

Behind the image:



School of Health
& Psychological
Sciences

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Understanding fetal bonding and the role of ultrasound

BMUS
2024



Dr Emily Skelton

12th December 2024

Disclosures

- Research funding awarded from the College of Radiographers (DF017) and City, University of London



Imaging in pregnancy



Fetal US credit: Ava A

(<https://www.youtube.com/watch?v=CZTNEF97mZ4>)

Fetal US credit: Life with Baby

(<https://www.youtube.com/watch?v=fumiHYSHXKk>)

Fetal MRI credit: BMEIS, KCL

(https://www.youtube.com/watch?v=djJnsC_Cddl)

**Behind the
image...**

**...sonographers
are most
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What is parent-fetal bonding?

- Cognitive and emotional ability to conceptualise another human being¹
- Influenced by social context²
- Unique to parents³
- Parent-fetal bonding = emotional connection expectant parents form to their unborn child⁴



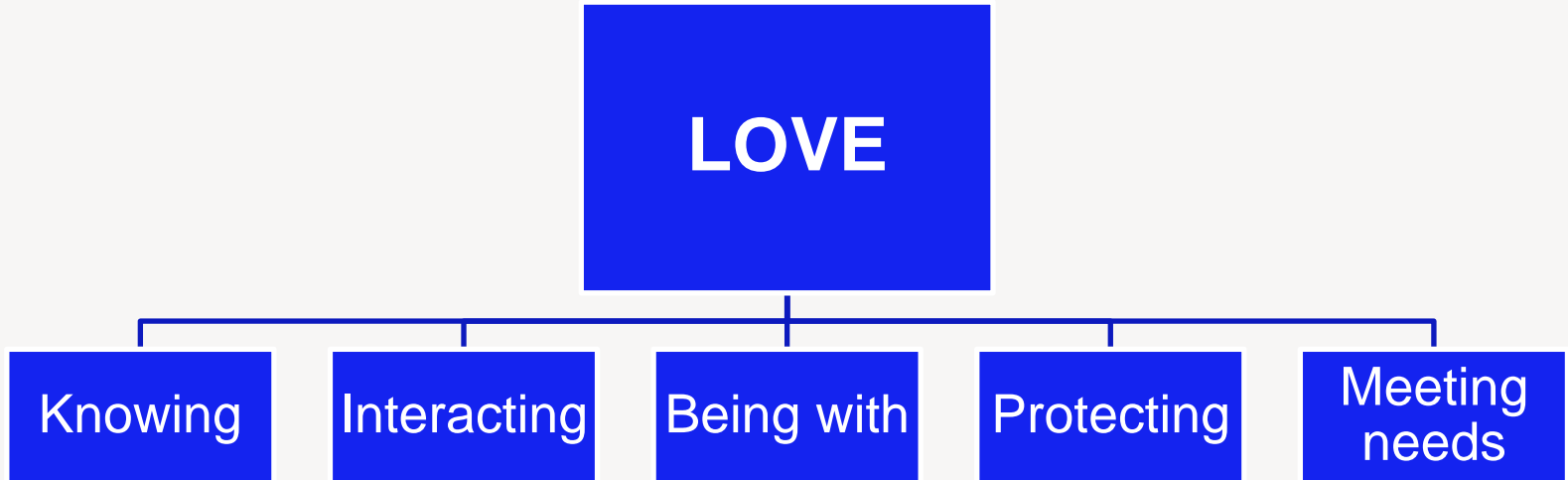
1. Doan & Zimmerman., 2003, "Conceptualising prenatal attachment"

2. Darvill et al., 2010, doi: 10.1016/j.midw.2008.07.006

3. Borg Cunen et al., 2022, doi: 10.1016/j.midw.2021.103198

4. Muller & Mercer., 1993, doi: 10.1177/019394599301500205

Condon's model of attachment (1993)⁵



The importance of parent-fetal bonding

- Fetal brain development, parental emotional well-being⁶
- Prenatal bonding predicts postnatal attachment⁷
- Secure infant-parent attachment is a protective factor⁸
- Societal costs⁹

Low quality attachment to
mother = £10,199

Low quality attachment to
father = £13,978

($p < 0.001$)

6. Göbel et al., 2018, doi: 10.1016/j.jad.2018.07.024

7. Trombetta et al., 2021, doi:10.3389/fpsyg.2021.620942

8. Ramchandani et al., 2013, doi: 10.1111/j.1469-7610.2012.02583.x

9. Bachmann et al., 2019, doi: 10.1111/jcpp.13103

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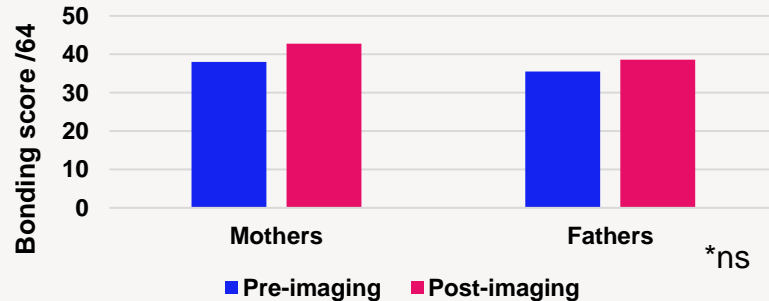
9. Bachmann et al., 2019, doi: 10.1111/jcpp.13103

Quantitative results: pre- and post-imaging (n=76)¹⁰

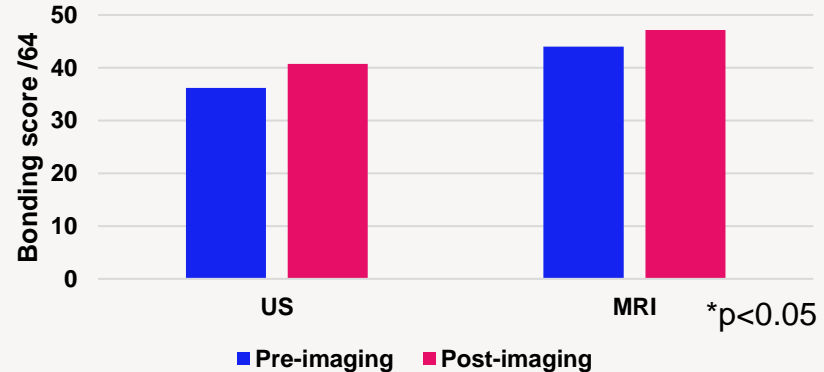
Bonding scores were significantly* increased after imaging for all parents and modalities

**p<0.05*

Comparison of bonding scores pre- and post-imaging: Mothers and Fathers*



Comparison of bonding scores pre- and post-imaging: US and MRI*

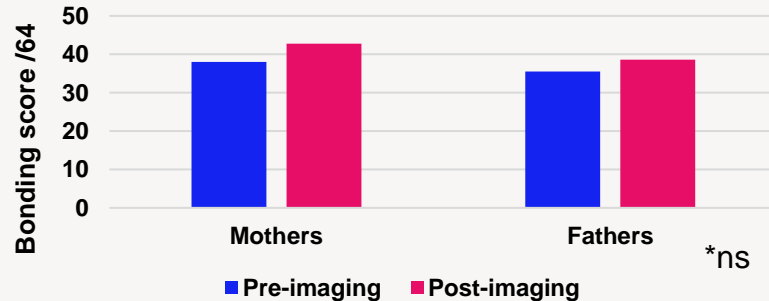


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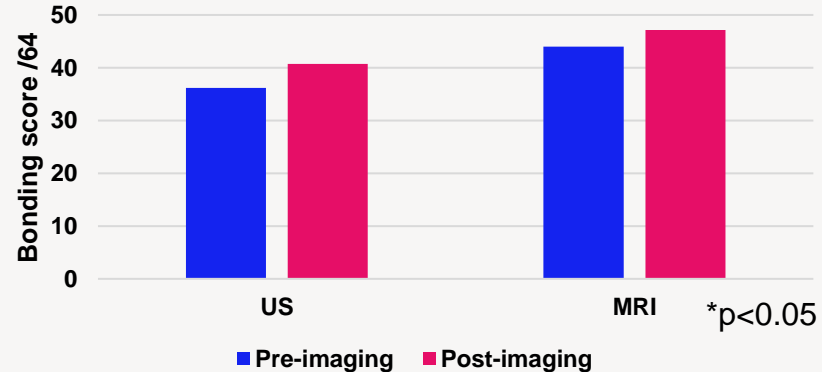
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Quantitative results: predictors (n=76)¹⁰

**Model
1**

**Parent
factors**

- Employment status ($\beta=0.35$)

F=2.34*
Adjusted R²=0.16

**Model
2**

**Scan
factors**

- Imaging modality ($\beta=0.53$)
- **Imaging experience ($\beta=0.42$)**
- **Parental excitement ($\beta=0.29$)**

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Qualitative findings: overview (n=28)¹¹

**Our baby, our
scan too**

**Destination
parenthood**

**Being in the
dark, then
finding the
light**

Our baby, our scan too

- Strong medical focus during scans
- Desire to be actively involved, especially fathers
- Working with HCPs was important in feeling supported and included, avoid “conveyor belt care”

“You’re not just looking at it like a case study of a condition, that is your baby, you are looking at your baby.” [Abigail]

“I think sometimes as a partner when you go to a scan and all the conversation is directed at the pregnant woman then sometimes you feel like a bit of a spare part and, like, you’re not particularly useful in the whole thing.” [David]

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Destination parenthood

- Fetal personification and tangibility
- Feeling closer to the unborn baby
- Acceptance and adjustment to new parenting role

“When you see it on the scan, it just brings it all home and it makes you confront the reality.” [Rob]

“...even sort of seeing that detail of like little fingers and things like that, it really started to feel like baby, rather than just a sort of idea...” [Elizabeth]

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Being in the dark, then finding the light

- Fear of receiving unexpected news
- Empowerment through imaging and positive care experiences

“I’m a bit of a worrier on these things and my concern was that we were gonna get to the scan and there was gonna be something slightly suboptimal or abnormal and that we were gonna worry.” [David]

“We’re in the best hands possible, the care plan’s in place, we’re lucky cos it’s been picked up... I actually think I’ve had a really positive outlook.” [Leah]

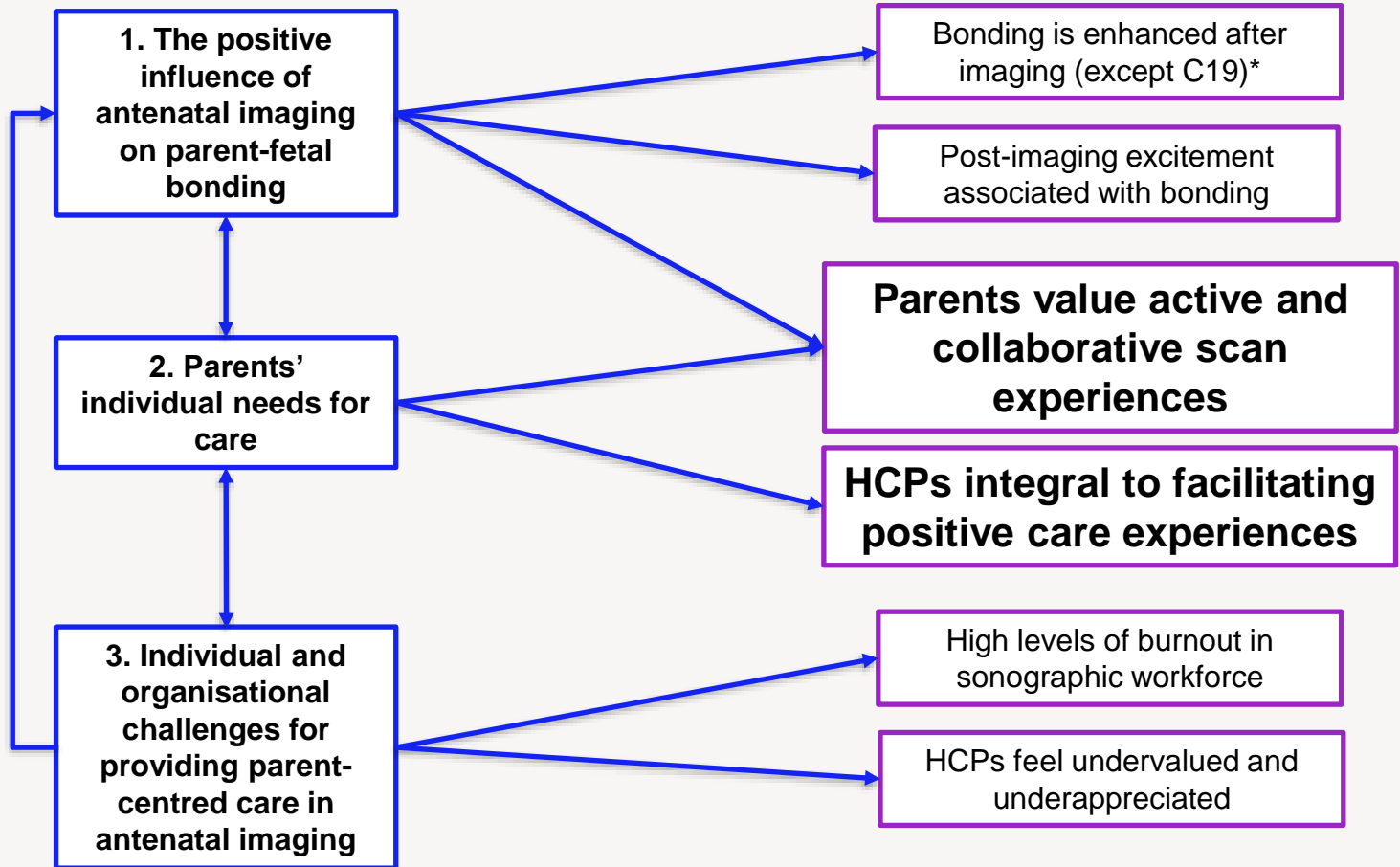
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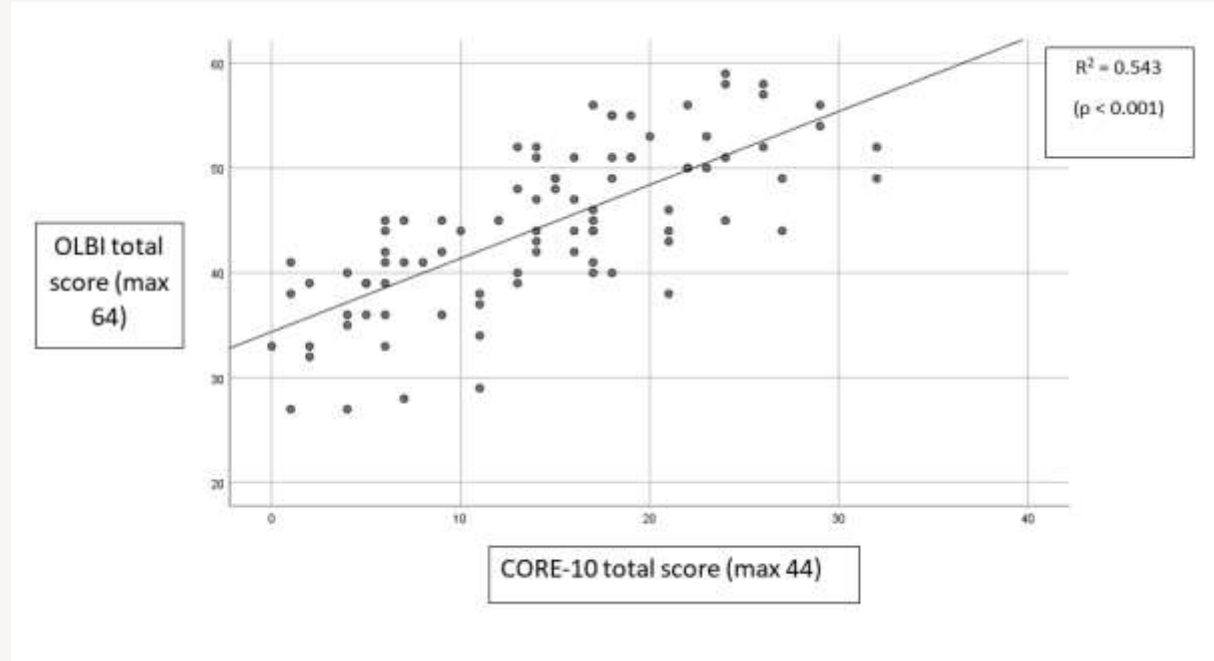
Discussion of key findings



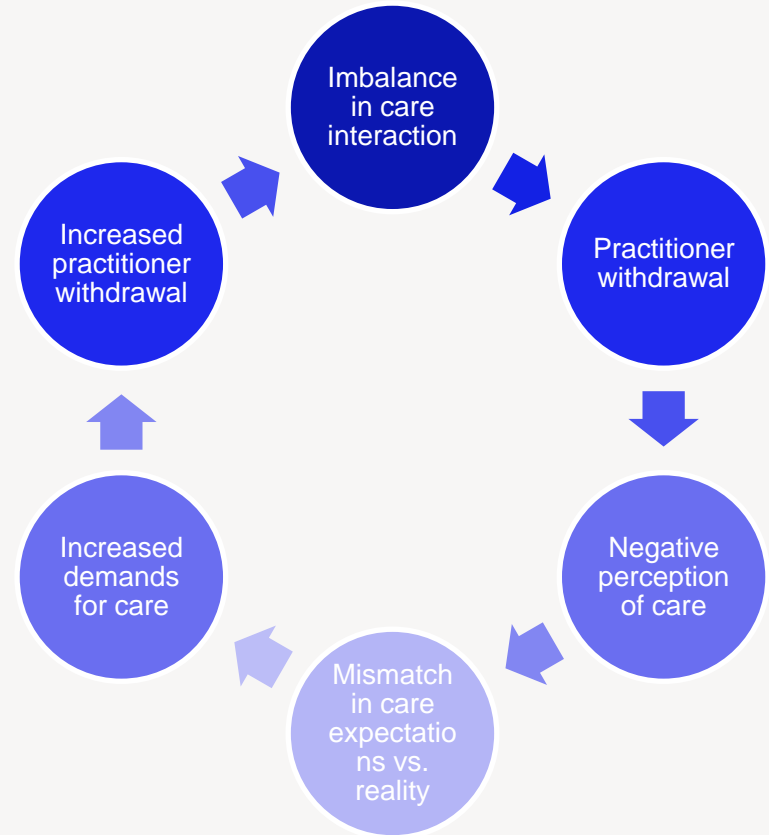
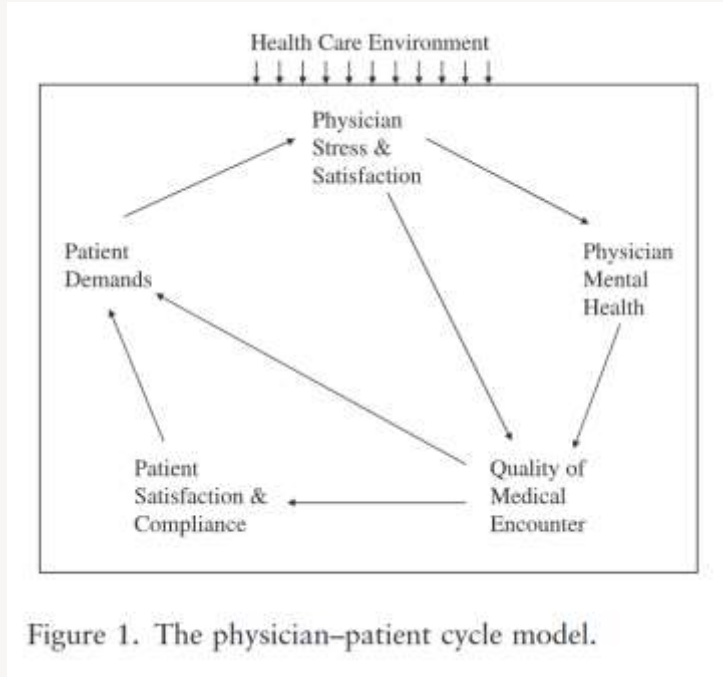
Sonographer burnout during COVID-19 (n=88)¹²

Burnout (OLBI)

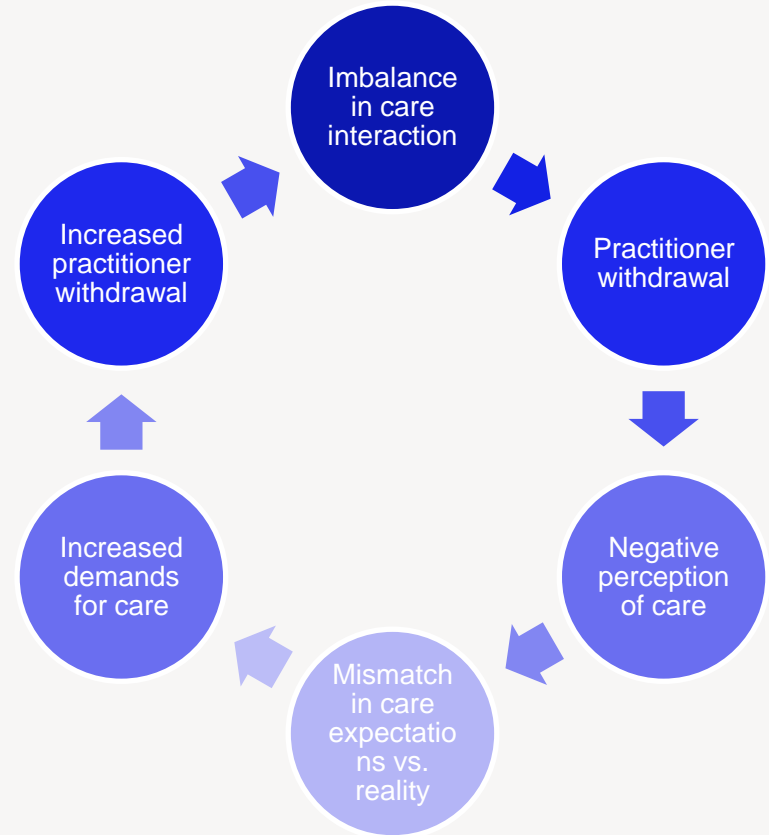
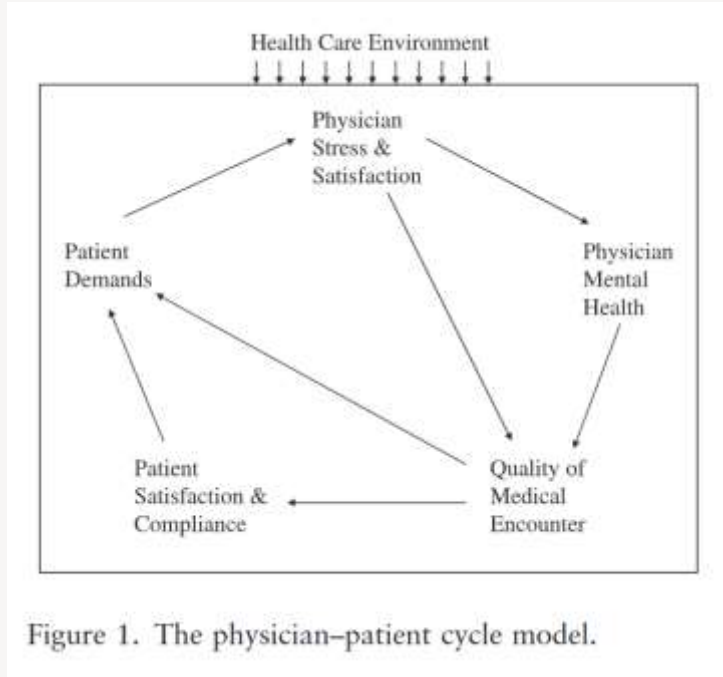
- Mean total = **44.47/64**
(SD 7.60)
- **92.1%** met exhaustion threshold*
- **91.01%** met disengagement threshold*
*($p < 0.001$)



Virtuous or vicious care interactions¹³



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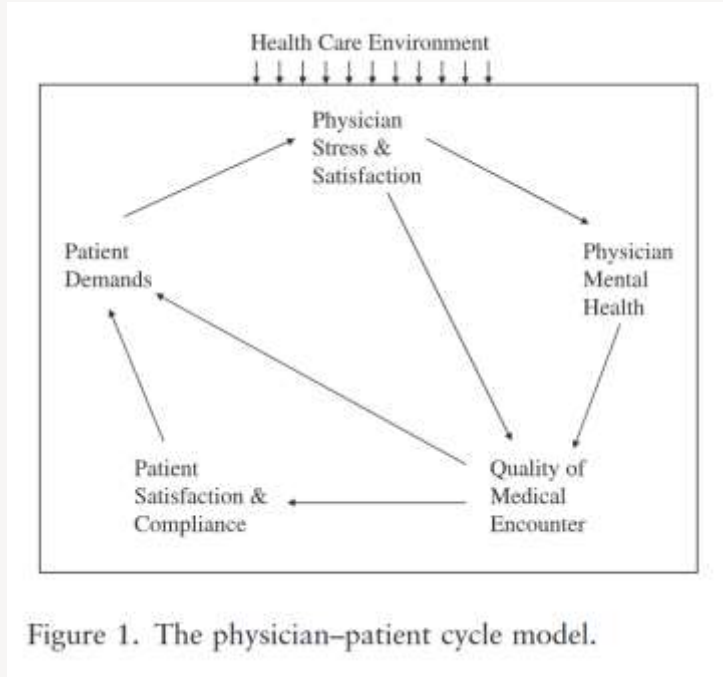
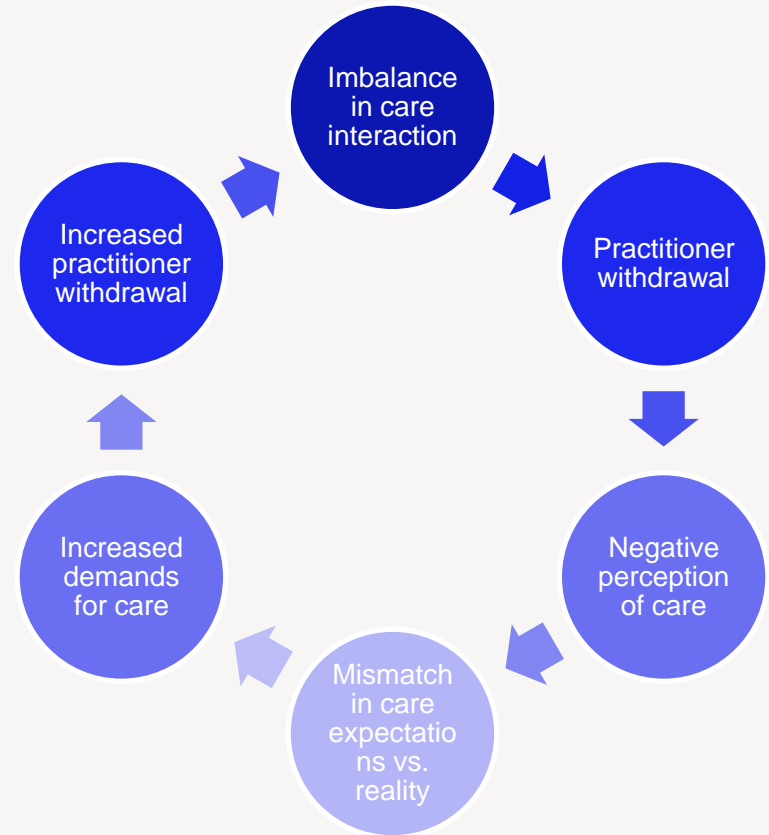
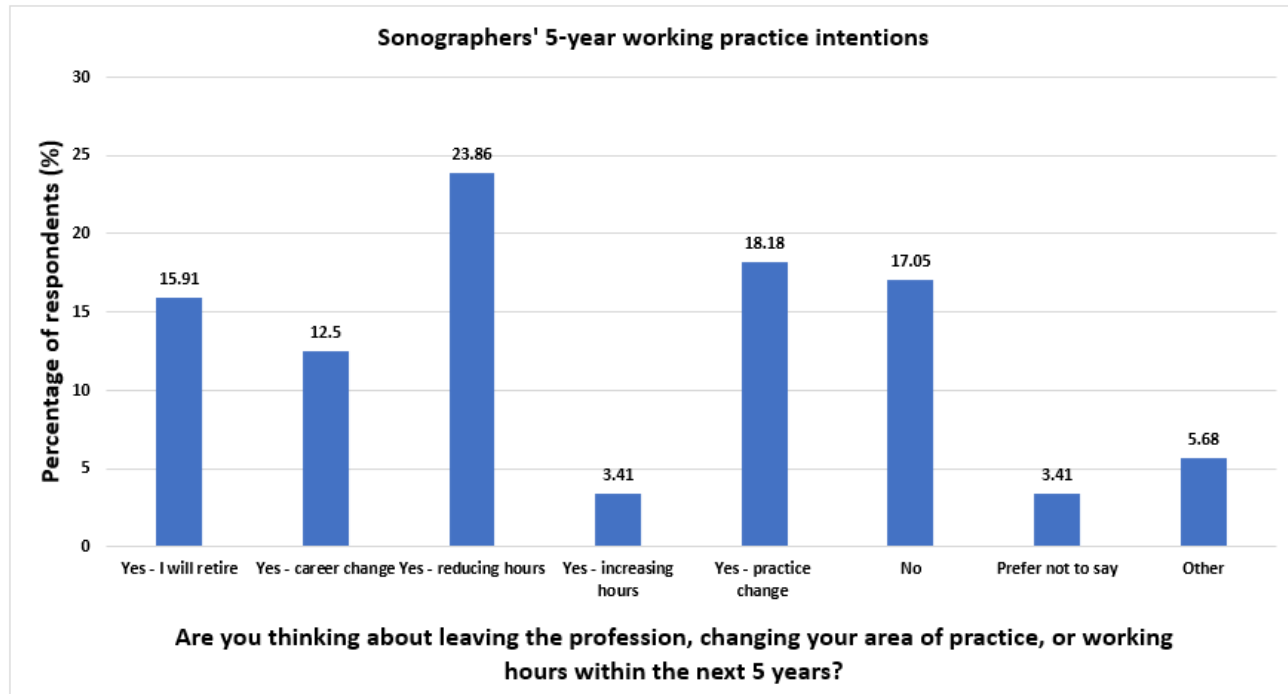


Figure 1. The physician-patient cycle model.



Implications for the workforce¹²

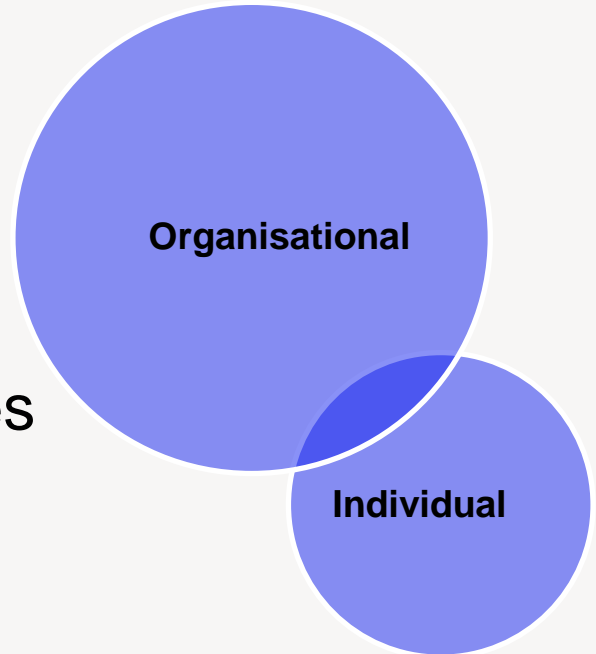


73.9% answered positively to leaving the workforce, or changing practice area/working hours within the next 5 years

24.6% reported their intention to change practice by no longer performing obstetric ultrasound scans

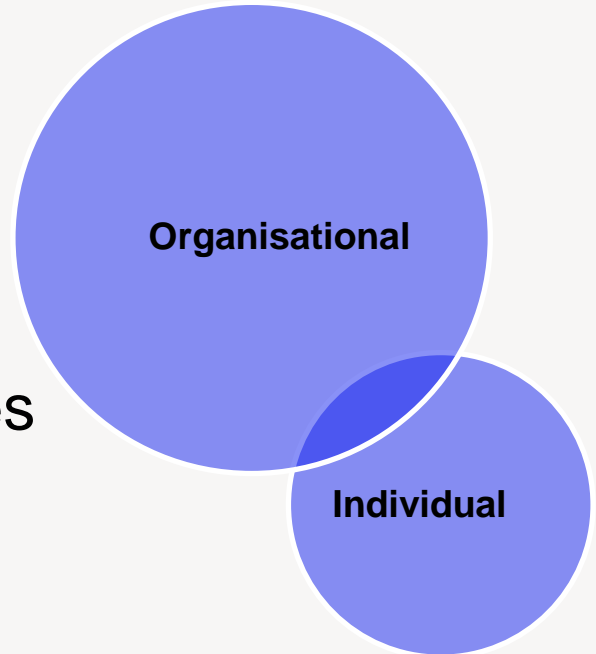
Other challenges for care provision

- Time and resources
- Organisational culture
- Team buy-in, professional attitudes



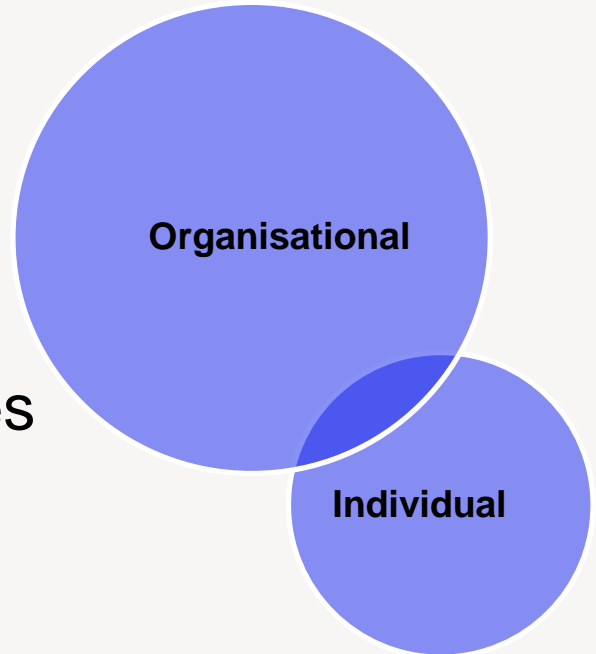
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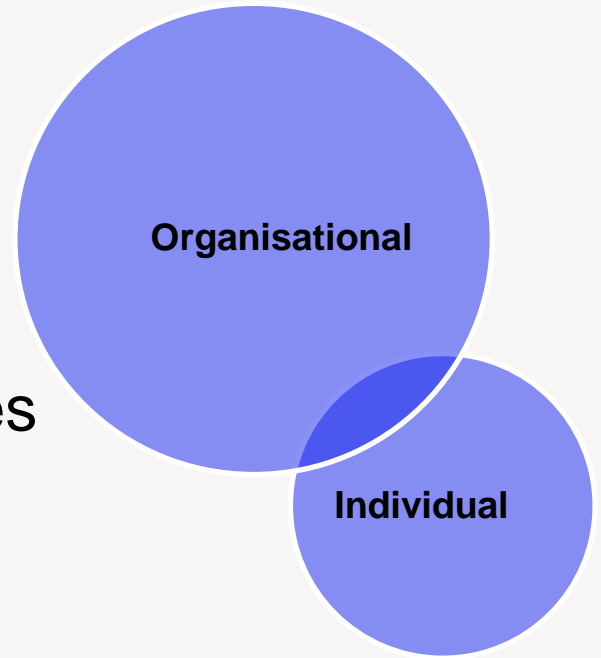
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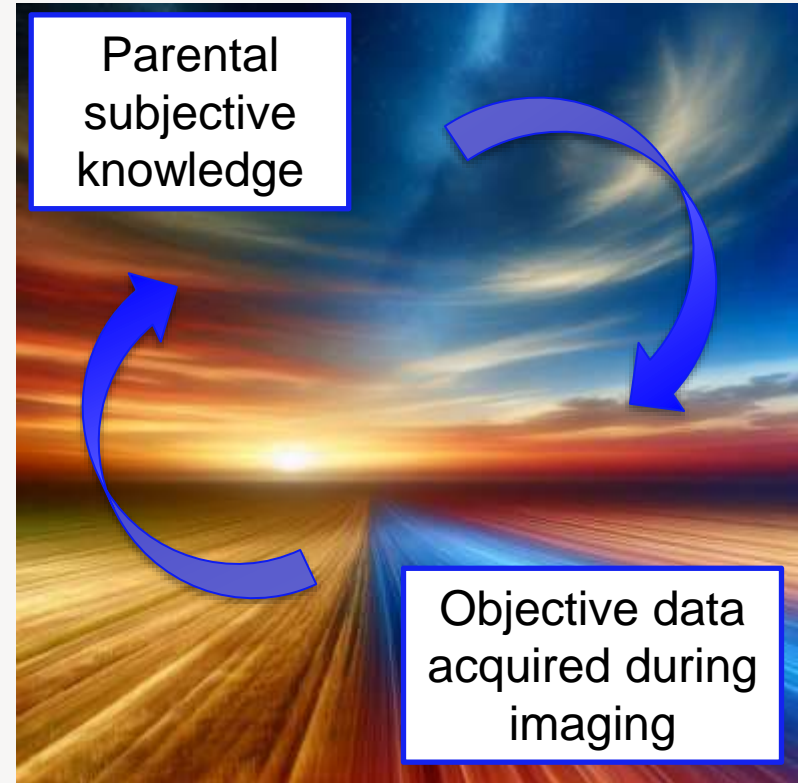
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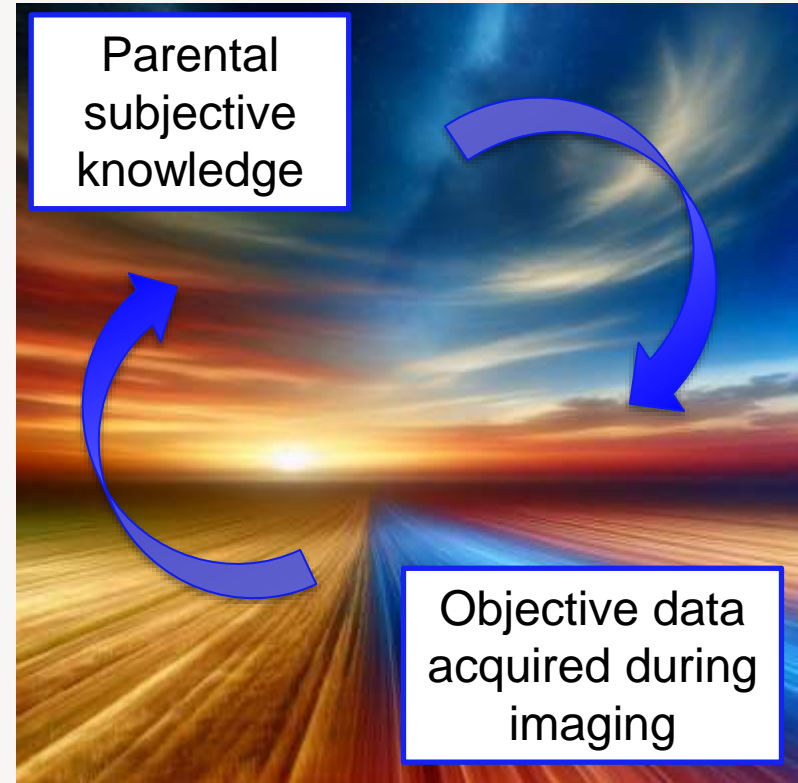
Fusion of horizons¹⁴

- Technical mastery
- Building rapport
- Explaining the process and significance of the examination
- Understanding the parents' world



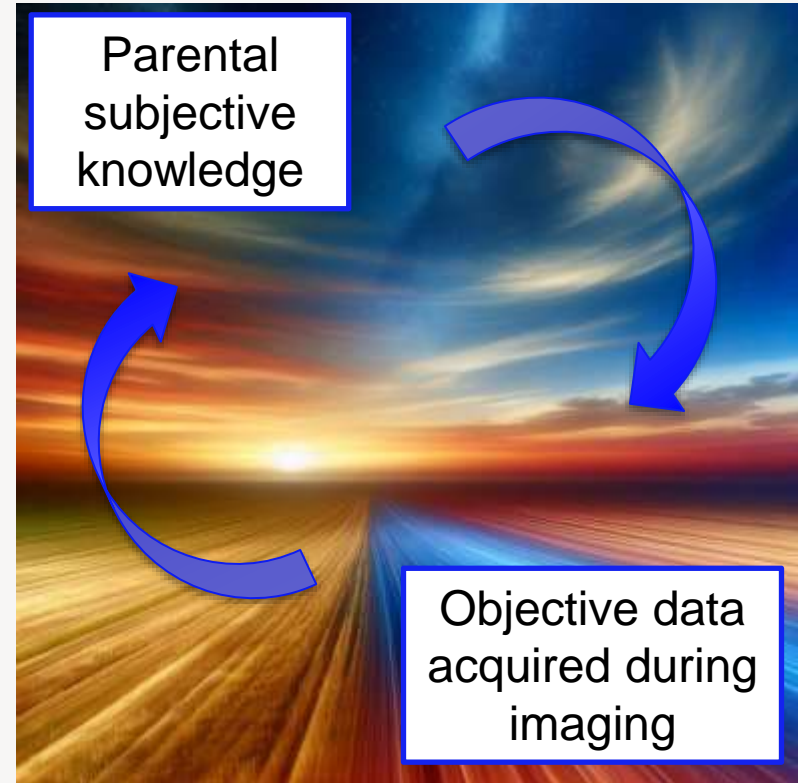
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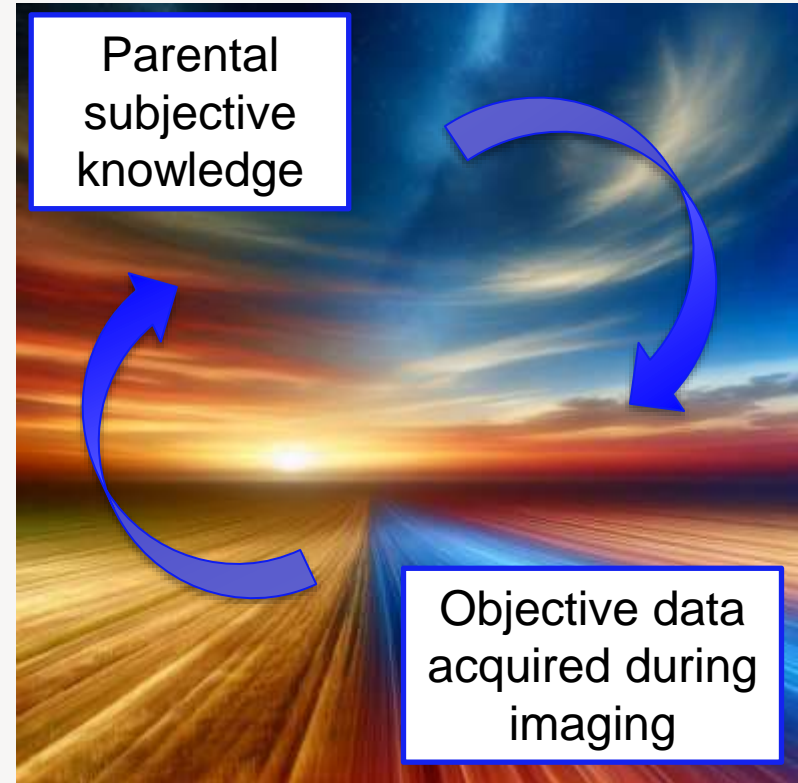
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Understanding the parents' world




**Is there
anything you
want to tell me
before we start
the scan?**




**Have you seen
everything you
wanted to see?**

Understanding the parents' world



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Summary

Imaging professionals who facilitate parent-centred antenatal imaging experiences are essential to support parent-fetal bonding



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Acknowledgements

Thank you to the parents and sonographers who participated in this research and shared their experiences



Dr Daniel Cromb



Ms Alison Smith



Prof Gill Harrison



Prof Mary Rutherford



Prof Susan Ayers



Dr Christina Malamateniou



CRRAG @ City St George's

- Weekly research clinic
- Monthly webinars
- Termly seminars

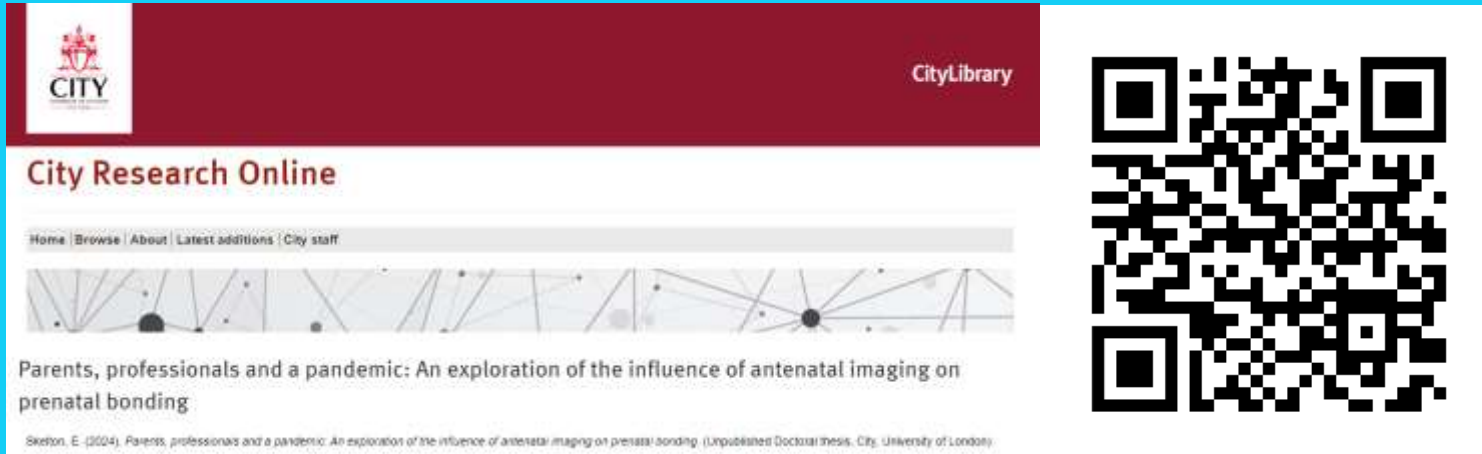
- Associate membership opportunities - please get in touch!

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Thank you for listening



The screenshot shows the City Research Online website interface. At the top left is the City University of London logo. At the top right is the 'CityLibrary' logo. Below the header is the title 'City Research Online'. A navigation bar contains links for 'Home', 'Browse', 'About', 'Latest additions', and 'City staff'. A decorative banner with a network diagram is visible. The main content area features the title 'Parents, professionals and a pandemic: An exploration of the influence of antenatal imaging on prenatal bonding' and a QR code to the right. Below the title is a small text snippet: 'Skelton, E. (2024). Parents, professionals and a pandemic: An exploration of the influence of antenatal imaging on prenatal bonding. (Unpublished Doctoral thesis, City, University of London)'.

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