

ABSTRACT

Background

Primary midwifery services access is a public health solution to the challenges of providing high-quality maternal and newborn care (Renfrew et al. 2014). National Maternity Services Plan recommends expanding access to integrated midwifery models for all women (Australian Government 2011). Only 8% of childbearing women in Australia have access to public midwifery models, often restricted to women with 'low risk' pregnancy. Comprehensive evaluation of maternity models analysing clinical outcomes, public cost and resource use for women with pregnancy complexities is therefore an important consideration for allocation of state and Commonwealth public health resources in Australia.

Methods

This study was a 2 armed quantitative non-experimental database analysis of outcomes for women in South Australia with pregnancies classified as 'moderate obstetric risk,' retrospective arm 2004–2010 (state based), and prospective arm 2010–2012 (Commonwealth based) in two maternity models. In this study, specific biophysical and psychosocial criteria that defined 'moderate risk pregnancy', as distinguished from 'low and high risk pregnancy' were used (Appendix 3.1a; p. 278). Women received services through either Midwifery Group Practice (MGP) or Standard Hospital Care (SHC). MGP is a model in which midwives supported each other in 4 group practices (6 full-time equivalent midwives per group) to provide caseload continuity of care to 36 women per annum per midwife during pregnancy, birth and the postnatal period (Appendix 3.1b). Net benefit principles were used to

analyse comparative clinical, cost and resource outcomes using linked data, including demographic characteristics. The retrospective arm (n = 13 462) matched a total of 12 406 records in three databases. Statistical analyses used a multivariate generalised linear model with log link function (adjusted for 18 confounders) to determine cost and revenue between MGP and SHC. Observed and adjusted cost modelling for 26 Australian Refined-Diagnostic Groups also was determined. The prospective arm (n = 206) examined two additional groups of women with complex pregnancies who completed care in MGP or SHC. Women consented to release and linkage of postnatal Commonwealth Medicare benefits and Pharmaceutical Benefits Scheme data with their state birth data in the four months after hospital discharge. Women's characteristics, patterns of service use and cost for MBS and PBS were explored using negative binomial regression and GLM models. Interpretation of data in both arms of the study applied the Donabedian SPO health evaluation framework.

Results

Retrospective arm analysis showed women in MGP were older (median age = 31 years [27–35]), compared with women in SHC (median age = 29 years [24–34]). Women in SHC had significantly more pregnancies and babies ($p < 0.01$), also were more likely to have experienced caesarean surgery ($p < 0.001$). Greater percentage of Caucasian women received MGP care compared with SHC (83% vs 64%), and fewer women from Asian background (11% vs 19.4%) and other races, especially Middle East and Africa (4.7% vs 13%), and Aboriginal/Torres Strait Islander women (1.8% vs 4.1%); $p < 0.001$. A higher percentage of women were represented in professional, paraprofessional and above trade occupations in MGP (34% vs 15.6%; $p < 0.001$). Fewer percentage of MGP women resided in the statistical local area with

the greatest social disadvantage, as compared with SHC (37.8% vs 53.1%; $p < 0.001$). Fewer women in MGP had a BMI Obese III classification (2.2% vs 3.2%; $p < 0.01$) or smoked (12.7% vs 18.7%; $p < 0.001$). Unadjusted clinical effectiveness results and resource use showed significant differences. Women in MGP were 1.5 times more likely to achieve a spontaneous vaginal birth (95% CI 1.40–1.65), and less likely to experience routine interventions and childbirth morbidity such as PPH \geq 500 ml, elective caesarean section, induction of labour, use of epidural, episiotomy. Adjusted Multivariate GLM models showed significant differences in costs for each group generated across AR- DRGs during 2004–2010. Cost by year and care type showed less cost per woman in MGP compared to SHC; A\$863.92 less cost per woman for MGP in adjusted model ($\beta = 0.79$; 95% CI 0.76–0.82). Maternal and infant characteristics that increased cost in both models were identified. The prospective arm analysis showed the mean age of women in MGP ($n = 95$) was 1.8 years older than SHC ($n = 111$). Adjusted IRR showed a 41% lower rate of postnatal Medicare benefits visits for women in MGP than SHC (95% CI 0.46–0.76). Increasing gravid status of women, and elective caesarean section were predictors for increased Medicare benefits use in both groups. GLM models showed higher mean provider charges (A\$48.24 [36.69] vs A\$41.04 [33.21]; $p < 0.001$) and higher mean out of pocket costs (A\$8.38 [13.86] vs A\$4.09 [13.77]; $p < 0.001$) for MGP women. Six times fewer PBS claims were recorded for MGP compared with SHC. Over half PBS claims related to six women, two from rural locations.

Results in both study arms demonstrated improved cost and clinical effectiveness in MGP compared to SHC; however, there was inequitable access to MGP for women with highest socioeconomic disadvantage.

Conclusion

Evaluation of maternity services in South Australia showed sub-optimal quality outcomes between two models of care for women with 'moderate risk' pregnancies. Evidence of significant cost savings and efficiency was shown in MGP compared to SHC, and improved clinical effectiveness. Improving equitable access to MGP and outcomes for women with socioeconomic disadvantage should be a critical public health objective to reduce costs and the burden of long-term chronic disease. Future allocation of resources should prioritise the expansion of public health midwifery models. This includes addressing state and federal cost shifting and funding barriers in Australia.