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Mentor Mothers Program Improved Child Health Outcomes At A Relatively Low Cost In South Africa

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Abstract

In light of South Africa's high prenatal HIV prevalence and infant mortality rate, a cluster randomized controlled trial was conducted to evaluate a program called Philani+, which used community health workers (known as Mentor Mothers) to deliver pre- and postnatal home visits in Cape Town, South Africa, to improve maternal and child health. We assessed the costs and benefits of this program and made comparisons with other scenarios that depicted increased capacity and provision of nurse-delivered care. The recurrent cost of the twenty-four-month intervention was US\$80,001. The major health outcomes analyzed were differences in the proportion of infants who were low birthweight, stunted, and suboptimally breastfed between intervention and control groups. Each case of low birthweight averted cost US\$2,397; of stunted growth, US\$2,454; and of suboptimal breastfeeding, US\$1,618. Employment of community health workers was cost saving compared to that of nurses. Philani+ improved child health at a relatively low cost, considering the health system costs associated with low birthweight and undernutrition. The model could be suitable for replication in low-resource settings to improve child health in other countries.

Introduction

Investments in maternal and child health have the potential to achieve large positive impacts on morbidity and mortality throughout the world. Globally, in 2015, 5.9 million children died before age five, and 45.1 percent of those deaths occurred in the neonatal period.¹ Complications of preterm birth and low birthweight were the leading cause of deaths under age five (17.8 percent; uncertainty range: 15.4–19.0) globally in 2015.¹ Malnutrition also remains a significant challenge: In 2011 an estimated 165 million children under age five—more than one-quarter of children in that age group—had stunted growth because of chronic undernutrition.²

Community-based care programs, which consist of prenatal and postnatal home visits, have the potential to address missed opportunities in care, including increasing identification of HIV-infected women, breastfeeding, and uptake of health care visits; such programs may reduce child morbidity and mortality.³ Over the past thirty years, evaluations of home-visit programs for new mothers have found overall positive impacts.^{4–7}

In high-income countries, home-visit interventions have been most efficacious when delivered by nurses.⁸ However, it is not feasible to implement nurse-delivered home visits in low-resource settings because of shortages of trained nurses and limited health care budgets.⁹ According to the World Health Organization (WHO), using community health workers may be the only feasible strategy to broadly scale up prevention services such as home-visit interventions for new mothers and children.¹⁰

This article focuses on South Africa, where pregnant women face intersecting challenges, including high levels of prenatal HIV infection, alcohol abuse, and malnutrition.¹¹ Neonatal mortality remained stagnant between 1990 and 2009 at 14–20 deaths per 1,000 live births,¹² and the proportion of low-birthweight newborns (12–15 percent)¹³ is twice the average of countries in the Organization for Economic Cooperation and Development (6.5% of live births were recorded as low birth weight in 2014).¹⁴ Further, despite economic growth and political transitions, stunting remained persistent between 2005 and 2012 at 26.9 percent for boys and 25.9 percent for girls.¹⁵

Although women and children in low- and middle-income countries face cumulative effects of poverty, infectious diseases, and malnutrition, most pre- and postnatal programs target single outcomes.¹⁶ The Philani+ intervention was based on and integrated into an existing community-based organization, called the Philani Maternal, Child Health and Nutrition Program (Philani Nutrition Program), which operates in Cape Town, South Africa, and uses home visits by community health workers (known as Mentor Mothers) to address multiple health challenges faced by infants and pregnant women. Philani+ was implemented between May 2009 and April 2011, and compared maternal and child health outcomes between people in intervention neighborhoods with those in standard care neighborhoods.¹⁷

In this article we assess the costs and benefits of the Philani+ intervention and estimate the costs of the program under the assumption that if the capacity of Mentor Mothers could be increased, a greater number of home visits per day could be provided. Finally, we compare

the personnel and training costs of the Mentor Mothers program with estimated costs of using nurses instead to implement the intervention.

Study Data And Methods

The Intervention

Study participants included pregnant women who were at least age eighteen, had less than thirty-four weeks' gestation at intake, and lived in one of the twenty-four selected study neighborhoods. These neighborhoods were identified in three Cape Town communities, matched, and randomized to either the intervention or the control group.¹⁷ Women in the control group received the standard care provided in the community, which included access to pre- and postnatal clinics, hospitals, and dedicated clinics for HIV-infected women and infants.¹⁷ The intervention group consisted of women who, in addition to receiving the standard care, also received pre- and postnatal home visits by Mentor Mothers.

The Mentor Mothers, paraprofessional community health workers, addressed multiple challenges faced by infants and pregnant women. The goals of the Mentor Mothers program were to reduce participants' risk of acquiring or transmitting HIV, improve illness detection, reduce maternal alcohol use, improve infant nutrition, and foster child growth and development.¹⁷ Mentor Mothers were local women who demonstrated strong parenting skills and were trained to apply cognitive-behavioral techniques to support mothers in managing daily activities and improving their children's outcomes. Twelve women were selected and trained as Mentor Mothers over six weeks. Training consisted of a four-week classroom-based session with a professional trainer followed by two weeks of field-based training, in which each new Mentor Mother was paired with an experienced Mentor Mother. New Mentor Mothers were evaluated during the training period, and those who did not meet the standard were not employed to deliver intervention services.

Throughout the twenty-four-month Philani+ intervention, Mentor Mothers worked half time (four hours daily) to schedule and make home visits. Mentor Mothers also received a full day of training once a month, and a nurse supervisor accompanied each Mentor Mother to home visits two days each month. Mentor Mothers made pre- and postnatal home visits to each participant once a month until the eighth month of pregnancy. During the ninth month of pregnancy, all participants received the standard care, including access to community resources. For two months after delivery, postnatal visits were scheduled every two weeks for each participant.¹⁸ The visits took thirty-one minutes, on average.¹⁷ The Mentor Mothers also visited all households in their catchment areas with children age six and younger (including those not in the intervention), weighed the children, encouraged clinical care for mothers living with HIV, and determined whether childhood immunizations had been received.¹⁹

A total of 1,238 pregnant women were recruited into the trial: 644 in the Philani+ intervention group and 594 in the standard care group. Only 2 percent of women declined to participate. A separate assessment team, not the Mentor Mothers, conducted all recruitment, informed consent, and assessments. The baseline assessment, which was conducted during pregnancy, collected sociodemographic, health, and behavioral characteristics of mothers.

Subsequent assessments at two weeks and six months post birth collected infant health outcomes. Follow-up rates were similar across the intervention and control groups: 92 percent were reassessed right after delivery (median: 1.9 weeks; standard deviation: 2.1); 88 percent six months after delivery (median: 6.2 months; standard deviation: 0.7), and 88 percent were assessed at baseline, post-birth, and six months.¹⁶ In terms of sociodemographic characteristics, there were no significant differences between the Philani+ intervention and standard care groups at baseline (Exhibit 3). For example, the mean age in the intervention was 26.5 years, and the mean age in the control was 26.3 years. HIV prevalence in the intervention was 25.5 percent; in the control, it was 26.7 percent.¹⁶

Setting

The Philani+ intervention took place in Cape Town, where unemployment is estimated to range between 25 percent and 50 percent.¹⁷ A large share of the working population (60–80 percent) earns less than R800 (South African rand) per month (US\$111).¹⁷ Women in South Africa have a high fertility rate (three to four children each) and face a high national prevalence of prenatal HIV (30 percent), and most live within five kilometers of a prenatal care clinic.^{17,20}

Cost Estimations

We assessed the financial costs of the Philani+ program from the perspective of the health system.²¹ Since both intervention and control groups had access to community health resources, these costs were not included in our estimates. We defined costs related to the intervention, exclusive of research-study costs, as incremental costs. Start-up and capital costs included initial training, office equipment and furniture, and staff time involved in hiring. Certain of these costs were annualized over their expected useful life (three years for computer equipment and four years for furniture), using a discount rate of 6 percent. Recurrent costs were those for personnel, operations, supplies, and ongoing training. Mentor Mothers did not receive reimbursement for transportation costs because they were assigned participants within walking distance of their own homes. Personnel included a full-time assistant coordinator, a program manager who allocated 20 percent of his or her time to the intervention, and Mentor Mothers employed part time during the twenty-four months of the intervention. Cost estimates were made retrospectively based on data from various sources, including invoices and financial statements. All cost data were collected in South African rand and are expressed in 2016 US dollars using the average exchange rate in 2016.

Because the Philani+ intervention was a component of randomized controlled trial with a predetermined sample size and implementation time frame, numbers of home visits were likely lower during the start-up and wind-down of the intervention. Thus, we conducted an additional analysis based on the assumption that the capacity of Mentor Mothers could have increased if the number of home visits they averaged over the twelve most productive months of the intervention (356 per month) could have been maintained for all twenty-four months. Then we adjusted costs according to the change in the number of Mentor Mothers that this would require.

Finally, we estimated the costs of replacing Mentor Mothers with nurses by identifying the monthly salaries of nurses employed by the Philani+ program and increasing personnel costs to account for the higher nurse salaries. Given nurses' higher level of prior training and expertise, we assumed that they would need less training than Mentor Mothers, which would offset the contribution of nurses' higher salary costs to the estimate.

Estimating Effectiveness

We assessed the effectiveness of the intervention for each woman prospectively at one week after childbirth and six months after birth, focusing on infants' birthweight and length for age (an indication of stunting) and mothers' self-reported breastfeeding. Low birthweight (defined as less than 2,500 grams at birth) was measured after delivery using participants' government-issued Road to Health cards, where child health information, including birth weight, immunizations, and growth are recorded by clinic staff until the child is five years old.¹⁷ Mentor Mothers measured infants' length at their assessments; anthropometric data were converted to z-scores based on the age-adjusted WHO norms.²² Infants were identified as stunted if their length-for-age z-scores were less than -2.²³ Self-reported months of breastfeeding were monitored and dichotomized as exclusive breastfeeding for six months or not.¹⁶

As reported elsewhere, longitudinal models were used to assess the Philani+ intervention effect for child outcomes using intention-to-treat analysis, and discrete outcomes were analyzed using logistic random effects regressions adjusting for neighborhood clustering.¹⁶ Infants in the Philani+ intervention group were more likely to have normal birthweight at delivery (odds ratio: 1.35; $p = 0.051$), more likely to achieve normal growth (not stunted) (OR: 1.69; $p = 0.002$), and more likely to have been exclusively breastfed for six months (OR: 3.59; $p < 0.001$) compared to those in standard care.¹⁶ To identify low birth weight, stunted, and suboptimally breastfed infants averted, we estimated adjusted risk differences using the results of the logistic random effects regressions.

Cost-Effectiveness Analyses

The incremental cost-effectiveness ratio for low birthweight was calculated as the additional recurrent cost of prenatal services for the intervention group divided by the number of cases of low birthweight averted. The latter number was calculated as the number of live births in the intervention neighborhoods multiplied by the risk difference in low-birthweight outcomes between the intervention and control groups, which was generated from a random effects logistic regression model that controlled for neighborhood clustering.¹⁶

The incremental cost-effectiveness ratios of preventing stunting and suboptimal breastfeeding were calculated in an analogous manner, using costs incurred both before and after childbirth. As the estimate of recurrent costs did not vary, the sensitivity of the incremental cost-effectiveness ratios were assessed using the 95% confidence intervals around each outcome estimate identified in the adjusted models described above.

Limitations

Our study had some limitations. We conducted our analysis from the perspective of the health system and did not include household costs associated with the intervention. However, the opportunity cost of the pregnant women's time spent taking part in the intervention was low because unemployment was high in our sample (17.5 percent), the home visits averaged only thirty-one minutes, and home visits were scheduled during a time that was convenient for participants. In addition, our analysis examined only rates of low birthweight, stunting, and breastfeeding during the first six months following birth, whereas the literature indicates that effects are longer lasting. Further, we did not estimate the economic costs associated with the medical director's time donated to the intervention; however, some of her effort was quantified in the training costs and much of her effort was related to research activities.

Because ours was a cost-effectiveness analysis, we did not quantify several important intermediate benefits derived from the Philani+ program. These include increased compliance with activities related to preventing mother-to-child transmission of HIV; the role of maternal depression (children of depressed mothers had growth similar to children of non-depressed mothers, in contrast to poor growth patterns among children of depressed mothers in the control condition);^{24,25} and benefits to children as reflected in higher scores on cognitive development assessments (for example, Bayley Scales at age eighteen months and the Peabody and Kaufmann scales at age three years).²⁴ Interrelated measures such as these cannot be quantified simply for a cost-effectiveness analysis.

Finally, costs were derived from a single intervention in an upper-middle-income country and might not be generalizable to other settings. Given that the intervention's primary cost driver was personnel, program costs could be lower in low-income countries because of lower wages. However, implementation in low-resource settings might require increased training because education levels might be lower among potential Mentor Mothers in lower-income countries. Further, depending on the population density of neighborhoods, implementers may also need to consider transportation costs for home visits. Nevertheless, the challenges addressed by the Philani+ intervention are common in many countries, and results may help inform other countries' decisions about resource allocation and service delivery among infants and pregnant women.

Study Results

Costs

Between April 2009 and May 2011, Mentor Mothers conducted 5,799 (3,157 prenatal and 2,642 postnatal) home visits. Under Philani+, the recurrent financial cost (in 2016 US dollars) of implementing the intervention was \$80,001 (Exhibit 1), with personnel accounting for 66 percent of these costs and training and support for 33 percent. Personnel costs were mainly driven by the salaries of the Mentor Mothers (73 percent). The main operational and supply cost drivers included printing and stationery (\$174, 14 percent) and office space rental (\$156, 12 percent). Capital and startup costs, including computer equipment, office furniture, equipment bags, and scales, totaled \$12,146. Excluding startup

costs, in Philani+ the average recurring cost of supporting twelve Mentor Mothers was \$6,667 per Mentor Mother, the cost per mother/child pair in the intervention was \$124, and the cost of each home visit was \$14 (Exhibit 2). Based on the per visit cost, the cost of the prenatal visits was \$43,553, and the cost of the postnatal visits was \$36,448 (data not shown).

Outcomes

Mothers and infants in the Philani+ neighborhoods achieved outcomes superior to those achieved in the standard care neighborhoods (Exhibit 4). Mothers in the intervention group had rates of low birthweight (10 percent) that were an estimated 3 percentage points lower (95% confidence interval: 0, 6) than those of mothers in the standard care group (13 percent), and their infants had rates of stunting (9 percent) that were 5 percentage points lower (95% CI: 2, 9) than those of mothers in the standard care group (14 percent). Cases of optimal breastfeeding among mothers in Philani+ (10 percent) were 7 percentage points higher (95% CI: 4, 12) than those of mothers in the standard care group (3 percent). Therefore, the costs of the Philani+ prenatal visits per case of low birthweight averted was \$2,397 (95% CI: no effect, \$1,192). The recurrent cost of all home visits per case of stunting averted was \$2,454 (95% CI: \$6,615, \$1,506), and the cost per case of suboptimal breastfeeding averted was \$1,618 (95% CI: \$3,421, \$1,059) (data not shown).

Under our assumption that the Mentor Mothers could increase their average monthly capacity from 242 to 356 visits, it might be possible to conduct the same number of home visits with only nine Mentor Mothers. After we decreased the personnel, training, and operational costs, the recurrent cost of the Philani+ intervention with nine Mentor Mothers (the increased capacity scenario) was \$60,562 (Exhibit 1). This improvement in efficiency would lower the average recurrent cost per outcome (incremental cost-effectiveness ratio) per case of low birthweight, stunting, and exclusive breastfeeding to \$1,814 (95% CI: no effect, \$902), \$1,858 (95% CI: \$5,008, \$1,140), and \$1,225 (95% CI: \$2,590, \$802), respectively (Exhibit 2).

In the nurse scenario, if nurses were employed in the place of Mentor Mothers at 50 percent time with an average monthly salary of R25,000 (\$1,800), total recurrent costs would have been \$274,961—four times the cost of the Mentor Mothers program (Exhibit 1). This scenario includes no ongoing training and support costs. At \$47 per home visit (Exhibit 2), the nurse-led intervention would need to avert 62 cases of low birthweight (compared to 18), 112 cases of stunting (compared to 33), and 170 cases of suboptimal breastfeeding (compared to 49), to achieve cost-effectiveness ratios similar to those of the Mentor Mothers program (data not shown).

Discussion

Our results indicate that Philani+, an innovative intervention with multiple focal points, improved child health using community health workers at a relatively low cost considering the costs that low birthweight and malnutrition impose on the health care system. Low birthweight contributes to neonatal mortality and is associated with increased costs for medical care and decreased lifetime productivity.^{26,27} For example, in one low-resource

setting, hospitalization after birth was one to two days, on average, for a normal-weight newborn with an uncomplicated delivery and five to seven days, on average, for a low-birthweight newborn (1,500–2,500 grams).²⁸ Another study estimated that the present value of seven major benefits of moving one infant out of low-birthweight status ranges from \$257 to \$832, depending on the discount rate used (3–10 percent), using low-resource settings as base cases.²⁷ A study in Mozambique found that the health system cost associated with low birthweight was \$169,957.61 (95% CI: \$144,900.00, \$195,500.00).²⁹

Malnutrition also entails economic costs. In Uganda, a country with stunting rates similar to those in South Africa, every dollar invested in reducing stunting through programs is estimated to generate economic returns of \$14.60–\$15.90 (in 2013 US dollars).³⁰ In addition to improving infants' nutritional status, breastfeeding is associated with improvements in child survival and development.³¹ One study estimated that the global loss of gross national income associated with present levels of any breastfeeding compared with all children being breastfed up to age six months amounted to \$302 billion annually.³²

South Africa's spending on health is among the highest in Africa; however, high rates of infant morbidity and mortality persist.³³ Some indicators of access to maternal health care are relatively high. For example, 80 percent of births take place in facilities,³⁴ 96.9 percent of women have access to at least one prenatal care visit,³⁵ and maternal and child health care is free at public facilities nationwide.^{4,36} However, receipt of these services varies widely by region, and as does inequality by socioeconomic status.³⁵ Among women in the poorest socio-economic quintile in South Africa, only 86.6% attended four prenatal visits, and 39.6% had a visit prior to twenty weeks' gestation.³⁵ Further, one study found that health workers' focusing their efforts on treatment rather than prevention leads to suboptimal rates of breastfeeding and other behaviors that are important for newborn health.³⁷

The Philani+ intervention, which took place during 2009–11, was unique because it addressed multiple challenges facing pregnant women in South Africa. Most other home-visit programs are vertical, with a focus on a single health issue such as prevention of mother-to-child transmission of HIV.^{38,39} For example, mothers2mothers, a program that originated in Cape Town, provides services to pregnant women living with HIV. While this program also hires and trains community health workers, it is clinic based, enrolls only pregnant women living with HIV, and focuses mainly on preventing mother-to-child transmission of HIV.⁴⁰ Other examples of vertical programming have been described by Peter J. Cooper and colleagues⁴¹ in Cape Town and Atif Rahman and colleagues⁴² in Pakistan. Both studies addressed interventions that used home visits to support parenting and improve rates of maternal depression. Cooper and colleagues found improvements in maternal depressed mood at six months in the intervention group compared to the control group. Rahman and colleagues found improvements in maternal depression at six months; however, the intervention they studied had no impact on infants' weight or height for age at six or 12 months.

Evidence about the cost and benefits of community health worker–led home visits is critical to informing policy makers about whether this strategy is efficient and feasible in resource-constrained contexts. Studies in Bangladesh⁴³ and Ghana⁴⁴ have found that pre- and

postnatal home-visit interventions using community health workers reduced neonatal mortality and were cost-effective. Our study adds to the literature by estimating the costs and benefits of a multifocal home-visit intervention aimed at improving a broader range of outcomes. Although the costs of Philani+ were high, the cost per mother/child pair (\$124 in 2016 US dollars) was comparable to the cost of \$102.50 (in 2013 US dollars) found in reviews of prior studies with more limited interventions.^{30,45,46}

Another positive outcome of Philani+, in addition to providing services to pregnant women, was the training and support provided to its community health workers. As a part of the Philani Nutrition Program, within which Philani+ was nested, most Mentor Mothers are employed for several years, and many become assistant coordinators. Further, the Philani Nutrition Program provides funding to support some Mentor Mothers in receiving training through the South African Nursing Council to become nurses and Philani Nutrition Program coordinators.

Conclusion

Philani+ was an innovative, multi focal point intervention that utilized Mentor Mothers to improve maternal and child health. The employment of Mentor Mothers resulted in cost savings compared to the use of nurses, and it built capacity in a country with a high unemployment rate and shortages of health care workers. Notably, it was able to improve several child health outcomes at a relatively low cost considering the costs to the health system caused by low birthweight and undernutrition.

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Notes

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Exhibit 4. Percentages meeting the criteria for success among mothers in the Philani+ program to improve maternal and child health and mothers receiving standard care in Cape Town, South Africa

Source/Notes: SOURCE 16 NOTES The exhibit shows outcomes from the Philani+ cluster randomized controlled trial. Denominators (sample sizes) were $N = 608$ (intervention group) and $N = 549$ (standard care group); numerators for birthweight, height for age, and exclusive breastfeeding, respectively, were 577, 546, and 573 (intervention group) and 489, 484, and 491 (standard care group). The unadjusted risks shown here are the differences in proportions of outcomes between the intervention and standard care groups (see le Roux IM, Tomlinson M, Harwood JM, O'Connor MJ, Worthman CM, Mbewu N, et al. Outcomes of home visits for pregnant mothers and their infants: a cluster randomized controlled trial [see Note 16 in text]). Adjusted risk differences were generated from random effects logistic regression, adjusting for neighborhood clustering. The adjusted risk difference for low birthweight was 0.03 (95% confidence interval: 0.00, 0.06), for stunting was 0.05 (95% CI: 0.02, 0.09), and for exclusive breastfeeding was 0.08 (95% CI: 0.04, 0.12). Significance indicators denote the difference from zero of adjusted risk differences. * $p < 0.10$ ** $p < 0.05$

Exhibit 1:

Financial costs of the Philani+ program and cost estimations of an increased capacity scenario and a nurse-led scenario

Intervention Component	Philani+	Increased capacity scenario ^b	Nurse scenario ^a
Startup costs			
Hiring	\$83	\$83	\$83
Equipment ^c	\$4,028	\$3,021	\$4,028
Initial training	\$8,035	\$6,026	\$8,035
Total startup	\$12,146	\$9,130	\$12,146
Recurrent costs			
Program manager	\$8,294	\$8,294	\$8,294
Assistant coordinator	\$6,048	\$3,024	\$6,048
Mentor Mother salaries	\$38,362	\$28,771	\$259,200
Operations	\$870	\$652	\$870
Supplies	\$404	\$303	\$404
Training and support	\$26,023	\$19,517	\$0
Total recurrent	\$80,001	\$60,562	\$274,816
Start-up plus recurrent costs			
Total	\$92,146	\$69,692	\$286,961

SOURCE Philani+ financial records and calculations. NOTE Costs are in 2016 US dollars.

^aPart-time nurse salaries replace those of Mentor Mothers in this scenario.

^bThis scenario assumes that nine Mentor Mothers can conduct the same number of visits as twelve did in the Philani+ intervention.

^cEquipment costs have been amortized.

Exhibit 2:

Average recurrent costs by program unit and outcome of the Philani + program, an increased capacity scenario, and a nurse-led scenario.

	N	Philani+ ICER	Increased capacity scenario ^b ICER	Nurse scenario ^a ICER
<u>Program units</u>				
Per home visit	5,799	\$14	\$10	\$47
Per participant	644	\$124	\$94	\$427
Per mentor mother	12	\$6,667	\$10,094	\$22,901
Per month	24	\$3,333	\$2,523	\$11,451
<u>Outcomes</u>				
Per low birth infant averted ^c	18	\$2,397	\$1,814	\$8,233
Low	0	-	-	-
High	37	\$1,192	\$902	\$4,094
Per stunting averted	33	\$2,454	\$1,858	\$8,430
Low	12	\$6,615	\$5,008	\$22,723
High	53	\$1,506	\$1,140	\$5,174
Per exclusive breastfeeding added	49	\$1,618	\$1,225	\$5,556
Low	23	\$3,421	\$2,590	\$11,752
High	76	\$1,059	\$802	\$3,638

SOURCE Philani + financial records. NOTES Incremental cost-effectiveness ratios (ICERs) are calculated as the average recurrent costs divided by the change in outcomes. Costs are in 2016 US dollars. Calculations were made on unrounded numbers and then rounded to the nearest decimal point.

^a Assumes half the training costs incurred for Mentor Mothers.

^b Assuming that nine Mentor Mothers can achieve the same number of visits as twelve did in the Philani+ intervention.

^c Average cost of all prenatal visits by low birthweight infants averted.

Exhibit 3:

Baseline characteristics of women in the Philani+ sample, by intervention and standard care groups

	Intervention (N = 644)		Standard care (N = 594)		Total (N = 1,238)	
	n	% or SD	n	% or SD	n	% or SD
Sociodemographic characteristics						
Age (years), mean	26.5	5.5 ^a	26.3	5.6 ^a	26.4	5.5 ^a
Highest education level (years), mean	10.3	1.8 ^a	10.3	1.8 ^a	10.3	1.8 ^a
Currently employed	129	20.0	104	17.5	233	18.8
Married or lives with partner	377	58.5	324	54.5	701	56.6
Monthly household income >R2,000	280	45.6	279	48.1	559	46.8
Has formal housing	197	30.6	191	32.2	388	31.3
Has water on site	333	51.7	327	55.1	660	53.3
Has flush toilet on site	340	52.8	343	57.7	683	55.2
Has electricity on site	569	88.4	543	91.4	1,112	89.8
Alcohol use during pregnancy	56	8.7	49	9.8	105	9.2
Weeks pregnant, mean	26.0	7.9 ^a	25.8	8.4 ^a	25.9	8.1 ^a
Previously given birth	422	65.5	394	66.3	816	65.9
Previously had low-birthweight infant	61	14.5	69	17.5	130	15.9
Maternal depression						
EPDS, mean	11.2	6.9 ^a	10.4	7.1 ^a	10.8	7.0 ^a
EPDS >13	238	37.0	195	32.8	433	35.0

SOURCE le Roux IM, Tomlinson M, Harwood JM, O'Connor MJ, Worthman CM, Mbewu N, et al. Outcomes of home visits for pregnant mothers and their infants: a cluster randomized controlled trial (see Note 16 in text). NOTES EPDS stands for Edinburgh Postnatal Depression Score. * $p < 0.05$ (t-tests for continuous variable or χ^2 tests for discrete variables).