


Maternity research priorities in country Western Australia: a Delphi study

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ABSTRACT

Objective. Health research priorities are commonly identified and resourced by strategic leaders. The importance of recognising the expertise of clinician-researchers is being prioritised by a national funding shift towards applied research. There is a dearth of evidence regarding research priorities for maternity care in rural and remote health in Australia. This study aimed to develop an evidence-based consensus of maternity research priorities in regional, rural, and remote areas of Australia's largest rural health service (by land area) in Western Australia. **Methods.** A three-phased Delphi method was selected to achieve an interdisciplinary, evidence-based consensus on maternity research priorities within Western Australian Country Health Service. **Results.** Across three study phases, 432 participants responded. Representation was from seven regions and all stakeholder roles within the regions. Phase 1 included 173 responses yielding 53 concepts categorised under five domains. Phase 2 involved 161 participants who prioritised concepts under domains of (i) workforce and education; (ii) health equity; (iii) Aboriginal health; (iv) logistics and health systems; and (v) clinical. Phase 3 included 96 participants revealing 15 maternity research priorities with the top four ranked concepts: 'recruitment and retention of staff'; 'care for women and families with vulnerabilities', 'models of care offering continuity' and 'systems efficiencies'. **Conclusions.** The novel evidence provided in this study, in conjunction with a strong consensus on research priorities and an interdisciplinary approach, strengthens the findings of this study and amplifies the mandate of action without delay.

Keywords: interprofessional, maternity, perinatal, priorities, regional, remote, research, rural.

Introduction

Maternity care in rural and remote areas presents many challenges and unique opportunities for innovation. Pressure to sustain services and improve safety of maternity care in rural Australia has led to creative solutions, including novel adaptations of continuity of care models, innovations in telehealth and student clinical placements.^{1,2} Knowing what is most relevant to clinicians is key to focusing on the correct challenges and solutions.

Traditionally, research priorities are driven by researcher interests, funding opportunities and limited consumer feedback. The Western Australian County Health Service (WACHS) created a research and innovation strategy³ to outline how WACHS focuses and invests in research specific priorities. Collaborative research undertaken by midwifery academics and clinicians has been recommended as one strategy for generating clinically meaningful research.⁴ Integrating clinical staff into research planning lays the groundwork for using clinical expertise to guide research investment. In Australia, clinicians have been invited to guide the development of priorities for agendas in clinical practice, workforce and research. Examples include ascertaining indicators of quality paediatric nursing care,⁵

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prioritising midwifery workplace needs,⁶ and highlighting research priorities for gynaecology nurses⁷ and neonatal nurses.⁸

Focusing on demand-driven research also elicits buy-in from clinical stakeholders when research projects are launched. Demand driven and locally led research strengthens local capacities and institutions.⁹ This research is recognised as important to address the evidence-translation gap in health.¹⁰ To address the gap in knowledge, the aim of this study was to identify the research priorities of maternity care professionals employed by WACHS in country Western Australia (WA).

Methods and results

A Delphi method was selected. The Delphi method derives new knowledge with a structured, consensus-driven identification of priorities via the scientific method. Delphi studies are typically conducted over two to three phases with non-probability, purposive sampling of recognised topic experts who have capacity to implement findings given their recognised expertise.^{11,12}

The setting for this research is WACHS, which provides publicly funded health care to non-metropolitan areas of WA and accounts for more than a third of the total land mass of Australia. Divided into seven regions, there are a variety of models and settings of maternity care from large regional hospitals through to outreach visiting maternity services in remote communities. Care is provided often in multi-disciplinary team including endorsed midwives, midwifery group practices, GP obstetricians and specialists.¹³

Providing care over such a large geographical area poses logistical challenges for many aspects of the system, necessitating innovative thinking and implementing new health practices. Data for this study were collected between November 2021 and April 2022. During the first two phases of the study, there were low to no community cases of COVID-19, with a hard border preventing travel into or out of WA without government approval. In the third and final round, community cases of COVID-19 had risen with increased clinical demand and staff furlough affecting maternity services.

We invited participation from all WACHS-employed health professionals registered with the Australian Health Practitioner Regulatory Authority and staff employed as Aboriginal Regional Health Consultants who provide maternity care or leadership. Exclusion criteria were those not providing maternity care, or not employed by WACHS. Online survey platform Qualtrics (Qualtrics XM, Provo, UT) was used to host the surveys in each phase. Invitations were sent via official health email addresses and the study was promoted through maternity managers and leadership groups to raise the awareness and profile of the study. There are no methodological requirements for calculating sample size for Delphi studies. A systematic review of Delphi methodology reports a range of three participants up to 400 with a recognition of waning participation with higher numbers.¹² A total of 432 participants were recruited in this WA study who contributed over the three phases. The total possible sample was approximately 400 staff, accounting for those on extended leave, or absence preventing access to work emails at the time. A participant information form was embedded in the survey front matter to enable provision of informed consent to participate. Completion of the survey was regarded as informed consent.

Development of the survey tools for each round was undertaken by a stakeholder reference group (SRG) consisting of the project lead, clinical leads from the professions of midwifery, obstetrics and Aboriginal health and two midwives with academic and research expertise in Delphi studies. Tools collected basic demographic data and relevant research priority data. Tools were piloted with five participants before each phase. Minor modifications to phrasing and question order were suggested and adopted. Pilot results were deleted prior to recruitment for each phase. The Phase 1 survey asked one open-ended question which yielded results for the second and third phases (Fig. 1).

The Delphi methodology scaffolds a step-wise process that necessarily integrates data collection, analysis and results of each phase to advise the next. As such, the data collection, analysis and results are presented in this way for clarity which supports rigour.¹² Out of the more than 400 staff that were contacted to complete the study (350 midwives, 60 doctors, 35 Aboriginal health workers); 175 completed the first phase of data collection, 161 the second phase and 96 the third.

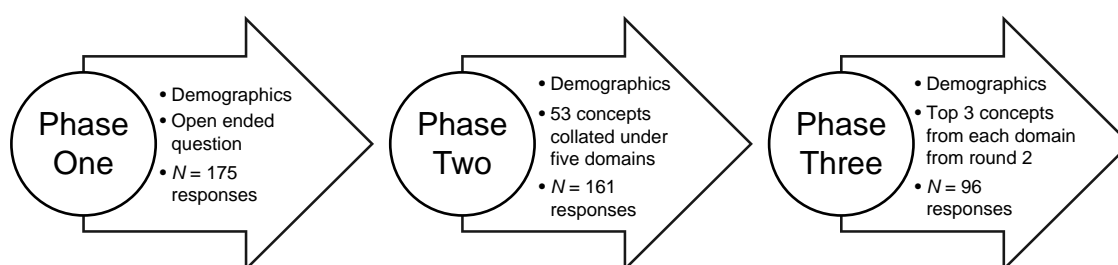


Fig. 1. Three phases of the Delphi study.

The main discipline represented was midwifery (P1: 58%, P2: 72%, P3: 63%) followed by medicine/obstetrics. Although there were consistent recruitment efforts, limited Aboriginal health workers responded (P1: 9, P2: 1, P3: 4). Most staff who answered worked in clinical care (73–76% all phases). Reflective of the workforce, just under 90% of respondents reported to be female, although 15.6% of Phase 1 respondents did not choose gender. The highest proportion of respondents had worked less than 5 years at WACHS (P1: 45%, P2: 36%, P3: 44%) but years of experience working in maternity care was evenly distributed. In the first two phases there were fewer staff who had worked in other WACHS regions outside of their current region but it was comparable in the last phase. The most represented region was the Midwest in Phase 1 and the Southwest in Phase 2 and 3. The least represented regions were the Pilbara and the Goldfields.

Ethics approval

Western Australian Country Health Service Human Research Ethics Committee has granted approval for the research to be done (RGS0000004824). This research was undertaken with appropriate informed consent of participants.

Phase 1

The Phase 1 survey tool consisted of basic demographic data questions such as years of experience and length of service in WACHS (Table 1). Participants were then asked to respond to an open-ended question 'Considering the type of work that you do and where you work, what are some of the key issues you encounter in your work that might be addressed through future research undertaken in WACHS?' A total of 189 participants responded to the Phase 1 survey, 14 did not progress past the demographic questions. Entries with no response to the open-ended question were removed, leaving 175 responses for analysis (Table 1). Results from Phase 1 yielded over 200 individual topics. Thematic analysis supported the categorisation of topics into 53 core concepts which were grouped into five overarching domains: Clinical, Aboriginal health, Workforce and Education, Logistics and Health Systems and Health Equity. The analysis was performed individually and brought to a stakeholder meeting, which adopted a consensus approach to arrive at the 53 agreed core concepts grouped under one of the domains. Discrepancies were addressed by returning to the raw data, counting concepts and group consensus.

Phase 2

The Phase 2 survey tool consisted of the same demographic questions (Table 1) and then presented the 53 concepts

under each of the domains (Table 2). Participants were asked to rank the importance of the concepts under each domain. For example, under the domain 'clinical', 11 concepts were extracted and participants had to rank the concepts from 1 to 11 according to their perceived importance with 1 being most important and 11 being least important. The remaining concepts under each domain were ranked in a similar manner with Aboriginal Health (8 concepts), Workforce and Education (11 concepts), Logistics and Health Systems (12 concepts) and Health Equity (11 concepts). This resulted in a ranked priority group under each domain (Table 2). A total of 198 individuals participated in the survey. A total of 37 did not complete the demographic section and did not progress to the concept ranking, resulting in 161 complete responses for analysis. Descriptive statistics reporting frequency data (mean, median, mode and standard deviation) were undertaken using Statistical Package for the Social Sciences (SPSS v 26). The results under each domain are presented in Table 2.

Phase 3

Phase 3 was conducted through the final survey tool with demographic questions (Table 1) and the top three ranked concepts under the domains. The decision to present the top three concepts was made by consensus in the SRG and was based on a pragmatic understanding of the potential for survey fatigue, peak clinical demand during the COVID-19 pandemic and resourcing available to address more than 15 priorities. A total of 122 staff commenced the final survey, 96 complete responses were received. The 15 concepts were presented with their domain name in brackets. Participants then prioritised individual research concepts regardless of their domain (Table 3). From this final ranking, the top five research concepts were ranked as (1) recruitment and retention of staff; (2) care for women and families with vulnerabilities (Aboriginal Health); (3) models of care-offering continuity of care; (4) systems efficiencies i.e. removing unnecessary paperwork; and (5) midwifery models, continuity of care, innovations. Finally, there was interest from within the SRG about the response to this priority by different professional groups. The two main professional groups who responded to the Phase 3 survey were midwives (62.5%) and doctors (24%). There was synergy in the ranking of the top concept of recruitment and retention of staff (Workforce and education) for both professions.

Discussion

To our knowledge, this is the first ever systematic and scientific consensus of its kind using a Delphi method to report research priorities for rural and remote maternity care in the world. The unique experience of providing care

Table 1. Participant demographic information for three phases.

	Phase 1 N = 175 (%) ^E	Phase 2 N = 161 (%) ^E	Phase 3 N = 96 (%) ^E
Main discipline			
Aboriginal health worker	9 (5.2%)	1 (0.6%)	4 (4.2%)
Medicine/obstetrics	32 (18.5%)	28 (17.5%)	23 (24.0%)
Midwifery	100 (57.8%)	115 (71.9%)	60 (62.5%)
Child health nurse	23 (13.3%)	9 (5.6%)	6 (6.3%)
General registered nurse	9 (5.2%)	6 (3.8%)	3 (3.1%)
Remote area registered nurse	0	1 (0.6%)	0
Missing ^F	2	1	0
Main type of work			
Direct clinical care	103 (73.0%)	119 (76.3%)	71 (74.0%)
Clinical management	23 (16.3%)	28 (17.9%)	14 (14.6%)
Executive management/leadership	15 (10.6%)	9 (5.8%)	11 (11.5%)
Missing ^F	34	5	0
Current registration/credentials			
Midwife	97	124	67
Registered nurse	98	107	56
Aboriginal health worker	5	1	2
Endorsed midwife	6	12	4
Nurse practitioner	1	1	0
Child health nurse	21	16	14
FRACGP ^A	10	15	14
DRANZCOG ^B	17	20	16
FRANZCOG ^C	6	8	5
FACRRM ^D	7	8	5
Other	9	4	2
Gender			
Male	13 (8.9%)	19 (11.9%)	9 (9.4%)
Female	133 (91.1%)	139 (86.9%)	86 (89.6%)
Missing ^F	29	3	1
Years experience working in maternity care			
Less than 1 – up to 5	26 (18.1%)	27 (17.1%)	19 (19.8%)
6–10	20 (13.9%)	25 (15.8%)	21 (21.9%)
11–15	24 (16.7%)	32 (20.3%)	14 (14.6%)
16–20	25 (17.4%)	22 (13.9%)	11 (11.5%)
21–25	18 (12.5%)	13 (8.2%)	17 (17.7%)
26–30	15 (10.4%)	13 (8.2%)	7 (7.3%)
>30	16 (11.1%)	26 (16.5%)	7 (7.3%)
Missing ^F	31	3	0

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Table 1. (Continued)

	Phase 1 N = 175 (%) ^E	Phase 2 N = 161 (%) ^E	Phase 3 N = 96 (%) ^E
Years worked in WA Country Health Service (WACHS)			
Less than 1 – up to 5	65 (44.5%)	57 (35.8%)	41 (43.6%)
6–10	24 (16.4%)	34 (21.4%)	20 (21.3%)
11–15	16 (11.0%)	27 (17.0%)	11 (11.7%)
16–20	15 (10.3%)	18 (11.3%)	5 (5.3%)
21–25	11 (7.5%)	14 (8.8%)	11 (11.7%)
26–30	9 (6.2%)	6 (3.8%)	5 (5.3%)
>30	6 (4.1%)	3 (1.9%)	1 (1.1%)
Missing ^F	29	2	2
Worked in WACHS regions outside current location			
Yes	60 (41.1%)	74 (46.5%)	48 (50.0%)
No	86 (58.9%)	85 (53.5%)	48 (50.0%)
Missing ^F	29	2	0
Region currently work in			
Kimberley	35 (24.8%)	18 (11.5%)	19 (21.3%)
Pilbara	8 (5.7%)	8 (5.1%)	9 (10.1%)
Midwest/Wheatbelt	40 (28.3%)	31 (19.9%)	16 (18.0%)
Goldfields	8 (5.7%)	19 (12.2%)	3 (3.4%)
Great Southern	15 (10.6%)	31 (19.9%)	10 (11.2%)
South West	35 (24.8%)	49 (31.4%)	32 (36.0%)
Missing ^F	34	5	7

^AFellow of the Royal Australian College of General Practitioners, a general practitioner.

^BDiplomate of the Royal Australian and New Zealand College of Obstetrician and Gynaecologists, a general practitioner obstetrician.

^CFellow of the Royal Australian and New Zealand College of Obstetrician and Gynaecologists, a specialist obstetrician.

^DFellow of the Australian College of Rural and Remote Medicine, a rural generalist/general practitioner.

^EValid percent.

^FMissing values shown for transparency.

outside of the metropolitan context warrants exploration and prioritisation by those living, working and directly involved in the delivery of professional maternity care. Similarly, the identification of research priorities by this expert group is essential to ensure that demand driven research is resourced and based on an interdisciplinary, evidence-based consensus.

Research in regional and remote areas is a focus of the national framework for rural and remote health to improve health service design and delivery.¹⁴ There is a paucity of evidence regarding research priorities for rural and remote maternity care globally. It is anticipated that the priorities identified in our study may be useful and transferable to clinician-researchers in rural and remote locations in similarly resourced settings. This international benchmarking provides useful data to support potential national and international collaborations on demand-driven, translational research.

Such collaborations are necessary to meet the sustainability and impact requirements of program and research funders who value multidisciplinary, multi-centre research for its utility to increase rapid evidence translation improving outcomes to health consumers.^{10,15} The high rates of participation by individuals involved in direct clinical care in this research is noteworthy and a significant study strength demonstrating the investment and interest in research from those on the front line of rural health service provision.

Research priorities identified may be useful for strategic planning, resourcing and implementation of demand driven research in this rural health service. The local and national priority to raise research capacity within clinicians is supported in the process of this study which included primary clinicians in the SRG who shaped the process from planning to implementation^{1,10,16,17} and provides legitimate optimism

Table 2. Ranked importance of research concepts under each domain in Phase 2.

(Domains) and concepts	Mean	Median	Mode	s.d.
(Clinical)				
1. Induction of labour practice	4.53	4.00	3	2.70
2. Evaluating existing clinical interventions	4.81	4.00	2	2.98
3. Perinatal mental health	4.88	5.00	3	2.72
4. Approaches to informed consent	5.29	5.00	2	3.21
5. Multi-Disciplinary Team collaboration	5.40	5.00	1	3.25
6. Non-standard clinical management (vaginal breech, VBAC, Third Stage)	5.56	6.00	6	2.83
7. Gestational diabetes mellitus screening	6.78	7.00	8	2.69
8. Impacts K2 implementation	6.88	8.00	11	3.35
9. Waterbirth—provision/access	7.08	7.00	11	3.09
10. Access to contraception/sexual and reproductive health care	7.09	7.00	11	3.17
11. Antibiotic use/Group B Strep screening	7.70	8.00	10	2.75
(Aboriginal Health)				
1. Enhancing access and engagement	2.78	2.00	1	1.75
2. Provision of culturally safe/secure care	3.19	3.00	2	1.68
3. Models of Care – offering continuity of care	3.41	3.00	4	1.74
4. Efforts to promote Birthing on Country	4.52	5.00	6	2.25
5. Workforce – more of existing and additional models of Aboriginal Health Liaison, Aboriginal Maternal Infant Care worker	4.72	5.00	5	1.93
6. Preterm birth prevention in culturally secure ways	5.10	6.00	6	1.93
7. Consumer voice – how to promote culturally safe/secure care	5.49	6.00	8	2.52
8. Access to culturally secure breastfeeding support	6.79	7.00	8	1.39
(Workforce and Education)				
1. Recruitment and retention of staff	2.74	2.00	1	2.03
2. Achievement and maintenance of clinical skills	3.26	2.00	2	2.25
3. Recognition and enabling of maternity professionals' scope of practice	4.50	4.00	3	2.33
4. Workforce satisfaction	4.52	4.00	4	2.13
5. All workforce practicing evidence based care	6.25	6.00	9	3.13
6. Strategies to improve workplace culture	6.43	7.00	7	2.80
7. Breastfeeding education – addressing inconsistencies	7.05	7.00	7	2.28
8. Maternity professional leadership – mentoring	7.44	8.00	8	2.41
9. Innovative workforce strategies; registered midwives only, GPO training, safe staffing	7.70	8.00	11	3.23
10. Waterbirth credentialing/competency using remote technology/simulation education	7.93	8.00	11	2.58
11. Vicarious trauma on health professionals	8.19	10.00	10	2.88
(Logistics and health systems)				
1. Midwifery models, continuity of care, innovations	4.28	3.00	1	3.27
2. Systems efficiencies (i.e. removing unnecessary paperwork)	4.71	4.00	1	3.33
3. Emergency transfers	5.13	5.00	7	2.62
4. Telehealth	5.16	5.00	4	3.00

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Table 2. (Continued)

(Domains) and concepts	Mean	Median	Mode	s.d.
5. Communication/handover between services	5.23	5.00	4	2.64
6. Digital technology and approaches for virtual care	6.34	6.00	5	2.90
7. Routine transfers	7.14	7.00	8	2.70
8. Innovations in clinical service provision (i.e. Antenatal education online)	7.26	8.00	7	2.74
9. Multi-Disciplinary Team collaboration	7.31	7.00	12	4.04
10. Consumer voice – how to improve services	7.82	9.00	11	3.68
11. Review and provision of contemporary resources for assessment, provision	8.13	9.00	9	3.11
12. Review of suitability of current Patient Assisted Travel Scheme	9.48	11.00	12	2.86
(Health equity)				
1. Care of women and families with vulnerabilities	2.64	2.00	1	1.83
2. Alcohol and other drugs: cannabis, tobacco, alcohol	5.29	5.00	4	2.40
3. Family and Domestic Violence	5.32	5.00	7	2.54
4. Access to breastfeeding support	5.43	5.00	5	2.59
5. Foetal Alcohol Spectrum Disorder – prevention	5.71	5.00	5	2.63
6. Health promotion in early pregnancy	5.92	6.00	9	3.06
7. Access to multi-disciplinary care	5.94	6.00	6	2.71
8. Local accommodation around birthing time	6.18	5.00	11	3.81
9. Trauma informed care	6.89	8.00	8	2.89
10. Consumer voice – how to improve equity	8.07	10.00	11	3.40
11. Nutrition security and anaemia	8.61	9.00	10	2.37

about the ability to gain traction on real change without the usual evidence-translation gap.

The research concept ultimately prioritised by all participants was the recruitment and retention of staff. This adds evidence to the strategic priority identified by most health leaders including those within WACHS. Workforce shortages are a recognised issue globally and acutely felt in areas that are distant from regional and metropolitan infrastructure. Several reports indicate the urgent need to prioritise recruitment and retention of skilled professional workforce to service the needs of maternity populations living in rural and remote areas.^{1,18,19} Development of an applied research project in collaboration with WACHS leaders and clinicians to explore and evaluate innovations to address this concept is a priority.

The high participation rate and multidisciplinary nature of this research is a strength. The invitation extended to all health professionals who provide maternity care in WACHS has resulted in a comprehensive, evidence-based catalogue of research priorities. The inclusion of Aboriginal health workers has provided critical perspective given the recognised gaps in health outcomes between Aboriginal and non-Aboriginal Australians.²⁰ Despite the reported philosophical divergence between the professions of midwifery and

obstetrics, the congruence in identification of research priorities by discipline is noteworthy.²¹ One study limitation is its focus on the WA context. In addition, the influence of rising COVID-19 cases during Phase 3 may have impacted uptake in the final phases. Given the lack of any comparable data within Australia or around the world, the unique contribution of this study may be of interest in other similar settings.

Conclusion

The evidence provided has utility for supporting strategic planning of maternity research and operational agendas and activities within local, regional and national settings. Consideration for a strategic approach to quality improvement projects could also be derived. This evidence provides data for key strategic positions such as the Rural Health Commissioner and the Commonwealth and Jurisdictional Chiefs, as well as planning for workforce support offered through professional peaks such as Australian College of Midwives and Royal Australian College of Obstetricians and Gynaecologists. The comprehensive description of the research setting and demographic data enable readers to assess the transferability of findings to other similar contexts.

Table 3. Final ranking of perceived importance of concepts in Phase 3.

Concept and (domain)	Mean	Median	Mode	s.d.
1. Recruitment and retention of staff (Workforce and education)	6.14	5.5	1	4.12
2. Care for women and families with vulnerabilities (Health equity)	6.85	7.0	8	3.78
3. Models of care – offering continuity of care (Aboriginal health)	7.14	6.5	2 ^A	4.12
4. Systems efficiencies (i.e. removing unnecessary paperwork) (Logistics and health systems)	7.32	6.0	5	4.46
5. Midwifery models, continuity of care, innovations (Logistics and health systems)	7.34	7.0	1	4.86
6. Recognition and enabling of maternity professionals scope of practice (Workforce and education)	7.42	7.0	6 ^A	4.12
7. Provision of culturally safe/secure care (Aboriginal health)	7.61	7.0	3	4.21
8. Achievement and maintenance of clinical skills (Workforce and education)	7.96	8.0	3 ^A	4.19
9. Enhancing access and engagement (Aboriginal health)	8.08	9.0	12	3.95
10. Family and domestic violence (Health equity)	8.28	8.0	8	3.44
11. Evaluating existing clinical interventions (Clinical)	8.48	9.0	4 ^A	4.52
12. Perinatal mental health (Clinical)	8.48	9.0	5	3.94
13. Induction of labour (Clinical)	9.07	10.0	15	4.72
14. Emergency transfers (Logistics and health systems)	9.60	11.00	15	4.57
15. Alcohol and other drugs: cannabis, tobacco, alcohol (Health equity)	10.22	10.5	13 ^A	3.58

^AMultiple modes exist. Smallest value shown.

Authorship

All authors meet the ICMJE criteria for authorship.

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