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How optimal caseload midwifery can modify predictors for preterm birth in young women: Integrated findings from a mixed methods study

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ABSTRACT

Objective: to identify possible mechanisms by which caseload midwifery reduces preterm birth for young childbearing women.
Design: a mixed methods triangulation, convergence design was used to answer the research question 'How does the way maternity care is provided affect the health and well-being of young women and their babies?' The project generated quantitative and qualitative findings which were collected and analysed concurrently then separately analysed and published. The research design enabled integration of the quantitative and qualitative findings for further interpretation through a critical pragmatic lens.
Setting: a tertiary maternity hospital in Australia providing care to approximately 500 pregnant young women (aged 21 years or less) each year. Three distinct models of care were offered: caseload midwifery, young women's clinic, and standard 'fragmented' care.
Participants: a cohort study included data from 1971 young women and babies during 2008–2012. An ethnographic study included analysis of focus group interviews with four caseload midwives in the young women's midwifery group practice; as well as ten pregnant and postnatal young women receiving caseload midwifery care.
Findings: integrated analysis of the quantitative and qualitative findings suggested particular features in the model of care which facilitated young women turning up for antenatal care (at an earlier gestation and more frequently) and buying in to the process (disclosing risks, engaging in self-care activities and accepting referrals for assistance). We conceptualised that Optimal Caseload Midwifery promotes Synergistic Health Engagement between midwife and the young woman.
Key conclusions: optimal Caseload Midwifery (which includes midwives with specific personal attributes and philosophical commitments, along with appropriate institutional infrastructure and support) facilitates midwives and young clients to develop trusting relationships and engage in maternity care. Health engagement can modify predictors for preterm birth that are common amongst pregnant adolescents by promoting earlier maternity booking, sufficient antenatal care, greater emotional resilience, ideal gestational weight gain, less smoking/drug use, and fewer untreated genito-urinary infections.
Implications for practice: the institutional infrastructure and managerial support for caseload midwifery should value and prioritise the philosophical commitments and personal attributes required to optimise the model. Furthermore the location of visits, between appointment access to primary midwife, and back-up system should be organised to optimise the midwife-woman relationship in order to promote the young woman's engagement with maternity care.

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Introduction

This paper reports on a mixed methods research project

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examining younger women's experiences of, and outcomes associated with, caseload midwifery compared to standard care. Caseload midwifery describes a model of maternity care that focusses on providing the woman with 'continuity of carer' from a known midwife throughout pregnancy, labour/birth and the postpartum period (Sandall et al., 2016). Key quantitative findings from our cohort study, which included a reduction in preterm birth for women receiving caseload midwifery care compared to women attending standard care (Allen et al., 2015a); are integrated with results from our focussed, ethnographic study on the caseload model (Allen et al., 2015b). The aim of the integrative analysis was to articulate possible mechanisms by which caseload midwifery may reduce preterm birth (PTB) for young women.

Preterm birth

The World Health Organisation defines PTB as any birth prior to 37 completed weeks of gestation (World Health Organisation, 1977). The Australian definition adds that PTB must be either >20 completed weeks of gestation or >400 grams birth weight (Australian Institute of Health and Welfare, 2015). Despite these definitions, figures on global incidence of PTB focus on the number of liveborn preterm babies because of the significant health care costs associated with neonatal intensive care and lifelong disability (Blencowe et al., 2012). Over the past 20 years, the global incidence of PTB has been increasing to approximately 11.1% of all livebirths in 2010; ranging from 5% in some northern European countries to over 15% in sub-Saharan Africa (Blencowe et al., 2012). Preterm birth occurs in 5% to 7% of all live births in high-resource countries (Lawn et al., 2006); with higher rates in the United States (US) (12.4%) compared to the United Kingdom (UK) (7.4%) (MacDorman and Mathews, 2010). Preterm birth rates in high-resource countries increase in vulnerable populations e.g. women <20 years of age (10%) and Australian Indigenous women (14%) compared to mothers aged 20-39 and non-Indigenous women (both 8%) (Australian Institute of Health and Welfare, 2015); with rates as high as 21% in some remote Australian Indigenous communities (Kildea et al., 2016).

Preterm birth is the leading cause of newborn death, the second cause of under-five mortality (after pneumonia), and is associated with serious morbidity and lifetime disability (Howson et al., 2012). Short-term complications include respiratory distress, poor feeding and/or hypoglycaemia in the newborn, frequently leading to neonatal intensive care unit (NICU) admission (Celik et al., 2013). The resultant separation between young mothers and their babies has negative implications for maternal well-being (Lasiuk et al., 2013) and breastfeeding (M. Parker et al., 2013). Admission to NICU due to PTB is associated with significantly increased direct health care costs (Clements et al., 2007).

The causes of spontaneous PTB are complex, multifactorial and often unknown but can include genetic, environmental, behavioural and socio-economic factors (Goldenberg et al., 2008). Socioeconomic deprivation is an independent predictor for preterm birth (Koullali et al., 2016; Ncube et al., 2016). In high-resource countries like Australia, Canada, Europe, New Zealand (NZ), the UK and the US; adolescents who become pregnant and continue the pregnancy are more likely to come from socio-economically disadvantaged backgrounds (Harden et al., 2009; Imamura et al., 2007; Pradhan et al., 2015). The effect of social deprivation on behaviour, health and living conditions are strongly associated with both adolescent pregnancy and PTB; the risk factors are identical (see Table 1).

Modifying the risk and protective factors inherent in adolescents daily lives, especially for those who are most socio-economically disadvantaged, can improve health outcomes (Viner et al., 2012). Indeed, programmes targeted to improve the circumstances of socially disadvantaged women can reduce PTB (Fernandez Turienzo et al., 2016; Hollowell et al., 2011). While there is some evidence that single interventions including smoking cessation, improved diet for under-nourished women, and antenatal lower genital tract screening are effective in reducing PTB rates (Piso et al., 2014); the effect of model of care is a PTB research priority (Duley et al., 2014). A Cochrane systematic review of participants enroled in different models of maternity care ($n=17{,}674$) found that women randomised to midwife-led care, compared to standard care, were less likely to give birth preterm (Sandall et al., 2016). Our cohort study (Allen et al., 2015a) was the first to find similar results for young women (aged 21 years or less).

The gap in the literature this paper addresses, focusses on how the complex intervention of caseload midwifery functions in relation to preterm birth. We sought to identify: 'what are the active ingredients within the intervention and how are they exerting their effect? Only by addressing this kind of question can we build

Table 1
Risk factors for adolescent pregnancy and preterm birth.

Adolescent pregnancy	Preterm birth
• Cigarette smoking (Bottorff et al., 2014)	• *Cigarette smoking* (Koullali et al., 2016) • *Exposure to environmental tobacco* (Ashford et al., 2010; Savitz and Murnane, 2010; Crane et al., 2011)
• *Alcohol, cannabis and other illicit drug use* (Salas-Wright et al., 2015)	• Cannabis use (Prunet et al., 2016)
• *Sub-optimal nutrition* (Bloomfield, 2011)	• *Low/high body mass index* (Koullali et al., 2016)
• *Inappropriate gestational weight gain* (Haggarty et al., 2009; Harper et al., 2011)	• *Inappropriate gestational weight gain* (El Rafei et al., 2016)
• *Maternal anxiety and/or depression* (Siegel and Brandon, 2014)	• *Maternal anxiety* (Liou et al., 2016) • *Maternal depression* (Accortt et al., 2015) • *Stress* (Straub et al., 2014)
• *Intimate partner violence* (Edirne et al., 2010; O'Donnell et al., 2009)	• *Intimate partner violence* (Donovan et al., 2016)
• *'Inadequate' antenatal care* (Debiec et al., 2010; Raatikainen et al., 2007)	• *'Inadequate' antenatal care* (Prunet et al., 2016)
• *Genito-urinary infection* (Goyal et al., 2016)	• *Genito-urinary infection* (Sangkomkamhang et al., 2015)

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