other local public hospital (Department of Health, 2022). The antenatal education sessions ran for 2 hours across two weeks covering a range of antenatal topics and the exercise classes ran weekly for up to six weeks with the aim to inform expectant mothers of pregnancy safe exercises. A women's health physiotherapist specialist team comprised three physiotherapists who facilitated both classes in a dedicated space within the hospital. Women were invited to attend the education and/or exercise classes via telehealth or face to face if they were to deliver their baby at one of the Women and Newborn Health Service sites. The classes were run as group sessions with one physiotherapist leading the class and the other two physiotherapists responsible for the creation and ongoing development of the classes.

A total of 202 eligible mothers, identified through a clinical database, were contacted via email from the clinical treating team. Inclusion criteria involved those who were biologically female from birth, over 18 years of age, able to participate in English, and who had participated in at least one telehealth or face-to-face physiotherapy-led antenatal education and/or exercise class(es). Women under 18 years of age and women whose pregnancies did not result in live birth were excluded. The recruitment period was open for a two-week period during March 2023, whereby a survey was sent out via email to the participants from the head of the physiotherapy department across both maternity hospitals with a link to connect them to complete the online survey. The email also contained an attached participant information sheet asking for voluntary participation; therefore, consent was provided by opting into completing the anonymous survey. A follow-up email was sent

one-week later reminding participants to complete the survey. Each participant was only able to complete the survey once, limited by parameters set in the online survey.

### Data collection

An online anonymous survey (Qualtrics, Provo, Utah, USA) was created in consultation with three clinical experts in women's health physiotherapy and one person with lived experience of attending the face-to-face classes. The survey was piloted with a person with lived experience of the classes and class facilitators for functionality and usability prior to it being sent to the participants, and no further adjustments were required. The survey (made available from the corresponding author upon reasonable request) included quantitative (i.e., Likert scale) and qualitative (open ended) questions on the mothers' experiences of attending telehealth or face-to-face antenatal class(es) and/or a combination (telehealth and face-to-face), to allow for triangulation of results, consisting of a total of 51 items with eight open-ended questions. Questions were linked to exercise completion or education received, and participants were asked to select all options that applied to them. The survey was developed to use adaptive questioning, as participants were only shown questions dependent on which type(s) of antenatal class(s) they attended. The survey included five key sections: 1) demographic information, 2) barriers and benefits to class participation, 3) partner involvement and social interaction during the classes, 4) impact of COVID-19, and 5) overall attendance preference. The open-ended questions were included to allow for comments on the class experience and mode of delivery.

### Data analysis

Data were screened and descriptive results (counts and percentages) were analysed using Microsoft Excel. The demographic information, challenges and benefits of the classes, and participant satisfaction scores were collated and grouped based on the participants who completed 1) education class(es), 2) exercise class(es), and 3) both education and exercise class(es). Additionally, the data were categorised by mode of class attendance (e.g., face-to-face, telehealth, or a combination of telehealth and face-to-face). The counts and frequencies (deductive analysis) were examined for each of the five sections of the survey. Open-ended qualitative data were entered into an Excel spreadsheet and grouped in accordance with participants' responses. The qualitative data were analysed using inductive content analysis with a descriptive approach.

## RESULTS

From the total of 202 surveys that were distributed, 44 (22%) surveys were returned and 41 (20%) surveys contained complete responses (the data were excluded from three participants as they had not started the survey). Of the 41 surveys, incomplete responses were received from four participants; however, their available data were retained in the analysis. The demographic information from 41 women is presented in Table 1. The majority of respondents (35/41, 86%) were > 30 years of age, with an even mix of Australian women (22/42, 54%) and those born overseas (19/51, 46%). The majority had engaged in tertiary education or further studies (39/41, 89%) and were currently employed (30/41, 73%). This was the first birth for most of the participants (36/41, 88%) and the majority gave birth vaginally (29/41, 71%), followed by emergency caesarean (9/41, 22%).

**Table 1**

*Demographic Information for the Cohort (*N = *41)*

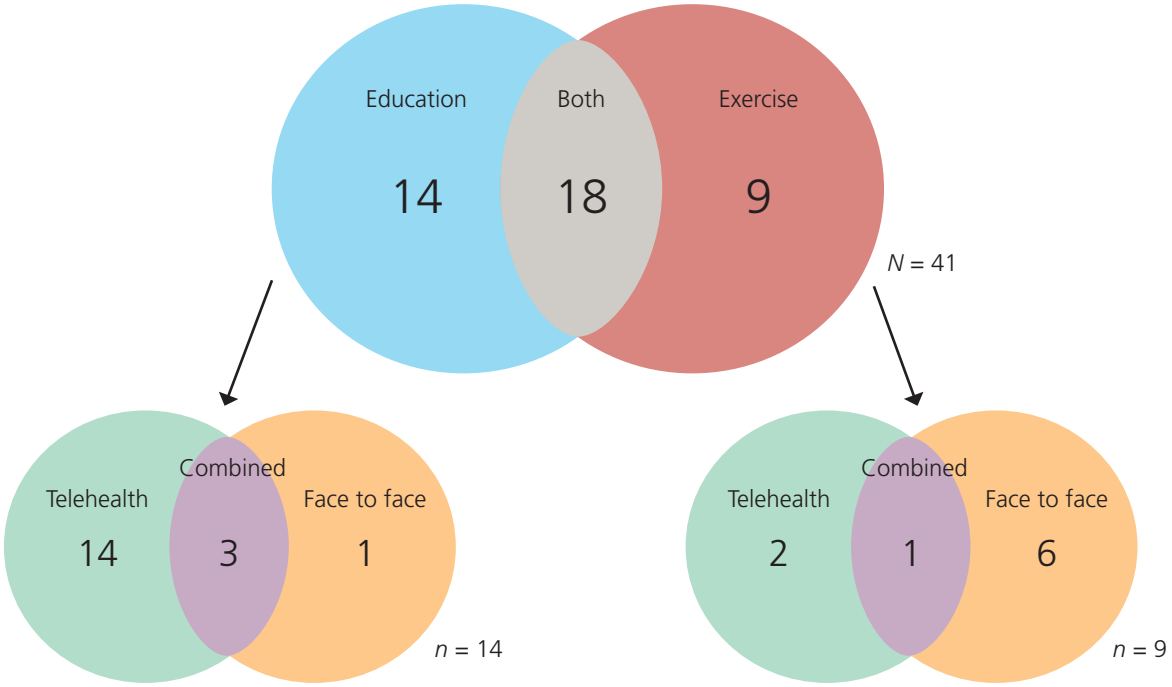
| Demographics | Total | |
|---|---|---|
| | *n* | % |
| Age (years) | | |
| 18–24 | 2 | 5 |
| 25–29 | 4 | 10 |
| 30–34 | 22 | 54 |
| ≥ 35 | 13 | 32 |
| Nationality | | |
| Australian | 22 | 54 |
| Born overseas | 19 | 46 |
| Level of education | | |
| Tertiary education | 18 | 44 |
| Post-graduate studies | 18 | 44 |
| Technical and further education | 3 | 7 |
| Secondary education | 2 | 5 |
| Employment status | | |
| Unemployed | 11 | 27 |
| Part-time employment | 16 | 39 |
| Full-time employment | 13 | 32 |
| Casual employment | 1 | 2 |
| Parity | | |
| One | 36 | 88 |
| Two or more | 5 | 12 |
| Type of birth | | |
| Vaginal | 29 | 71 |
| Planned caesarean | 3 | 7 |
| Emergency caesarean | 9 | 22 |

Figure 1 provides a breakdown of participant attendance in both the type of classes (exercise or education), and the mode of delivery. Fourteen (34%) respondents completed the education classes only, with 12 (86%) of those participating via telehealth, and 1 (7%) attending this class via telehealth and face to face (noted as "both" in Figure 1). Eighteen (44%) participants engaged in both the education and exercise classes, and 9 (22%) completed the exercise class only. Of those in the exercise class, most participants (6/9, 67%) attended via face-to-face delivery (see Figure 1).

Figure 2 displays the mode of class delivery for participants who attended both the education and exercise classes. Eighteen (44%) participants completed both class types. Of those in the education class, 14 (78%) completed the class via telehealth, with a minority participating via a face-to-face option (1/18, 5%). Of those in the exercise classes, 8 (20%) participants attended the class via telehealth and 8 (20%) via face-to-face. A small number (3/18, 17%) participated in a combination of telehealth and face-to-face in the education classes and likewise (2/18, 11%) in the exercise classes.

**Figure 1**

*Overall Class Attendance, Categorised into Type of Class and Mode of Delivery*




Twelve participants completed one or more of the classes via a combination of both telehealth and face to face. Of note, participants were unable to choose their mode of class delivery due to COVID-19 restrictions. Table 2 highlights the difficulties that these mothers reported experiencing in attending the classes face to face or via telehealth, and the difficulties noted varied between the two groups. Women participating in the face-to-face classes noted their greatest difficulty to be finding parking (4/11, 36%), whereas those in the telehealth classes said it was forming a connection with others (12/21, 57%).

**Figure 2**

*Participant Breakdown of Mode of Class Delivery for Participants Who Attended Both the Education and Exercise Classes*

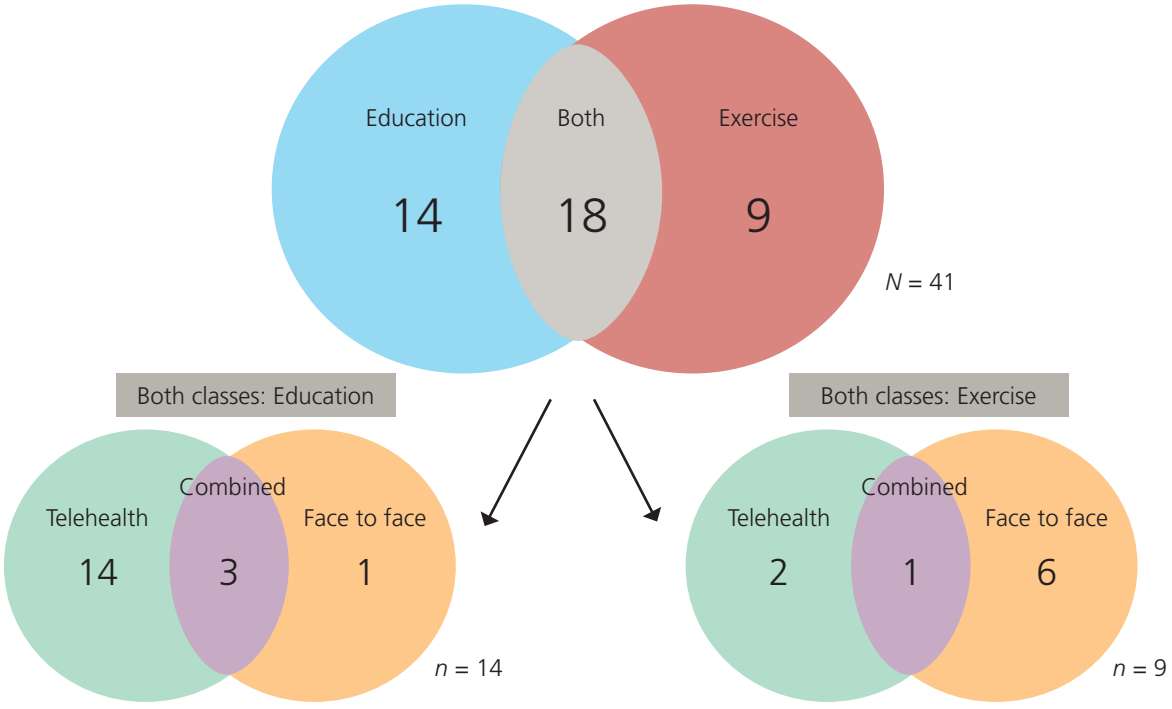


**Table 2**

*Difficulties with Class Attendance, Categorised into Type of Class and Mode of Delivery*

| Characteristic | Total | | Type of class | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Face to face | | Telehealth | | Combined [a] | |
| | *n* | % | *n* | % | *n* | % | *n* | % |
| Class attendance (total *n*) | 41 | | 8 | | 21 | | 12 | |
| Both education and exercise classes | 18 | 44 | 1 | 5 | 7 | 39 | 10 | 56 |
| Education | 14 | 34 | 1 | 7 | 12 | 86 | 1 | 7 |
| Exercise | 9 | 22 | 6 | 67 | 2 | 22 | 1 | 11 |
| Face-to-face difficulties (total *n*) | 8 | | 3 | | | | 5 | |
| Finding parking | 4 | 36 | – | | | | 3 | 60 |
| Finding the classroom | 3 | 27 | – | | | | 2 | 40 |
| Signing up | 3 | 27 | 1 | 33 | | | 1 | 20 |
| Forming a connection with others | 3 | 27 | – | | | | 2 | 40 |
| Time of the class | 2 | 18 | 1 | 33 | | | 1 | 20 |
| Asking questions | 2 | 18 | 1 | 33 | | | 1 | 20 |
| Telehealth difficulties (total *n*) | 18 | | | | 10 | | 8 | |
| Forming a connection with others | 12 | 57 | | | 6 | 60 | 4 | 50 |
| Time of the classes | 6 | 29 | | | 2 | 20 | 3 | 37 |
| Visual and audio issues | 5 | 24 | | | 3 | 30 | 2 | 25 |
| Asking questions | 5 | 24 | | | 3 | 30 | 2 | 25 |
| Completing the exercises | 5 | 24 | | | 5 | 50 | – | |
| Other | 4 | 19 | | | 2 | 20 | 2 | 25 |
| Logging in | 3 | 14 | | | 1 | 10 | 1 | 13 |

[a]Combined = telehealth and face to face.

Table 3 provides a summary of participants' experiences, stratified by mode of class delivery. In the face-to-face classes, most women felt connected to others (5/6, 83%), compared to most not feeling connected to each other in the telehealth classes (8/9, 89%). The majority of the participants attended the classes with a support person, irrespective of mode of class delivery (23/29, 79%), with most feeling it was important to attend with somebody else (21/29, 72%). All the participants who attended the face-to-face classes said they would refer a friend to the classes (19/19, 100%), whereas in the telehealth classes, a smaller proportion said they would refer a friend (21/26, 81%). Overall, all participants voted for either a face-to-face class delivery (22/37, 59%) or a combination of both face-to-face and telehealth delivery for future classes (15/37, 41%), noting that the telehealth only delivery was not suggested.

Table 4 illustrates the satisfaction level across all types of class attendance. Most of the participants were satisfied across both classes and both modes of class delivery. Satisfaction was similar among groups, with the majority (17/19, 89%) satisfied with the face-to-face classes and the telehealth classes (30/39, 77%).

## Themes derived from open-ended responses

From the written responses left by the participants, three key themes emerged relating to class experience. These themes included "Difficulties completing the classes", "Lack of connection and support", and "Class convenience and enjoyment" (Figure 3). Overall, 75 comments were made and most participants (38/41, 93%) left at least one comment. Each participant was assigned a unique identification number to maintain anonymity; the number was assigned based on the order in which they completed the survey. Women either completed the education, exercise class, or both classes via telehealth, face to face, or a combination of both modes of delivery.

### *Difficulties completing the classes*

Participants in the telehealth education classes and the face-to-face classes both shared they were overloaded with information regardless of the mode of delivery.

> The education classes covered a lot of information. Too much to properly cover in the assigned 2 weeks so it felt very rushed. Either reduce the content or increase the number of weeks over which the class is presented. (025, telehealth, both classes)

When asked about helpful ways to remember the information in the education sessions, three participants said they did not receive the PowerPoint slides during the education class, which made it harder for them to remember the information. One

**Table 3**

*Summary of the Participants' Class Experiences*

| Questions and responses | Total | | Type of class | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Face to face | | Telehealth | | Combined [a] | |
| | *n* | % | *n* | % | *n* | % | *n* | % |
| What strategies helped you to remember information in the education class(es)? | 66 | | 6 | | 31 | | 29 | |
| Slide shows shown throughout the class | 19 | 59 | 1 | 50 | 12 | 63 | 6 | 54 |
| Props and demonstrations by physiotherapist | 17 | 53 | 2 | 100 | 9 | 47 | 6 | 54 |
| Getting the PowerPoint one week prior | 11 | 34 | 1 | 50 | 3 | 16 | 7 | 64 |
| Practising the exercises | 11 | 34 | 1 | 50 | 5 | 26 | 5 | 45 |
| Other (e.g., handouts) | 8 | 25 | 1 | 50 | 2 | 11 | 5 | 45 |
| Did you feel connection to others in the class(es)? | 22 | | 6 | | 9 | | 7 | |
| Felt connected to others | 12 | 55 | 5 | 83 | 1 | 11 | 6 | 86 |
| Felt no connection to others | 10 | 45 | 1 | 17 | 8 | 89 | 1 | 14 |
| Did anybody attend the education class(es) with you? | 29 | | 1 | | 18 | | 10 | |
| Partner/spouse | 22 | 76 | 1 | 100 | 15 | 83 | 6 | 60 |
| Family member | 1 | 3 | – | | 1 | 6 | – | |
| None | 6 | 21 | – | | 2 | 11 | 4 | 40 |
| How important is it that a support person attends the education class(es)? | 29 | | | | | | | |
| Very important | 13 | 45 | 1 | 100 | 8 | 44 | 4 | 40 |
| Important | 8 | 26 | – | | 6 | 33 | 2 | 20 |
| Neutral | 3 | 10 | – | | 1 | 6 | 2 | 20 |
| Unimportant | 1 | 3 | – | | 1 | 6 | – | |
| Very unimportant | 4 | 14 | – | | 2 | 11 | 2 | 20 |
| How comfortable did you feel asking questions in the education class(es)? | 29 | | | | | | | |
| Very comfortable | 8 | 28 | 1 | 100 | 4 | 22 | 3 | 30 |
| Quite comfortable | 10 | 34 | – | | 5 | 28 | 5 | 50 |
| Neutral | 8 | 28 | – | | 6 | 33 | 2 | 20 |
| Uncomfortable | 3 | 10 | – | | 3 | 17 | | |
| How much information did you remember after the education class(es)? | 29 | | | | | | | |
| Most of the information | 12 | 41 | 1 | 100 | 6 | 33 | 5 | 50 |
| Some of the information | 12 | 41 | – | | 8 | 44 | 4 | 40 |
| Half of the information | 5 | 17 | – | | 4 | 22 | 1 | 10 |
| Did your support person feel actively included in the education class(es)? | 26 | | 1 | | 16 | | 9 | |
| Yes | 18 | 69 | 1 | 100 | 12 | 75 | 5 | 56 |
| No | 8 | 31 | – | | 4 | 25 | 4 | 44 |
| Did you have any unanswered questions after the education class(es)? | 28 | | 1 | | 17 | | | |
| Yes | 1 | 4 | – | | 1 | 6 | | – |
| No | 27 | 96 | 1 | 100 | 16 | 94 | 10 | 100 |

**Table 3** *Continued*

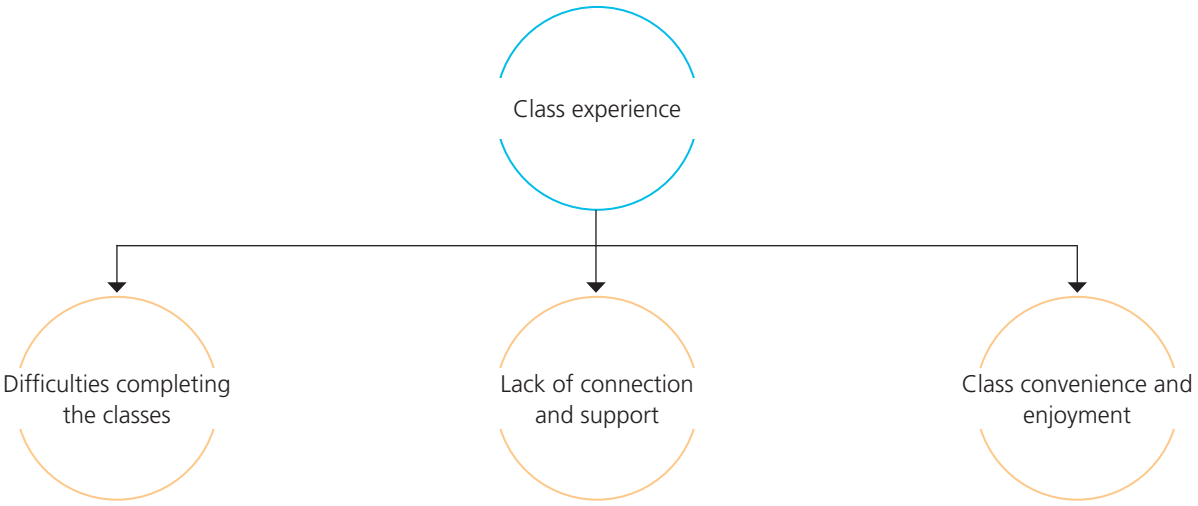
| Questions and responses | Total | | Type of class | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Face to face | | Telehealth | | Combined [a] | |
| | *n* | % | *n* | % | *n* | % | *n* | % |
| Did you feel safe attending face-to-face class(es) during COVID? | 15 | | 1 | | 6 | | | 8 [c] |
| Yes | 13 | 87 | 1 | 100 | 6 | 100 | 6 | 75 |
| No | 2 | 13 | – | | – | | 2 | 25 |
| Did you prefer to attend telehealth class(es) during COVID? | 29 | | 13 | | 3 | | | 13 [c] |
| Yes | 13 | 45 | 8 | 62 | 2 | 67 | 3 | 23 |
| No | 11 | 38 | 3 | 23 | 1 | 33 | 7 | 54 |
| Other | 5 | 17 | 2 | 15 | – | | 3 | 23 |
| Would you refer a friend to the class(es)? | 56 | | 5 | | 14 | | 26 | |
| Yes | 46 | 82 | 5 | 100 | 14 | 100 | 21 | 81 |
| No | 10 | 18 | – | | – | | 5 | 19 |
| How would you prefer to attend the class(es) in the future? | 37 | | 7 | | 20 | | 10 | |
| Education classes – Face to face | 8 | 22 | 1 | 14 | 7 | 35 | – | |
| Education classes – Combined | 6 | 16 | – | | 5 | 25 | 1 | 10 |
| Exercise classes – Face to face | 6 | 16 | 4 | 57 | 1 | 5 | 1 | 10 |
| Exercise classes – Combined | 2 | 5 | 1 | 14 | 1 | 5 | – | |
| Both classes – Face to face | 8 | 22 | 1 | 14 | 2 | 10 | 5 | 50 |
| Both classes – Face to face | 7 | 19 | – | | 4 | 10 | 3 | 30 |

[a]Combined = both face-to-face and telehealth class participation.

[b]Both education and exercise classes, rather than a combined classes.

**Figure 3**

*Key Themes Derived From the Open-ended Responses*




participant said, "We took notes that we referred to later. Receiving a summary of key information would have been helpful" (028, face to face, both classes).

A few mothers also commented that the education classes caused more anxiety about giving birth and the post-partum period as they received a lot of education about the complications that could arise. One mother commented, "We felt the classes went into too much detail about things that could go wrong – it gave us more anxiety than what we felt was helpful. Especially via telehealth when pictures of bad engorgement and mastitis were shown" (037, telehealth, both classes).

**Table 4**

*Participants' Overall Satisfaction with the Class(es) They Attended*

| Response | Attended education and exercise (both classes [*n* = 18]) *n* (%) | | | | | | Education class (*n* = 14) *n* (%) | | | Exercise class (*n* = 9) *n* (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Education (*n* = 15) | | | Exercise (*n* = 16) | | | | | | | | |
| | Total [a] (*n* = 17) | Face to face (*n* = 3) | Telehealth (*n* = 14) | Total [b] (*n* = 1 8) | Face to face (*n* = 9) | Telehealth (*n* = 9) | Total [c] (*n* = 14) | Face to face (*n* = 1) | Telehealth (*n* = 13) | Total (*n* = 9) | Face to face (*n* = 6) | Telehealth (*n* = 3) |
| Very satisfied | 5 (29) | 2 (67) | 3 (21) | 6 (33) | 5 (56) | 1 (11) | 2 (14) | 1 (100) | 1 (8) | 4 (45) | 4 (66) | – |
| Satisfied | 9 (53) | 1 (33) | 8 (58) | 9 (50) | 3 (33) | 6 (67) | 9 (64) | – | 9 (69) | 3 (33) | 1 (17) | 2 (67) |
| Neutral | 1 (6) | – | 1 (7) | 1 (6) | – | 1 (11) | 2 (14) | – | 2 (15) | 1 (11) | 1 (17) | – |
| Unsatisfied | 2 (12) | – | 2 (14) | 2 (11) | 1 (11) | 1 (11) | 1 (7) | – | 1 (8) | 1 (11) | - | 1 (33) |

[a] Three women attended the education class both face to face and via telehealth. [b] Two women attended the exercise class both face to face and via telehealth. [c] One woman attended the education class face to face andvia telehealth.

One mother felt some of the information in the education classes was too focused, particularly towards the information surrounding lactation: "Education given on lactation is far from the reality. The education seemed to be extremely biased to encourage breastfeeding. I believe we can encourage breastfeeding and have a more realistic explanation on how things can go" (007, both classes, combination).

The participants who attended face-to-face classes were required to wear masks due to mandatory COVID-19 hospital guidelines. As a result, some participants would have preferred to attend via telehealth as the mask made it uncomfortable while attending the class. When asked if they would attend the classes again, one participant said, "Yes, if we won't be forced to have a mask on during the class. I don't think it was healthy being pregnant and doing exercise at the same time while having a mask on" (002, face to face, exercise class).

Issues specific to attending the telehealth classes were described, which included difficulties doing exercises over telehealth. Many reported it was difficult to see the physiotherapist or ineffective as many could not ask for immediate feedback on the exercise(s) they were completing. This was particularly difficult when completing the pelvic floor muscle exercises.

> The classes were not effective as it was difficult to see how to do exercises correctly and there was no personal connection with the instructor or fellow mums. I also found [it] hard to work on the pelvic floor as I couldn't ask for immediate feedback on how to do it. (025, telehealth, both classes)

Participants also commented that asking questions via telehealth was harder than asking questions in-person. One participant noted that asking questions over the chat function was ineffective because the physiotherapist could not answer their comments in a timely manner and a lot of participants asked the same question.

> Asking questions via the chat function was not effective. Most of the time the class would be interrupted due to questions being asked midway through the presenter talking. There were a lot of double ups on questions because it's on a chat with a large audience. (025, telehealth, both classes).

Telehealth classes added a new element of difficulties as this required the participants to rely on the use of their personal technology at home. Some participants experienced technological difficulties including adjusting the volume and difficulty finding appropriate space at home to practise the exercises. One mother said, "When I attended the telehealth classes, there were lots of technical issues with volume and sound and the classes were not performed in an appropriate space" (022, telehealth, exercise class).

Finally, several commented that they could not remember a lot about the classes since the survey was sent out 3–12 months after completion of the antenatal classes.

> I completed the class nearly a year ago. It's difficult to remember specifics of the class now. However, I do remember feeling very reassured and well informed after the class and found the physios very approachable and I had all my questions answered. (003, face to face, education class)

### *Lack of connection and support*

A lack of connection with other participants was a common theme experienced, particularly for those who attended the telehealth classes. Several reported feeling a lack of connection with other

participants during the telehealth classes because many attended the classes with their cameras turned off. Some women reported that a lack of introductions among class participants contributed to this lack of connection: "It would have been great to encourage people to turn their cameras on and introduce themselves so that there was some connection between us, rather than just having information delivered one way" (035, telehealth, both classes).

Some mothers noted that they wanted to do the classes to meet other expectant mothers and felt this was taken away with the telehealth option. A minority reported the classes felt impersonal over telehealth and would have preferred face-to-face attendance if they had the option. One participant said, "A major part of attending is to connect and talk to other mums, so the online option didn't appeal to me. I would attend face to face again if I had another pregnancy" (023, telehealth, exercise class).

Although the majority of the participants felt a good sense of connection to others in the face-to-face exercise classes, a few commented that they struggled to form connections in these classes.

> The exercise class I took was poorly run, and most of the participants talked loudly to each other through the class and didn't really participate, making it difficult for those who wanted to do the exercises, to hear, and participate in the class. (044, face to face, both classes)

### *Class convenience and enjoyment*

Several participants were impressed with the convenience of the telehealth class option, especially during periods of isolation, as these classes were better for their schedules. Many appreciated this option instead of the class being completely cancelled.

> The online classes were more convenient. I probably wouldn't have attended any face-to-face exercise classes in-person because it was too hard logistically with other children to care for, but I do enjoy face-to-face classes more when I do make the effort to attend. (035, telehealth, both classes)

Participants enjoyed that they did not have to travel to the telehealth classes, struggle to find parking, and were less distracted when watching online.

> My preference would be to do the education online – made it a lot easier timing and parking wise and was a lot more comfortable to ask questions in the chat and felt I was less distracted by being on [a] laptop in home setting. (015, telehealth, both classes)

Several participants had difficulties booking into another face-to-face class if they had to cancel their initial booking. Those in the telehealth classes did not share this issue. One mother wrote about the long wait times to access a face-to-face class again if they had missed one class:

> It was inconvenient that there is only one session and if we missed it, it was too bad for us. I've missed one session as I was at the hospital, and I couldn't have any information about it unless I waited for the next session which was after my due date. (007, combination, both classes).

One participant suggested it may be more effective if the telehealth exercise classes were pre-recorded and then if they had any issues, they could book an appointment to receive feedback from a physiotherapist: "The exercise class could have been a pre-recorded video and if you have any additional requirements/concerns, then arrange a one-on-one telehealth appointment with a physio" (022, telehealth, exercise class).

Overall, the majority of participants reported they would prefer to attend the classes face to face. Participants enjoyed meeting other expectant mothers, and said it was easier to practise the exercises in front of a physiotherapist and was an effective education tool. One participant summarised, "I enjoyed meeting other mothers to be and also to educate myself on the correct exercises" (038, face to face, exercise class).

Many saw the value in completing these classes prior to giving birth. Several mothers left positive comments like, "Great classes! I feel it's important for all expecting mothers to have a class on physio and impacts on the body before and after birth" (018, combination, education class).

To summarise, participants commented about the overload of information covered in the education classes (regardless of the mode of class delivery), felt a lack of connection to others in the telehealth classes, and overall responded more positively to the face-to-face classes.

## DISCUSSION

The main purpose of this study was to explore participants' experiences of physiotherapy-led antenatal classes who attended telehealth and/or face-to-face delivery across two different classes (exercise vs education) during COVID-19. While several studies have explored the benefits of implementing telehealth medical services during COVID-19 (Aksoy Derya et al., 2021; De Simone et al., 2022; Halcomb et al., 2023), differences between telehealth and face-to-face delivery of physiotherapy-led antenatal classes remain unexplored. The three key findings from this study include (1) greater difficulties completing the classes over telehealth compared to face to face, (2) participants felt a lack of connection to others while participating in the telehealth classes, and (3) women enjoyed the convenience of telehealth class delivery; however, the majority still preferred the face-to-face classes. These findings are also reflected in the quantitative data with the majority (12/21, 57%) having difficulties forming a connection with others in the telehealth classes and fewer participants satisfied with the telehealth classes (30/39, 77%) compared with the face-to-face classes (17/19, 89%).

### Difficulties completing the classes

This study revealed that participants felt overloaded with information in the antenatal education class(es) regardless of the mode of delivery. Only 8 (44%) of participants who attended via telehealth felt they could remember "some of the information". This was also supported in the open-ended responses, as several participants commented on the large amount of information covered. Difficulties remembering information during antenatal class was also found by Lee and Holroyd (2009), who highlighted that women in their reproductive years often work full time, resulting in lower attention spans during

the classes running in the evenings. This is comparable to this study, with the majority of participants being employed (30/41, 73%) potentially contributing to them feeling overloaded with information as the classes were conducted on weekdays, after business hours.

Some mothers in this study reported that receiving information about birthing complications made them more anxious about giving birth. In contrast, Çankaya and Şimşek (2021), in a randomised control trial found reduced rates of depression and anxiety, and fear of birth including increased childhood self-efficacy among the group who participated in several antenatal classes compared to controls. However, their results were not clinically significant, which may suggest bias in the study's findings (Çankaya & Şimşek, 2021). Similar to the present study, a systematic review investigating the effects of antenatal education on maternal and foetal health found no effect on maternal stress, anxiety, and fear of birth after antenatal education; however, there was a lower elective caesarean birth rate of the educated cohort (Hong et al., 2021). In this study, (3/41, 7%) of participants gave birth via an elective caesarean, with the majority (29/41, 71%) giving birth vaginally. Despite these findings, this study did not explore whether antenatal class participation was associated with type of birth.

The increase in utilisation of telehealth during COVID-19 in Australia was essential in maintaining safe medical service delivery. Telehealth service delivery can sustain both a high standard of healthcare and reduce the risk of disease transmission for both health professionals and consumers (Campo et al., 2023; De Simone et al., 2022; Halcomb et al., 2023). During physiotherapy education and exercise classes, hands-on feedback and support from a physiotherapist plays a valuable role in teaching and engaging the participants (Kalisiak & Spitznagle, 2009). In the present study, participants reported difficulty completing exercises via telehealth as they were unable to receive immediate feedback, which was an issue not encountered by face-to-face participants. Prior studies have found there are many benefits to hands-on physiotherapy, extending past the role of only antenatal physiotherapy to other areas such as the musculoskeletal and neurological settings (Geri et al., 2019; Shahid et al., 2023). Recently, Halcomb et al. (2023) found the use of telehealth during COVID-19 in an outpatient setting among various medical professionals was less useful when physical examinations, physical intervention, and/or visual cues were required. Participants in the present study found it more difficult to practise exercises over telehealth and did not experience the benefits of hands-on care. These factors relating to class experience should be considered when planning mode of class delivery.

Furthermore, poor computer literacy and Information Technology (IT) skills among class participants is considered a significant barrier in receiving medical care over telehealth (Halcomb et al., 2023). Participants in the present study expressed greater difficulties in the telehealth compared to face-to-face classes, however only a minority experienced IT issues (8/21, 38%), which included visual and audio issues (5/21, 24%) and difficulties logging in (3/21, 14%). Participants in the present study, however, had completed high education levels with 36 (88%) participants having completed tertiary education, with 28 (68%) of the participants being younger than 35 years. The only mode of participation in this study was by completing an online survey, which may have led to some selection bias and a lack of generalisability of these findings. Similarly, Spiby et al. (2022) acknowledged that selection bias through an online survey may silence those who do not have access to the internet or electronics and marginalise minority groups who may benefit the most from antenatal classes.

### Lack of connection and support

The greatest reported disadvantage of telehealth participation was the lack of connection and support from others during the antenatal classes. A greater percentage of participants in the telehealth classes (8/9, 89%) reported a lack of connection with others, compared to the face-to-face participants (1/6, 17%). Spiby et al. (2022) found first-time mothers wanted to feel reassured about giving birth and to meet others, and felt this was achieved though attending face-to-face antenatal sessions with health professionals. They also found the main reason for class attendance was to meet others, even though this study was carried out prior to COVID-19 (Spiby et al., 2022). Consequently, these results may not reflect the unique circumstances of the pandemic period and therefore future class delivery could include introductions and active class participation (regardless of the mode of class attendance) to improve class engagement.

### Class convenience and enjoyment

Overall, the majority of the participants in this study were satisfied with the classes, despite lack of choice regarding mode of delivery due to COVID-19. Across all classes only 11% of participants were unsatisfied, but of those who were unsatisfied, 83% had completed a telehealth class. Despite this small number of participants who were dissatisfied with the classes, most telehealth class participants noted the convenience of connecting to a telehealth class from home. Similarly, Silva-Jose et al. (2022) conducted interviews with 24 women who felt safer attending classes online during COVID-19 and had more time available to adhere to an exercise programme. Comparably, 45% of respondents in the present study said they preferred attending classes via telehealth during the pandemic.

Although this does not represent the majority of participants in this study, the impact of COVID-19 between Australia and Spain is not comparable, as Australia had fewer confirmed COVID-19 cases and did not have community transmission at the time of the study (World Health Organization, 2023). However, participant safety from illness is an important determinant to reduce maternal stress and telehealth services allowed antenatal classes to continue safely, likely serving a role in reducing maternal stress during pregnancy (Aksoy Derya et al., 2021).

The level of satisfaction (75%) with the telehealth classes in this study is comparable to Quinn et al. (2021) who found women were highly satisfied with virtual antenatal appointments due to the convenience, avoidance of travel, and staying safe during the pandemic. However, Quinn et al. (2021) focused on individual antenatal appointments with medical and nursing staff, whereas the present study focused specifically on physiotherapy care. Telehealth offers further benefit in that it enables participation among people who live in rural and

remote areas who may not have the means to attend face-to-face classes (De Simone et al., 2022). This is particularly relevant in a Western Australian context, as the state only has one tertiary referral centre for complex pregnancies, meaning that rural and remote participants need to travel long distances to access physiotherapy-led antenatal classes. The present study did not specifically capture experiences from women living outside the metropolitan area; however, the potential benefits of a telehealth class option to increase access for this population must be considered.

### Strengths and limitations

The focus on physiotherapy-led classes, which differs from current literature focusing mostly on midwifery-led antenatal class experience, provides a novel contribution to the literature. This study also captured perceptions of both modes of delivery (face to face and telehealth), which allowed for between-group comparisons. Although the survey utilised in this study was not a validated tool, it was developed by experts and a person with lived experience of antenatal classes during the pandemic. Participants did not have choice in the mode of class delivery due to the COVID-19 restrictions, which must be noted when considering generalizability in a context outside of the pandemic. Despite the small sample size, the present study received a 20% response rate and pursuing a higher response rate often creates other measurement problems (Hendra & Hill, 2019). A response rate between 15 and 20% is acceptable for survey responses when aiming to collect a truly random sample and not "knowing" (purposively sampling) the participants (Fincham, 2008). It is also important to note that the response for some individual questions was low, which can be explained by the surveyed cohort being new mothers and likely time poor, fatigued, and still dealing with ongoing effects from the COVID-19 pandemic (e.g., survey fatigue). This study did not aim to target participants from a higher socioeconomic background; however, selection bias may have occurred due to the online delivery of the survey. The online nature of the survey may have presented barriers to participation for people with limited internet access, computer literacy, and from non-English speaking backgrounds. This limitation speaks to the representativeness of the data, as it may not have captured those living in rural WA, those from a lower socioeconomic background, and non-responders. Finally, some participants may have had difficulties remembering details of the classes due to survey distribution being three to 12 months' post class competition, leading to a risk of recall bias.

## CONCLUSION

Findings from the present study provide insight into differences between face-to-face and telehealth class delivery of physiotherapy-led antenatal classes. Overall, women preferred to attend antenatal classes face to face, enjoyed the convenience of telehealth, or wanted to attend through a hybrid (face-to-face and telehealth) model. Despite the challenges experienced by medical services during COVID-19, the utilisation of telehealth services was beneficial in a WA context and the significance of online physiotherapy services should be an ongoing option for women. Future services may consider offering antenatal education classes as a hybrid model incorporating both online and face-to-face class delivery, to allow participation via telehealth among those who cannot attend face to face. Further research investigating satisfaction associated with hybrid models of delivery is warranted. Considering findings from the present study, it may be recommended that antenatal exercise classes are offered face to face, but if face-to-face exercise class attendance is not possible, online class delivery presents a suitable alternative.

## KEY POINTS

1. There are benefits in providing physiotherapy-led antenatal classes over telehealth; however, participants prefer face-to-face class delivery, regardless of class mode (education or exercise).
2. Greater difficulties with telehealth classes were experienced, which included a lack of opportunity to form connections with others.
3. A hybrid mode of delivery may offer the satisfaction associated with face-to-face education and accessibility associated with online education. Further research into acceptability of a hybrid model is warranted.

## DISCLOSURES

No funding was obtained for this study. There may be a perceived conflict of interest as the primary author worked at one of the hospitals from which the data was collected; however, the primary author did not contact the participants (this was done by the clinical team did).

## PERMISSIONS

This study was approved by Women and Newborn Health Service ethics committee (EC00350), PRN: RGS0000005607. Reciprocal ethical approval was granted through the University of Notre Dame Australia (2023-001F).

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## CONTRIBUTIONS OF AUTHORS

Conceptualisation, IS, JN, NN, CH, AL and AT; methodology and formal analysis, IS, JN, NN, and AT; writing – original draft preparation, IS, JN, NN, CH, AL and AT; writing – review and editing, IS, JN, NN, and AT; supervision, JN, NN and AT; project administration, IS, JN, BB and AT.

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