PAA 2014 Extended Abstract - It's complicated: Planning for Pregnancy in Indonesia

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Indonesia has made impressive gains on many demographic indicators, but maternal mortality remains stubbornly high, and in fact rose from some 228 deaths per 100,000 live births in 2007 to an estimated 359 per 100,000 live births in 2012 (DHS 2013). On the one hand, the lack of progress is surprising given Indonesia's success on dimensions of human capital such as infant survival and educational attainment and its efforts to address maternal mortality through improving recognition of risks and access to health services. On the other hand, some of the complications that kill women during childbirth can only be treated in facilities with the capacity for surgery and blood transfusions, which remain few and far between in many parts of Indonesia.

In this paper we draw on three rounds of DHS data (2002, 2007, and 2012) to examine family- and couple-level determinants of and changes over time in women's, men's, and couples' knowledge and behaviors related to pregnancy and delivery—factors that combine to affect survival chances during a delivery. Because the DHS 2012 data were released just this week, in this abstract we present results only for the earlier two surveys.

Background

Two major campaigns comprise Indonesia's efforts to address maternal mortality. The more recent of these began in 1999 and emphasized the concept of "Suami SIAGA" (loosely, "watchful husbands"), which educated men as well as women about pregnancy complications and encouraged couples to work together to formulate plans for getting adequate care in the event of danger signs. The SIAGA program expanded quickly and by 2006 brought communities, their citizens, and local midwives into the arena, charging these various groups with taking greater responsibility (Hill 2013).

The SIAGA efforts built on an earlier program to expand access to trained midwives through its "Midwife in the Village" program. This program trained and placed some 50,000 midwives into underserved rural communities in the early 1990s. In previous work we have shown that this program improved women's health outcomes and prenatal care use (Frankenberg and Thomas 2001; Frankenberg et al. 2008).

Data and Methods

Our paper uses data from the last three waves of the Indonesia Demographic and Health Survey (DHS), which provide nationally representative data for a period spanning some fifteen years (1997-2012). The surveys contain information on pregnancies and deliveries for tens of thousands of women, over a period during which Indonesia switched from a highly centralized decision-making system to much greater local level control over investment of resources. We can combine these data with community-level information from Indonesia's *Potensi Desa* censuses. These censuses are conducted annually in each village in Indonesia and provide

information on presence of various sources of health care (including whether a village midwife and a village delivery location are available), as well as whether the village participates in the SIAGA program.

We create outcome measures that reflect three constructs: knowledge of pregnancy and delivery complications, preparations for delivery, and choices regarding the location of and attendant at delivery. In combination these constructs encapsulate the processes through which couples execute a strategy for childbirth that guards against the risk of a maternal death. We examine changes in these measures over time and by region. We also consider how these measures are related to family-level markers of socioeconomic status and to community-level measures of access to care and to networks that provide funds, supplies, and transportation during obstetric emergencies.

In preliminary work drawing on the 2002 and 2007 surveys, we have developed an index of knowledge of major complications that can occur during or just after pregnancy/delivery, which reflects four danger signs: bleeding, convulsions, fainting, and fever. We also have developed an index of planning for delivery that encompasses where to deliver, whom to call on for assistance during the delivery, whether transportation exists, whether there is a payment, and whether a blood donor has been identified. In the surveys, all women are asked about pregnancy complications, while planning items are asked of women who report a live birth in the five years prior to each survey. A subset of husbands are interviewed at random and asked the same questions about complications and preparedness. These data allow us to consider the knowledge of women, of men, and of couples considered as a dyad.

The DHS provides information on ever-married women between 15 and 49 years of age. For at least some of these women an additional pregnancy is relatively unlikely because they have completed childbearing and want no more children. In order to focus the spotlight on women most likely to conceive, we stratify women into two groups. We define as “likely to become pregnant” women who are under 35 years old or are currently pregnant or are older than 35 but have declared that they would like to have more children. We consider women unlikely to become pregnant if they are over 35 and do not want more children; are widowed, divorced, infecund, or sterilized; or are under 35 but do not want more children. We subdivide men on the basis of their wife’s classification. Lastly, we create outcome measures that aggregate to the level of the couple (whereby a couple is considered to have knowledge of pregnancy complications or to have made plans for delivery if either the husband or the wife does).

Preliminary results

Descriptive statistics reveal that improvements in knowledge and preparedness are moving very slowly between the two periods we study. Knowledge of complications has increased little for both men and women over time in terms of magnitude. While the percent of women who report knowing no complications has decreased, the percentage of uninformed men has increased. Women report making slightly more plans for delivery and men report no change.

The percentage of women who make no plans has gone down; however, men become more disengaged from planning and a larger proportion report making no plans.

We go on to use linear probability models to examine variation in knowledge of complications and preparedness by year, rural residence, age of the mother, and socioeconomic status (measured with education and wealth). Our models include province controls to capture regional variation in intensity of programs oriented around maternal health. We use the survey weights provided by DHS and robust standard errors.

Preliminary results, for women and for men, are presented in Table 2. With respect to knowledge of complications, no gains were made between 2002 and 2007 in terms of increasing women's awareness of possible danger signs during pregnancy and delivery. Knowledge levels do not vary between urban and rural areas, nor do they vary in any meaningful way by age. The strongest differentials emerge by educational level, with women who have some post-secondary education aware of nearly one additional complication than those with no education. Smaller but highly significant differences exist by socioeconomic status as well. For men the results are somewhat different. Men actually know less about complications in 2007 than in 2002. Age serves to increase knowledge but there is a weak gradient. For only the best-educated men is there a knowledge differential, and there are no differences by wealth. For men, relatively few differentials emerge across the characteristics we consider, but the erosion of progress over time suggests that stratifying by year may reveal differentiating characteristics in one or the other periods.

The story for degree of planning is different than that for complications. Women register a significant increase in preparedness between the two survey waves, but rural women report lower levels of planning. Younger women are also better prepared, and the differences by level of education are large (a wealth gradient exists as well, but differences between those at opposite ends of the spectrum are much smaller). On this index demographic and socioeconomic patterns for men roughly mirror those for women. Older age is associated with less planning and preparation, whereas more education (and wealth) increase the index though the gains are much stronger for wealth.

Future Work

Between now and the PAA meetings we plan to extend our work in three important ways. We will take advantage of the couple sample to consider whether couples pool knowledge and preparatory activities in ways that suggest that the couple is better positioned to deal with childbirth than are men and women considered as individual units. Second, we will extend our results to 2012, a period during which maternal mortality increased. If the increase occurred without changes in levels of knowledge and preparation (or as these factors were improving), their importance is called into question. Third, we will attempt to merge in data at the community level from the village potential censuses, which will let us better control for community resource levels devoted to maternal health.

Table 1. Descriptive Statistics

	2002	2007
Complications [range: 0-4]		
mean (sd)		
women	0.5 (0.7)	0.5 (0.7)
men	0.3 (0.6)	0.2 (0.5)
% who know no complications		
women	63.5	57.9
men	73.5	80.5
N women	12975	14987
N men	3688	3845
Preparedness [range: 0-5]		
mean (sd)		
women	2.4 (1.7)	2.6 (1.7)
men	2.2 (1.6)	2.2 (1.7)
% who have no plan		
women	23.9	21.0
men	24.4	27.3
N women	7554	8586
N men	3171	2353

Table 2. Variation in knowledge and preparedness

	knowledge		preparedness	
	Women	Men	Women	Men
	(1)	(2)	(3)	(4)
year == 2007	0.02	-0.09***	0.11***	-0.07
	(0.01)	(0.02)	(0.04)	(0.07)
rural	-0.00	-0.01	-0.15***	-0.12
	(0.02)	(0.02)	(0.05)	(0.09)
Age (ref = < 20)				
age 20-34	0.03**	0.17***	0.17***	-0.77**
	(0.02)	(0.04)	(0.06)	(0.36)
age 35+	-0.00	0.14***	0.06	-0.96***
	(0.03)	(0.04)	(0.13)	(0.36)
Education (ref = no education)				
incomplete primary	0.11***	-0.01	0.52***	0.10
	(0.03)	(0.05)	(0.13)	(0.26)
complete primary	0.16***	0.05	0.78***	0.22
	(0.02)	(0.05)	(0.13)	(0.26)
incomplete secondary	0.29***	0.06	1.09***	0.27
	(0.03)	(0.05)	(0.13)	(0.26)
complete secondary	0.47***	0.14***	1.30***	0.62**
	(0.03)	(0.05)	(0.13)	(0.26)
higher	0.72***	0.36***	1.68***	0.90***
	(0.04)	(0.07)	(0.15)	(0.28)
missing	0.80***	-0.01		-0.39
	(0.04)	(0.06)		(0.29)
Wealth (ref = poorest)				
poorer	0.04**	0.02	0.17***	0.24**
	(0.02)	(0.02)	(0.06)	(0.10)
middle	0.12***	0.05*	0.26***	0.37***
	(0.02)	(0.03)	(0.07)	(0.11)
richer	0.12***	0.01	0.39***	0.42***
	(0.02)	(0.03)	(0.08)	(0.13)
richest	0.16***	0.05	0.47***	0.46***
	(0.03)	(0.03)	(0.09)	(0.14)
province controls	yes	yes	yes	yes
Constant	0.03	0.05	0.87***	2.36***
	(0.04)	(0.07)	(0.16)	(0.48)
Observations	27,962	7,533	16,140	5,524
R-squared	0.14	0.10	0.12	0.10

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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