

**Postnatal cardiovascular risk after
hypertensive disorder of pregnancy:
Identifying knowledge needs and
education recommendations for women
and healthcare providers**

Heike Roth BMid(Hons), GradCertAEd

A thesis submitted for the degree of Doctor of Philosophy (Midwifery)

Faculty of Health
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Certificate of original authorship

I, Heike Roth, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Faculty of Health at the University of Technology, Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution. This research is supported by the Australian Government Research Training Program.

Signature:

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Publications included in this thesis

Statement of contributions to jointly authored works contained in this thesis

The systematic review of the literature and all results from this thesis have been submitted for publication in peer-reviewed journals. Below is a description of the contributions made to the papers by the co-authors. I take full responsibility for the accuracy of the findings presented in these publications and this thesis. All authors have given permission for the publications to be incorporated into this PhD.

Thesis format

This is a thesis by compilation and consists of seven chapters, five of which are papers; Chapter Two to Chapter Six. Chapters Two, Three, and Five are papers that have been published in peer reviewed journals during my PhD candidature. Chapters Four and Six are currently under peer review. Publication details for each chapter are outlined below, together with a statement of contribution and percentage contribution for each author. All authors have provided permission for the papers to be included in this thesis.

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Statement of Contribution	Percentage of contribution
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Conference presentations related to this PhD

2019

Roth H, Henry A, Homer CSE. Assessing the knowledge gap of women and healthcare providers concerning cardiovascular risk after hypertensive disorders of pregnancy (oral presentation). *Australian College of Midwives National Conference*, Canberra, Australian Capital Territory, Australia.

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Glossary of terms

AAPEC	Australian Action on Preeclampsia
ACM	Australian College of Midwives
CH	Chronic hypertension worsening in pregnancy and/or with superimposed preeclampsia
CVD	Cardiovascular disease
CSANZ	The Cardiac Society of Australia and New Zealand
DRANZCOG	Diplomate of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (General Practitioner with Obstetrics/Gynaecology Diploma)
FRANZCOG	Fellow of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (Specialist obstetrician/gynaecologist).
GDM	Gestational diabetes mellitus
GH	Gestational hypertension
GP	General practitioner
HCP	Healthcare provider
HDP	Hypertensive disorders of pregnancy
HELLP	Haemolysis, elevated liver enzymes, low platelet count syndrome
IHD	Ischaemic heart disease
ISSHP	International Society for the Study of Hypertension in Pregnancy
IUGR	Intrauterine growth restriction
NICU	Neonatal Intensive Care Unit
NSW	New South Wales
P4 Study	Postpartum physiology, psychology and paediatric follow-up study
PE	Preeclampsia
PVD	Peripheral vascular disease
RANZCOG	Royal Australian and New Zealand College of Obstetricians and Gynaecologists
SESLHD	South Eastern Sydney Local Health District
SOMANZ	Society of Obstetric Medicine of Australia New Zealand

Abstract

Background

Women with a history of hypertensive disorder of pregnancy (HDP) are at significantly increased risk of future cardiovascular disease compared to women with no HDP pregnancies. Recent findings suggest this information is not transferred sufficiently to women, and how best to do this, including how to equip healthcare providers (HCP) for the knowledge transfer process, is not known. The aim of this study was to (i) identify knowledge and knowledge gaps of Australian women and HCPs regarding health risks after HDP and (ii) to explore their education preferences.

Method

A sequential explanatory mixed method design was undertaken. After a scoping review of relevant literature, data were collected from two cohorts: women and HCPs. Quantitative data on knowledge related to health after HDP were collected using online surveys. Qualitative data were collected through interviews and analysed using framework analysis.

Findings

The scoping review identified that published literature reflected a lack of, or insufficient knowledge amongst HCP and women regarding CVD risks after HDP. The surveys (266 women and 492 HCPs) found that women's and HCP level of knowledge about health post-HDP was similar. Knowledge was highest in both groups regarding risk of recurrent hypertensive disorders in future pregnancies and future chronic hypertension, and lowest/greatest knowledge gaps regarding risks after gestational hypertension versus preeclampsia, and increased risk of Type 2 diabetes. Only one-third of participants in each cohort were aware that risks start within 10 years after the HDP affected pregnancy.

In the qualitative component (13 women and 20 HCPs), women's preference included early post-HDP birth risk counselling about long-term and modifiable risk factors from their HCPs accompanied with evidence-based, print or web-based information. HCPs wanted access to similar material to assist in their risk discussions with women. HCPs

expressed a preference for multi-disciplinary education, preferably endorsed or facilitated by professional colleges and health organisations. Both groups were in favour of structured long-term follow-up, including reminder systems, to facilitate the transition from hospital to community health and align with international and local societies' hypertension guidelines.

Conclusion

Important knowledge gaps in women and healthcare providers were found regarding health after HDP in the Australian context. Women and healthcare providers want more information about long-term and modifiable risk factors post-HDP. Recommendations are made to enable a more structured transition from hospital to community health post-HDP, including automated alerts to remind women about key points of follow-up.

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