



BMJ Open Preferences of Australian healthcare providers regarding education on long-term health after hypertensive disorders of pregnancy: a qualitative study

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ABSTRACT

Objectives To explore Australian healthcare providers' (HCPs') preferred content, format and access to education regarding long-term health after hypertensive disorder of pregnancy (HDP), in order to guide the development of education programmes.

Design and setting A qualitative study using a framework analysis was undertaken. Registered HCP who were practising in Australia and previously completed a survey about long-term health after HDP were invited to participate.

Participants Twenty HCP were interviewed, including midwives, specialist obstetrician/gynaecologists, general practitioners with a diploma in obstetrics and gynaecology, and cardiologists.

Primary and secondary outcome measures Exploration of preferred content, format and distribution of educational material post-HDP.

Results Twenty HCP were interviewed in April to May 2020. Four main categories were identified. 'Obtaining evidence-based information for own learning' addressing own learning with preference for multi-disciplinary education, preferably endorsed or facilitated by professional organisations. 'Optimising the referral process from hospital to community health services' was about the need for structured long-term follow-up to transition from hospital to community health and align with HDP guidelines. 'Facilitating women's health literacy' addressed the need for evidence-based, print or web-based material to assist risk discussions with women. 'Seizing educational opportunities' addressed the responsibility of all HCP to identify education opportunities to initiate key health discussions with women.

Conclusion(s) HCP provided ideas on content, format and access of education regarding long-term health post-HDP within the parameters of the Australian healthcare context. This evidence will guide educational developments for HCP on post-HDP health to ensure they can better care for women and families.

INTRODUCTION

Hypertensive disorders of pregnancy (HDPs), including pre-existing or chronic hypertension (CH), gestational hypertension (GH) and pre-eclampsia (PE), affect 5%–10% of

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first study to explore educational material preferences of Australian healthcare providers (HCPs) about health after hypertensive disorder of pregnancy (HDP).
- ⇒ This study qualitatively explores preferences on post-HDP education for HCP that will guide future education programmes.
- ⇒ Participants included a range of context-relevant HCP, representing the key stakeholders in this space.
- ⇒ Despite potential participant bias from an overall highly engaged group of HCP, education suggestions made will be relevant to the broader HCP community.

pregnant women globally.¹ HDPs are among the leading causes of maternal and perinatal death, with PE leading to over 50 000 maternal and 400 000 perinatal deaths globally each year.^{2–3} HDPs are also associated with significant, ongoing risks of maternal disease. Ischaemic heart disease and stroke, two leading causes of death in women globally,⁴ are 2–2.5 times higher after PE versus normotensive pregnancies,^{5–7} and risks of type 2 diabetes and renal disease are also increased.⁸ Risks are present within 5–10 years of an affected pregnancy^{5–9} and continue lifelong.⁷ GH is associated with similar long-term cardiovascular sequelae,^{7–11} while CH is an established cardiovascular disease (CVD) risk factor.

Prior studies have mostly found that healthcare providers (HCPs) have poor knowledge of women's increased CVD risks after HDP.¹³ In general, obstetricians are aware, however, they do not always communicate this knowledge to women or other HCP. A recent Australian survey found moderate HCP knowledge, but gaps in knowledge regarding post-GH risk versus PE, how soon health risks increase, and poor knowledge of some specific risks, for example, diabetes.¹⁴

Women's postnatal follow-up engagement is also often limited for reasons including family and caregiving responsibilities, lack of knowledge, and lack of appropriate, and accessible follow-up.^{15–18} Fragmented models of care and information systems make the transition from hospital-based to community-based care an additional system-level barrier.¹⁹ HCP awareness of post-HDP risks, along with facilitation of knowledge transmission and the referral process, potentially provides a unique opportunity to plan future screening and preventative health recommendations.

International societies such as the American Heart Association and the International Society for the Study of Hypertension in Pregnancy (ISSHP), recommend that women and HCPs are informed about HDP and later CVD. It is recommended that HCPs ask women about PE/HDP when assessing women for CVD risk.²⁰ In Australia, Obstetric Medicine guidelines carry similar recommendations but not yet CVD risk screening guidelines.^{21–22} Recommendations include to review women at 3 months post partum and attend regular follow-up with a general practitioner (GP) to monitor blood pressure, fasting lipids and blood sugar.²³ Recommendations emphasise healthy lifestyle adoption, maintenance of an ideal weight and regular aerobic exercise.^{22–23} However, implementation of these guidelines, at least in Australia, appears lacking.¹⁴

It is now necessary to expand awareness and knowledge among HCP regarding post-HDP implications and health recommendations. It is not clear, however, how HCP would prefer to learn about this topic and how they perceive the transmission of such information is best undertaken. The aim of the study was therefore to (1) explore HCP preferred content, format and access to education, as well as (2) explore their perceived facilitators and barriers to knowledge acquisition and transmission regarding long-term health after HDP.

METHOD

Design

A qualitative study using a framework analysis was undertaken. Framework analysis is an approach to facilitate interpretation of qualitative data^{24–25} and is increasingly used across multiple disciplines, including health.^{25–26} The framework offers a flexible, pragmatic and thorough approach to data analysis.²⁷

Patient and public involvement

This study focused on HCP feedback, therefore patients were not involved in the study addressed in this manuscript.

Participant recruitment

Participation was open to HCP who had taken part in a recent survey assessing HCP knowledge after HDP.¹⁴ These included midwives, specialist obstetrician/gynaecologists, GPs with a diploma in obstetrics and gynaecology,

and cardiologists. Participants left contact details at the end of the survey if interested in follow-up interviews. Of the 492 survey participants, 67 left their details and were contacted in March 2020 via email. Twenty (30%) consented to interview, fourteen after the initial email, with a further six HCP recruited after a reminder email was sent to call for further participants, in particular GPs and female obstetricians, to establish a more representative sample. All participants were English-speaking HCP, registered to practice in Australia.

Data collection

Data were collected through semi-structured interviews, all conducted by HR in April and May 2020. Nineteen interviews were audio-recorded with consent and later transcribed. One interview was conducted via email due to remote participant location, with questions, responses and follow-up clarifying questions communicated via email, and transcript creation based on the emailed responses. All interviews commenced with the researcher introducing herself and providing a brief summary of the findings of the preceding survey study.¹⁴ This assisted in the contextualisation of the questions that followed and provided a transition from the survey to the interview. HCP were asked about preferences and priorities concerning knowledge acquisition and transmission around long-term health after HDP (online supplemental table 1). The questions addressed the research aims through inquiry about the type of content, format of and access to education. In addition, participants were asked to identify any barriers and/or facilitators relating to acquisition and transmission of relevant knowledge.

Telephone interviews were chosen as they offered greater flexibility in interview scheduling, given the participants were geographically diverse, and also reduced costs and increased convenience.²⁸ As COVID-19 pandemic-related travel and contact restrictions were in place, this form of method was practical and appropriate. Phone interviews are increasingly accepted as providing a rich data source for qualitative analysis.²⁹

Data analysis

Interviews (n=19) were transcribed verbatim, then all 20 were analysed qualitatively using framework analysis.^{24–25} Data analysis was performed independently by two authors (HR, VM). The authors familiarised themselves with the data by reading and re-reading interview transcripts, taking note of preliminary themes. Participants were allocated codes based on the participant's discipline. To increase confidentiality, identifiable features including locations were removed. Both authors coded the data and established the initial themes. The first author abstracted the content further, prior to sharing these for discussion and debate between other authors.

A matrix (Excel V.16.16.25 for Macintosh)³⁰ was used to allocate themes to HCP quotes. A thematic framework was devised from the data and synthesis enabled early data abstraction in the analytic process. Data were

then reassembled from different areas of the interviews and organised into categories. Descriptive and explanatory accounts were developed during the interpretative process and relationships between categories were constructed^{24 25 31} (online supplemental table 2).

Saturation was achieved after 14 interviews, however, a reminder email was sent to call for further participants as potential sampling bias was noted. The sample mainly included midwives, obstetricians and a cardiologist but we also wanted to hear from GPs to establish a proportionally similar sample to the preceding survey. Further interviews confirmed that saturation was achieved at 14 interviews and that the suggestions expressed by all four professions were similar.

The authors include female HCP and a consumer. As a group we acknowledge our own personal values and positions, including our work within the Australian healthcare system and as recipients of maternity care, may impact on the research process and type of data collected.³²

RESULTS

The 20 participants consisted of 11 midwives (55%), 5 specialist obstetricians/gynaecologists (25%), 3 GPs with obstetrics/gynaecology diploma (15%) and 1 cardiologist (5%). Similar proportions of participants belonging to a given profession took part in the survey and interviews. Fourteen participants were female (70%) and six were male (30%). The HCP worked across six Australian States and Territories, in a mixture of regional and metropolitan practice, public and/or private sectors, and clinical focus versus a more academic focus (online supplemental table 3).

Participants were not asked, nor did they disclose, where they were located at the time of the interview, however, they chose an interview time that suited them. There was no indication that participants were in a hurry, disturbed or interrupted during the interviews and there was no background noise causing a distraction. There was no remuneration or incentives offered to participants. Interview length was on average 20 min.

Participants were asked about their preferred content, format of and access to educational materials to assist their knowledge of long-term health after HDP. The four main categories identified, in no particular order of importance, were 'Obtaining evidence-based information for own learning', 'Optimising the referral process from hospital to community health services', 'Facilitating women's health literacy' and 'Seizing educational opportunities'.

Obtaining evidence-based information for own learning

HCP wanted evidence-based information. Defining HDP, and clarifying signs and symptoms of various HDP conditions, was important as was explaining the link between HDP and increased CVD and metabolic disorders in women and their children. Evidence-based information

regarding follow-up and healthcare planning for women and their children post-HDP was a popular request.

HCP wanted educational materials to be supported by relevant and recent evidence and simple statistics. Access to these resources would provide the HCP with the option to review the evidence themselves and further expand their knowledge on the topic. Including best-practice guidelines for women post-HDP, and more visible promotion of guidelines that already contain post-HDP advice (eg, ISSHP and The Society of Obstetric Medicine of Australia and New Zealand),^{22 33} in a more summative manner, was suggested by most participants as they were uncertain of current medium to long-term follow-up recommendations and health planning.

I wouldn't know really what to do other than take the blood pressure, maybe ask for a renal function and that's it (Specialist obstetrician)

I wouldn't know what the follow-up would actually look like for them. What is the recommendation? (Midwife)

If it was presented as advances or changes in protocols, that would be useful (GP)

Participants expressed a number of preferences regarding the format of educational resources. Face-to-face, interdisciplinary education was preferred by most to promote mutual, professional respect and a team approach. Education delivered to a multi-disciplinary group using different approaches was suggested.

It would be good if it was presented by a multi-disciplinary team of GPs, obstetricians, cardiologists and midwives. Because presenting it from a group perspective like that would make it more useful to all of us I think (GP)

If members of the team get along together and respect each other's area of expertise, hence trust each other to impart the correct knowledge to patients. It is important to listen to other professions, respecting other professions, having trust in other professions (Specialist obstetrician)

Web-based learning was a popular alternative when face-to-face learning was unavailable, for example, dedicated, topic specific website access to evidence-based information and links. Conferences with interprofessional participation, professional education evenings and journal articles were also considered helpful. Interprofessional podcasts were also suggested, where a topical series with representation of the various specialty perspectives could be broadcast. Smartphone applications could be another convenient way to access information.

Most participants stated education should be produced for, and directed at all HCP as a collective, rather than profession or scope specific. This would enable uniform learning among multi-disciplinary teams and then the same information given to women.

In essence if working with a multi-disciplinary team, say midwives and doctors it is important that you are all 'singing from the same hymn sheet' (Specialist obstetrician)

Professional colleges and recognised health bodies and societies were deemed trustworthy distributors of information. Endorsement of these was also seen as acceptable if an independent website was established. HCP mentioned that obtaining 'Continuing Professional Development' points for any organised education would be an attractive bonus.

A further suggestion was a yearly awareness day where various stakeholders could provide a platform for educational campaigns, re-enforcing the existing evidence and potentially enhanced by perspectives from women with a lived experience of HDP.

It is important to try to push the information out. I think it is important to have enough people saying 'Hey, this is a big deal' or if you have multiple Societies coming out and saying, 'It's a big deal' (Cardiologist)

Optimising the referral process from hospital to community health services

HCP felt postpartum referral/transition from hospital to community health could be optimised to improve communication about risk factors and recommended follow-up. This includes referral letters from the specialist or maternity service to the community HCP; including informing about the woman's HDP history, her risk profile and recommended follow-up. It was suggested that referrals should also include the information the woman has received thus far, for example:

... ensuring decent clinical handover to her GP, so that when she went back to the primary care setting the GP understood that the patient had preeclampsia. What we had warned her about and that she would need to keep her blood pressure under regular surveillance. GPs normally look after things in the first three months of pregnancy. So, you just want to make sure that there was good clinical handover back into primary care, so that the woman and the GP had a shared understanding of what my concerns were and how her care should be programmed for next time (Specialist obstetrician)

HCP suggested that they often sourced learning from other HCP clinical documentation regarding recommended treatment or follow-up for women. A letter with instructions regarding the medium to long-term care of the woman post-HDP was suggested useful as keeping up to date with evolving specialty practices, especially as a GP, was considered a challenge.

If we got more clear instructions as to what to do next, we can't know everything. I don't think there's any harm having a referral template. It's a standard

thing that comes with every woman who's a diabetic, who's being seen by the specialist (GP)

Reminder systems sent to the women would help her to establish good health habits. Existing systems such as for Cervical Screening in Australia were mentioned as examples of efficient health reminder systems which may also work for women with HDP.

Facilitating women's health literacy

All participants wanted to transmit information to women post-HDP and facilitate women's health literacy. They wanted suitable, supportive materials that could be given to women or that women could be referred to online. Availability of targeted, evidence-based materials such as these could be time-saving and useful for HCP.

Other identified facilitators of knowledge transmission included continuity of care, reminder systems for timely follow-up of women, identifying opportunities where aspects of health could be addressed, and building women's self-advocacy for health. For some, continuity of care contributed to more effective information transmission as there was an established relationship and trust between the woman and the HCP.

In the long-term the women have formed that association, they're more comfortable with discussing certain issues. So that gives us an opportunity to look at their overall health. So, in that way, I think we are better placed (GP)

HCP stated that where women experienced psychological sequelae post-HDP, it was more challenging to constructively address long-term health concerns. Focus needed to first be directed to addressing women's mental health. Further challenges were the health beliefs held by women and their commitment to engage with and maintain suggested lifestyle changes.

Practices regarding the transmission of health information differed, including relaying information to women based on their assumed health literacy, using research, and tailoring the language and discussion. Most acknowledged it was their responsibility to adjust and adapt in order to relay the information in a language and context that the women can relate to and understand.

It depends on the woman and about her health literacy. If a woman was really interested in it and I thought that she'd be able to understand it, well then I'd usually give her some quite detailed information (Specialist obstetrician)

I usually give them a copy of the paper, and just say to them: 'Look, this is the actual literature, if you want to read it and this is what I've found and this is why it's really important, this is what underpins the basis of me seeing you today and the reason why I should be seeing you for a long time'. That's what I do for all my patients (Cardiologist)

HCP addressed the timing of risk discussions and the potential psychological effect of HDP on women's capacity to process information regarding their future health. Transitioning to parenthood in addition to HDP related, unexpected outcomes regarding pregnancy, birth or post partum was seen as potentially overwhelming for women, so planning a discussion about their long-term health risks needed to be appropriately timed.

Seizing educational opportunities

HCP felt they needed to raise targeted health discussions post-HDP; that is, they needed to be accountable to women. Some highlighted the importance of not 'passing the buck' regarding information transmission to women. It was deemed equally relevant for midwives as it was for obstetricians, cardiologists and GPs to have these discussions. One midwife explained that all HCP should find educational opportunities to address the relevant health topic, implications and ways of mitigating risk. Participants admitted that at times, assumptions may be made about what another HCP would or should discuss with women post-HDP, meaning women may miss out on important health information and opportunity to address modifiable risks in a timely manner.

It's everyone's business. So not saying, 'Oh, that's for the GP to talk about,' because they might not. Or, 'that's the obstetrician's job,' or 'the midwife should've done that. The child and family health nurses will do that.' And so if you have an opportunity to have that conversation and convey that information, then we're all working for the same purpose. So, if you have that opportunity, you find out that someone's got that history, you say, 'Oh, did you know? Has anyone spoken to you about this?' You know? (Midwife)

Some aspects of care or information transmission were out of the control of HCPs. These included women's attitude towards their own health, their general world view as well as their health literacy. Some perceived those with a family history of CVD to be more receptive to information.

Women's health literacy is certainly another important factor. The woman being open to such a discussion and able to absorb and reflect on the risks and discussions. The woman's view of medicine in general and how it affects her as a person can interfere with how she takes on information. Are there any other, outside, medical or non-medical influences that may alter her behaviour to be different to what you advise (Specialist obstetrician)

DISCUSSION

In this study, HCP expressed their preferred content, format of and access to, educational material relating to health after HDP. These preferences were illustrated via the four main categories identified: 'Obtaining

evidence-based information for own learning', 'Optimising the referral process from hospital to community health services', 'Facilitating women's health literacy' and 'Seizing educational opportunities'.

HCP supported the need for content to include targeted education about the link between HDP and increased risk of future disease for women and their children, the timing of risk onset and how to mitigate risks. They provided ideas on how to format and access education for HCP, within feasible parameters of the healthcare context. Suggestions to explore more structured referral and follow-up processes in the transition from hospital to community healthcare were also made. Most HCP were in favour of women-targeted, educational pamphlets or a centralised, reliable, web-based information source with printable documents they could share with women to support their risk discussion. The importance of seizing accountability and opportunity to share important post-HDP health information with women was highlighted by participants, rather than making assumptions that this will be attended by another HCP.

Since the first (2008) systematic review reporting on the link between HDP and CVD,³⁴ actioning education and awareness among HCP and women about post-HDP health has been suggested by both local²² and international guidelines.^{13 35-37} Participants in this study suggested increased visibility of existing guidelines, with some not aware they covered post-HDP health risks and screening. Availability and awareness of guidelines are associated with higher HCP knowledge regarding risk and recommended long-term follow-up.³⁸

Access to and awareness of guidelines impacts not only HCP awareness and risk discussion with women, it may also affect handover when women transition post partum from hospital back to community healthcare. Specialists, who are more likely to have post-HDP risk and recommended follow-up knowledge,¹³ may make assumptions regarding the knowledge of their community healthcare peers, and not clearly document recommended follow-up. Our study found HCP felt that detailed postpartum referrals were an important opportunity to educate peers. A template to assist with this process was supported, as was optimising referral processes via electronic health records and automated reminders.

Findings from previous studies³⁹ and from the wider study^{40 41} indicate that diagnosis and discussion of long-term health risk post-HDP may fall into the area of 'breaking bad news'. The impact of HDP diagnosis may be seen as an unexpected pregnancy and/or birth outcome. This may leave a significant, lasting impression on women and may negatively impact on how they feel about subsequent pregnancies, with some women unsure whether or not to pursue further pregnancies. An important element to consider when communicating about risk with women who have experienced HDP is the timing of risk and prevention discussions, as situational factors of being a new mother may alter when women are most receptive to follow-up. In a previously published study,⁴¹



three-quarters of the women preferred the risk discussion to occur in the first 6 months after birth. As well as being their preference, this also aligns with the potential benefits of early intervention and would allow for addressing knowledge gaps found in this study around how soon the risk rises after HDP. Addressing future risk early but not immediately is also supported by Brown *et al*¹⁶ of women after PE, where participants suggested that 6 months post partum was the timeframe where they felt they had transitioned into a more comfortable stage of parenting and were able to focus more on themselves again.

Integrated primary healthcare involves the coordination of healthcare, connecting care internally and with other, health and related services to assist people achieve best health outcomes.^{42–44} In Australia, primary healthcare services are administered at different government levels (state and federal) and funding arrangements (public and private), with little overarching policy or organisation, potentially impeding appropriate post-HDP primary care. Participants in our study, midwifery and medical, recognised the importance of collaborative relationships with primary care networks to adequately address follow-up and continuation of care for women post-HDP. Engaging with HCP regarding professional development opportunities in this health context, may align to similar findings from a recent study addressing primary HCP learning needs regarding perinatal mental health screening and referrals.⁴⁵ More efficient approaches to assessment, screening and comprehensive information about local referral options may result from targeted education among HCP in the post-HDP context.

The concept of shared responsibility of health and hence shared decision making was seen as important by HCP, consistent with other studies addressing disease prevention, screening and treatment.^{46–47} For this to occur, both parties need to have knowledge and work in partnership. Clinicians also felt that women needed to take responsibility to make follow-up appointments, attend them and action the advice provided by HCP.³⁷

HCP mentioned the importance of relaying information to the women as key to women's understanding and engagement in risk mitigation. They considered print or online information useful facilitators when discussing post-HDP health, both during consultation and to refer women to afterwards. This is in line with prior studies involving women after PE, who wanted information from their HCP and take-home materials for future reference.⁴⁸ Similar recommendations were made by Seely *et al*³⁶ where a tick list was developed for HCP for post-HDP discussion.

As part of the research team's broader work, we explored knowledge and knowledge gaps as well as education material preferences with women who had experienced HDP.⁴⁹ Knowledge about health post-HDP was overall quite similar between women and HCP.^{14–40} Overlap between women and HCP regarding preferred learning content and format was also evident, with both wanting more detailed information about long-term

health and modifiable risk factors. In addition, similar to HCP, women suggested counselling from their HCP should be complemented by detailed and evidence-based, print or web-based information to take home for future reference. Both groups also expressed that all HCP who may provide care to women with a history of HDP, should discuss post-HDP risk with women at any and all given occasions, and agreed on the need for more structured postnatal follow-up to close the knowledge gap and to more actively facilitate the transition from hospital to the community health service.

Strengths and weaknesses of the study

Selection bias is likely, as only HCP who participated in the preceding survey¹⁴ were invited to participate in the interviews, and therefore there is participant bias from an overall highly engaged group of HCP. Additionally, survey participants likely had higher overall knowledge on this topic than the broader HCP community, particularly the GP participants as recruitment targeted those with an obstetrics qualification. The interviewed HCP also had a clear understanding of the link between HDP and CVD by the time of the interview and had at least some knowledge of post-HDP women's risk factors. If recruitment had been open to a wider group of HCP, the findings may have been different. Findings may relate to local care provision within this specific health context only. However, knowledge gaps and many suggestions for education/improvement were still found in the survey and interviews, and there is no reason to believe that suggestions made by our study participants will not be relevant to the broader HCP community. Finally, the concurrent onset of the COVID-19 pandemic and related healthcare setting adjustments may also have led to selection bias, by limiting participation in the interviews for potential participants more affected by the pandemic than others.

Implications and future directions

Studies published over recent years, reporting on various aspects of long-term health post-HDP, suggest that HCP need to access education regarding women's risks post-HDP, CVD screening and prevention options. However, few studies provide recommendations on what the education should look like. These findings will inform educational material which will be piloted by HCP in planned future projects at a local level.⁵⁰ Once this educational material has been piloted with the specialised HCP, it may be adapted to suit a broader distribution which would include, for example, GPs without specialist qualification in women's health. The piloted education may then also be considered for use in preservice training among the relevant HCP training programmes. A more knowledgeable HCP, as a result of having access to tailored education, may in turn positively contribute to improved communication to women about risk factors, associated recommendations regarding their lifestyle. A structured follow-up medium to long-term may ensue

to positively alter a women's health trajectory within the post-HDP health context.

CONCLUSION

HCP preferred to learn about post-HDP health risk and how to mitigate the risks where possible via multi-disciplinary learning opportunities, and to access further learning via a central, web-based information portal. Information for women as well as referral templates were recommended to facilitate women's transition from hospital to community healthcare and support HCP risk discussions. Endorsement or distribution of education materials was suggested to be via the various professional colleges or via reputable healthcare organisations. The gathered evidence will guide the development of education programmes for HCP on health after HDP.

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