Do Women Respond to Expansions in Reproductive Health Care?

Elizabeth Frankenberg

One of the cornerstones of progress in improving the health outcomes of women in developing countries is improving the quality and availability of health care that women receive while pregnant and during delivery. In this paper we examine the relationship between access to health services and women's use of prenatal and delivery care. The context for our research is Indonesia. In the 1990s, concerned that maternal mortality rates were significantly higher than in other ASEAN nations, Indonesia introduced a program to expand access to nurse-midwives. Between 1990 and 1998 some 54,000 graduates of nursing academies were given one year of midwifery training and placed in under-served communities (Sweet et al., 1995; Ministry of Health, 2000).

We evaluate the extent to which this major expansion of access to midwifery services has affected women's health-seeking behaviors. Because many countries have attempted to increase access to care through the provision of outreach workers to underserved areas, an evaluation of the impact of Indonesia's village midwife program on women's health-seeking behaviors provides results of general relevance for developing countries.

The purposeful targeting of the program to underserved areas where health is likely to be poor raises a methodological issue that complicates efforts to link access to care to health outcomes. If targeting is based on observable characteristics that are controlled in an evaluation of the program, purposive program placement poses no conceptual difficulty. On the other hand, if program placement is associated with characteristics that are unobserved or unmeasured, failure to take account of the fact that placement is nonrandom will generally lead to biased estimates of the impact of the investment (Angeles, Guilkey, and Mroz 1998).

We approach this problem in two ways. First, we explore whether the presence of a village midwife in a community by the mid 1990s is correlated with aspects of the community measured at an earlier point in time (results are presented and discussed below). Second, we exploit the availability of retrospective data on pregnancies that occur in the same village, but at different times—before and after the arrival of the midwife. In this way, we hold constant aspects of the village that do not vary over time and that affect both women's decisions regarding use of care *and* access to midwives. In some cases a woman will have had a pregnancy before the midwife arrived and another pregnancy after her arrival. For the women with multiple births spanning the point when the midwife arrived, we can compare whether decisions made after the midwife arrived differ from those made before. In this sort of a comparison, time-invariant factors specific to the individual woman are held constant.

DATA

Our data come from the Indonesia Family Life Survey, an ongoing panel survey of individuals, households, communities, and facilities. The first round of data (IFLS1, collected in 1993) included interviews with 7,224 households. The IFLS1 conducted interviews in 321 enumeration areas in 13 of Indonesia's 26 provinces, and represents about 83% of the Indonesian population. In 1997 a resurvey (IFLS2) was conducted, which sought to reinterview all IFLS1 households (and all members of these households in 1997), as well as a set of target members of IFLS1 households in 1993 who had migrated out by 1997. IFLS2 succeeded in reinterviewing 94.5% of IFLS1 households. In 2000 and third wave of the IFLS was conducted, and 95% of IFLS1 households were reinterviewed. In IFLS2 and IFLS3 the community and facility components of the surveys were repeated.

The IFLS questionnaire covers a broad array of topics. Key for this study, interviewers questioned woman at length about their use of prenatal and delivery care for pregnancies occurring within five years of the survey. These questions allow us to construct measures of whether prenatal care was received, the quantity and quality of the care, and where the delivery took place. In IFLS3 women were also questioned about their knowledge and use of pap smears and breast self-exams.

Another key feature of the IFLS is that an extensive community and facility survey was conducted in each wave. We use the IFLS community survey data to measure whether each community has a village midwife, and when the midwife arrived.

PRELIMINARY RESULTS

Descriptive statistics indicate a substantial increase in access to village midwives during the mid 1990s. In 1993 about 10% of IFLS communities had a village midwife. By 1997 that fraction had increased to 46%. The level in 2000 is similar.

To examine how these midwives were allocated across communities, we use the IFLS data from 1993 to explore how aspects of socioeconomic development and health status, measured at the community level in 1993, are associated with expansion in access to midwives between 1993 and 1997. The dependent variable in the regressions is a dichotomous indicator of whether the community gained a village midwife between 1993 and 1997. The results are presented in Table 4.

We include as a regressor average per capita expenditure levels of households in the community (measured in 1993) to test whether gaining a village midwife varies with the community's wealth. Expenditure is specified as a spline with a knot at the 25th percentile. For communities in the lowest quartile of the expenditure distribution, higher household expenditure does not affect the probability that a village midwife will be assigned to the community between 1993 and 1997. In contrast, for mean expenditure level in communities with expenditures in the top three quartiles of the distribution, the coefficient is large, negative, and statistically significant. The results provide strong evidence that among the IFLS communities, the poorest as of 1993 were most likely to gain a village midwife by 1997.

We also include controls for province (coefficients not shown) and for other aspects of community infrastructure. The results reveal that the greater a community's distance from a health center in 1993, the more likely that community was to gain a village midwife by 1997. Distance from a private practitioner also has a positive but only marginally significant effect. In addition, communities with a public phone in 1993 were significantly less likely to gain a village midwife by 1997. The empirical evidence suggests that the communities into which village midwives were introduced between 1993 and 1997 were those that in 1993 were relatively poor and located far from public health services. It will be important, then, to address the issue of non-random program placement in our assessment of the relationship between program expansion and use of prenatal and delivery care.

We have conducted preliminary analyses of this relationship. We consider a series of binary outcomes regarding use of prenatal care (whether any care was obtained, and whether visits were made in each of the three trimesters), content of prenatal care (whether the woman received a tetanus toxoid injection, iron pills, had blood pressure measured, had height measured, had weight measured) and choices regarding delivery (whether a biomedically trained attendant was present, whether the woman delivered at home with a traditional birth attendant). In Table 2 we show the coefficients associated with the presence of a village midwife. The estimates are from logistic regression models that include controls for whether the pregnancy was the woman's first one, her age, her educational level, the per capita household expenditure level of her household, and her height. A community fixed effect is included as well to control for unobserved features of the community that may affect both whether a midwife is present and health-seeking behaviors of women within the community.

Preliminary results suggest that having access to a village midwife during pregnancy does affect use of reproductive health care. Women are considerably more likely to receive prenatal care during their first trimester when a village midwife is available. The presence of a village midwife in the community is also related to the content of prenatal care, serving to increase the likelihood of receiving iron tablets, and having height and weight measured. Finally, women are more likely to deliver in the presence of a biomedically trained attendant, and less likely to deliver at home with a traditional midwife when their pregnancy occurred at a time when a village midwife was located in their community.

Table 1: Community-level Correlates of Gaining a Village Midwife by 1997

	Coefficients
1993 per capita expenditure < 25th %	1.05
(spline)	(0.92)
1993 per capita expenditure >= 25th %	-1.28**
(spline)	(0.48)
Urban residence	-0.27
	(0.36)
Distance to nearest health center	0.27**
	(0.12)
Distance to nearest private practice	0.25*
	(0.13)
Monthly visit by Health Ctr Staff ('93)	0.15
	(0.73)
Public phone in the community	-0.92**
	(0.38)
Market in the community	-0.03
	(0.33)
Main roads are paved	0.37
	(0.35)
Constant	-11.00
F	93.52
Prob (F)	(0.00)
R^2	0.22

Logistic regressions, level of observation is IFLS enumeration area; sample size is 321. Standard errors reported in parentheses. *=p<=.10, **=p<=.05

Table 2 Preliminary Results: Relationship between Use of Care during Pregnancy and Presence of a Village Midwife

A Use of Prenatal Care	Used any care	Used care in 1st trimester	Used care in 2nd trimester	Used care in 3rd trimester
Village Midwife present during pregnancy	0.04 (0.85)	0.33 (0.02)	-0.06 (0.85)	-0.20 (0.55)

B. Content of Prenatal Care	Received tetanus toxoid	Received iron tablets	Blood pressure was measured	Height was measured	Weight was measured
Village Midwife present during pregnancy	-0.14 (0.64)	0.47 (0.06)	0.13 (0.69)	0.36 (0.09)	0.61 (0.04)

C. Delivery Assistance	Delivered in the presence of a biomedically trained attendant	Delivered at home with a traditional birth attendant
Village Midwife present during pregnancy	0.36 (0.00)	-0.37 (0.04)

Results are from logistic regressions. Controls are included for whether the pregnancy was the woman's first one, her age, her educational level, the per capita household expenditure level of her household, her height. A community fixed effect is included as well to control for unobserved features of the community that may affect both whether a midwife is present and health-seeking behaviors of women within the community. P-values displayed in parentheses below the estimates.