

Continuity of maternity care in a community setting: a randomised controlled trial using the Zelen design

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the Degree of Doctor of Philosophy**

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CERTIFICATE OF AUTHORSHIP / ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements except as fully acknowledged within the text.

I also certify that the thesis is written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Candidate

Of all life choices, none is more important to society, none has more far reaching consequences, none represents a more complete blending of social, biological and emotional forces than bringing another life into the world.

Shearman Report, 1989

Dedicated to James who gave me the space, freedom and love to complete this work and to the little people in my life: Michael, Sebastian, Sally and Cindy; who constantly remind me about what the real world is all about and make sure I stay in it!

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Peer reviewed publications and conference presentations from this research

A number of peer reviewed publications and conference presentations have arisen from this work. I have been the first, or only, author on these papers.

Peer reviewed publications

Homer CS, Matha DV, Jordan LG, Wills J, Davis GK. Community-based continuity of midwifery care versus standard hospital care: a cost analysis. *Australian Health Review*, 2001 (in press).

Homer CS, Davis GK, Brodie PM, Sheehan A, Barclay LM, Wills J, Chapman MG. Collaboration in maternity care: a randomised controlled trial comparing community-based continuity of care with standard hospital care. *British Journal of Obstetrics and Gynaecology* 2001, 108, 1-7.

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Homer CS. Incorporating cultural diversity in randomised controlled trials in midwifery. *Midwifery: An International Journal*, 2000, 16 (4): 252-259.

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Homer CSE. Midwifery research in contemporary Australia: Ensuring a multicultural approach. Proceedings of the *Australian College of Midwives Inc. 11th Biennial National Conference*. Tasmania. September 1999, 214-223.

Homer CSE, Davis G, Brodie PM, Sheehan A, Barclay LM, Wills J, Chapman MG. Collaboration in maternity care: a randomised controlled trial comparing community-based continuity of care with standard hospital-based care. Presented at: *4th Annual Congress of the Perinatal Society of Australia and NZ*. Brisbane, March 2000; *XVth Annual Scientific Symposium*, Royal North Shore Hospital and UTS. Sydney, November 1999; and the *St George Hospital Annual Medical Symposium*. November 1999.

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Homer CSE, Brodie PM. Innovations in maternity care: Researching a new model. *Fourth Nursing Practice Conference*. Adelaide, November 1998.

Homer CSE. Midwives and continuity of care: Balancing the experience. *New Models of Maternity Service Provision: Australian Midwifery Perspectives Conference* Adelaide. November 1998.

Poster presentations

Homer CSE, Davis GK, Brodie PM. Women's perceptions of community-based antenatal care. Poster presentation at the *Perinatal Society of Australia and NZ 4th Annual Congress*. Brisbane, March 2000.

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Homer CS, Sheehan A, Cooke M. Early infant feeding decision and practices: a comparison of the experiences of women from English, Arabic and Chinese-speaking backgrounds in Australia. Submitted to *Australian and NZ Journal of Public Health*, August 2000.

Homer CS, Davis GK, Cooke M, Barclay LM. Women's experiences of continuity of midwifery care in Australia: A randomised controlled trial. Submitted to *Midwifery*, August 2000.

Abbreviations and glossary

ANC	Antenatal Clinic
AN-DRG	Australian Diagnosis-Related Groups
EDPS	Edinburgh Postnatal Depression Scale
GP	General Practitioner
IOL	Induction of labour
IUGR	Intrauterine growth retardation
NESB	Non-English speaking background
NMHRC	National Health and Medical Research Council (Australia)
NHS	National Health Service in the United Kingdom
NSW	New South Wales
OECD	Organisation of Economic Co-operation and Development
RAP	Risk Associated Pregnancy team
RCT	Randomised controlled trial
SAMBA	Study About Maternity carers Beliefs and Attitudes
SCN	Special care nursery
STOMP	St George Outreach Maternity Project
WHO	World Health Organization

Glossary of terms

Antenatal period	Period of time before birth occurs, ie, the pregnancy.
Apgar score	A numerical set of criteria for assessing the well being of the baby at one and five minutes after birth. The score ranges from 0 to 10 (10 being perfect).
Area Health Service	A unit of health system administration in NSW. Each service comprises a population of about one million people and is accountable to the NSW Health Department for the management of public hospitals and community health services in the area.

Augmentation	Accelerating the progress of labour using oxytocic drugs or by artificially rupturing the membranes.
Booking visit	The first antenatal visit to the hospital.
Caseload midwifery	Small groups of midwives (usually 2 or three) who provide all antenatal, intrapartum and postnatal care for a defined group of women.
Cardiotocograph	Electronic monitoring of the fetal heart rate. This procedure may be undertaken in the antenatal period and during labour. During labour, the procedure is commonly known as electronic fetal monitoring (EFM).
Continuity of midwifery care	A consistent philosophy or organisational structure around which care is provided. This may be achieved through a model of team midwifery where a small number of midwives care for a group of women through the antenatal, intrapartum and postpartum periods.
Continuity of midwifery carer	Care provided by a midwife whom the woman has met previously and feels that <u>she knows</u> .
Core midwives	Midwives within a maternity unit who are not 'team midwives'. Core midwives are usually based in one area (antenatal, labour and birth or postnatal) and do not follow the same group of women from one stage to another.
Elective caesarean section	A caesarean section performed before the onset of labour.
Emergency caesarean section	A caesarean section performed after the onset of labour.
Electronic fetal monitoring	Monitoring the fetal heart rate using an electronic monitor which is either external (strapped to the women's abdomen) or internal (using an electrode attached to the baby's head).
Epidural	Injection of an anaesthetic agent outside the dura mater which covers the spinal canal causing loss of sensation to the lower part of the body.
Episiotomy	An incision of the perineum and vagina to enlarge the vulval orifice.

Gestational age	The duration of pregnancy in completed weeks from the first day of the last normal menstrual period.
Induction of labour	The artificial initiation of labour either by the use of drugs or by rupturing the membranes.
Intrapartum period	Period of time when labour and childbirth occurs.
Medicare	The Australian system of universal health insurance with revenue raised through a compulsory levy and taxes. Medicare provides access to public hospital services for all Australians through a negotiated payment to state governments. Medicare also supports access to general practitioners and specialist services including pathology, x-ray and ultrasound.
Multiparous woman	A woman who has already given birth. A woman having her second or subsequent baby.
Neonatal death	The death of a live born infant within 28 days of birth.
Nulliparous woman	A woman in her first pregnancy
Parity	The total number of live births before the pregnancy or birth under consideration.
Perinatal death	A still birth or neonatal death.
Perinatal mortality rate	The number of perinatal deaths per 1,000 total births in a year.
Postnatal or postpartum period	Period of time after childbirth, usually up to 42 days.
Premature infant	An infant born before 37 completed weeks gestation.
Premature labour	The spontaneous onset of labour before 37 completed weeks of gestation.
Primiparous woman	Woman in her first pregnancy or who has just given birth to her first baby.
Prolonged rupture of membranes	The spontaneous rupture of membranes for at least 24 hours before the onset of regular contractions with cervical dilatation.
South East Health	The Area Health Service in which this research was conducted.

Special care nursery	Level 2 neonatal unit which can give oxygen therapy, commence mechanical ventilation and has paediatric house staff with a paediatrician on call. Any infants requiring sustained mechanical ventilation are transferred to a Level 3 neonatal intensive care unit.
Stillbirth	The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400g birth weight who did not, at any time after birth, breathe or show any evidence of life such as a heartbeat.
Team midwifery	System of midwifery care where small teams of midwives (usually 6-10 midwives per team) provide care throughout the childbearing experience, including antenatal and intrapartum care, for a defined group of women.
Third degree tear	A perineal laceration or tear, passing through the anal sphincter and involving the anal canal.
Vacuum extraction	A form of instrumental delivery in which the baby is delivered vaginally with the aid of a shallow rubber cup fixed to the baby's head using suction.

Abstract

This research investigated a new community-based model of continuity of care provided collaboratively by a small team of midwives and obstetricians (St George Outreach Maternity Project or STOMP). The study considered whether STOMP improved maternal and neonatal clinical outcomes, resulted in a better experience for women and could be implemented within the current resources of a public teaching hospital in Sydney, Australia.

A randomised controlled trial using a Zelen design was used to compare the STOMP model with standard care. One thousand and eighty-nine women were randomly allocated to either the STOMP model or standard hospital-based care. The Zelen design was used to increase the participation of women from non-English speaking backgrounds and to reduce disappointment bias in women allocated to the control group.

The results suggest that the model of community-based continuity of care is associated with a lower caesarean section rate, more positive experiences for women and costs less than standard care. There were no differences in the number of medical complications experienced in either group, but more women in the control group were admitted to hospital during the antenatal period. There were four perinatal deaths in each group.

Women in the STOMP group reported a higher quality of antenatal care compared with the control group. Women in the STOMP group also reported that the community-based service was accessible and convenient with reduced waiting times for appointments. Women in the STOMP group were more likely to have received adequate information about labour, birth and the postnatal period and felt more 'in control' during labour compared with the control group. Women from both groups reported problems with postnatal care, particularly when provided in the hospital.

The study also examined the impact of the STOMP model on women from Chinese and Arabic-speaking backgrounds. The STOMP model appeared to reduce the rate of elective and emergency caesarean section in Chinese-speaking women compared with English-speaking women. Small numbers precluded statistical analysis on these data so the results must be interpreted with caution. Women from Chinese-speaking

backgrounds reported receiving insufficient information. The STOMP model improved the provision of information, however Chinese-speaking women still reported inferior experiences. There were also differences in the method of infant feeding.

The results indicate that the model provides effective, cost efficient and satisfying maternity care. New models of maternity care can be implemented within current resources when organisations have a strong commitment to change.