

# Community Effects on Pregnancy Intention Among Cohabiting Women in The Philippines: Implications for Maternal and Child Health

Chi Chiao · Chin-Chun Yi · Kate Ksobiech

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**Abstract** Unintended pregnancy impacts both maternal and child health. International studies continue to emphasize the importance of reproductive health in the context of community. Only a few researchers have explored the impact of community factors on pregnancy intention using population-based surveys. This issue is of particular importance for women of low socioeconomic status in developing countries, where unintended fertility rates remain relatively high. Using the 1998 ( $n = 6,849$ ) and 2003 ( $n = 6,773$ ) Demographic and Health Surveys in the Philippines, we employed multi-level logistic models to explore whether community factors are associated with pregnancy intention among these women. The results showed community social capital, comprised of community-related variables, significantly predicted women's pregnancy intention, even after controlling for women's socioeconomic status, individual background factors, and spousal characteristics. The relationship between pregnancy intention and selected variables associated with community social capital, however, was not consistent across the two surveys. Community context, in general, has a significant influence on women's pregnancy intention. Specific components of the community context vary in their associations with pregnancy intention over time. In addition, differences in pregnancy intention may explain individual-level

social disparities between communities. These findings suggest population health policies designed to promote maternal and child health must be context-specific.

**Keywords** Community context · Pregnancy intention · Population-based survey · The Philippines

## Introduction and Background

Despite international support for improving maternal and child health over the past few decades, the health consequences associated with unintended pregnancy remain a concern, particularly for women of low socioeconomic status in general, and those living in developing countries in particular [1, 2]. Unintended pregnancy is often related to an increased likelihood of poor nutrition, frequent illness, and infections in children [1, 3], abortion [4], and, in rare instances, maternal death [5, 6].

Research on pregnancy intention has traditionally focused on characteristics of women. Social status variables such as age, education and work status predict women's pregnancy intention through their inherent social qualities. Young, less educated women or those earning low wages are more likely to have higher pregnancy intention because motherhood may be positively related to perceptions of being a good wife [7, 8]. There is ample evidence employment status and job characteristics are associated with women's perceived ability to balance family and work needs [8–12]. In addition, women's experience with childbearing is crucial to their future pregnancy intention. The birth of each child alters mothers' perceptions in ways they cannot entirely anticipate, causing them to reevaluate their initial fertility plans and/or change their pregnancy intention [13, 14].

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C. Chiao (✉)

Institute of Health and Welfare Policy, College of Medicine,  
National Yang-Ming University, No. 155, Sec. 2, Li-nong St.,  
112 Taipei, Taiwan, ROC  
e-mail: cchiao@ym.edu.tw

C.-C. Yi

Institute of Sociology, Academia Sinica, Taipei, Taiwan, ROC

K. Ksobiech

Terra Nova Learning Systems, Wauwatosa, WI, USA

Existing studies have also paid attention to characteristics of women's partners related to pregnancy intention. Male partners working in agriculture, as suggested by the land-security hypothesis, often want more children to increase the supply of labor available on the farm [15]. Despite continued economic progress among developing countries over the last several decades, child labor in agricultural work remains widespread, and having many children helps reduce economic risks associated with farming as the male grows older [16, 17]. Pregnancy intention is thus hypothesized to be linked to spousal characteristics such as employment status, especially in rural, developing nations.

On the other hand, an equally important but much less investigated aspect of pregnancy intention is community context. The present study attempts to explain variations in pregnancy intention by examining the influence of community factors as suggested by the ecological and community social capital theories [18, 19]. The ecological theory focuses on individuals in social context [8, 20]; the idea of community social capital further includes structural components that consider the extent and intensities of associational links and pregnancy intention [21]. These theories focus on the extent to which individual attitudes and behaviors are collectively shaped by social networks and resources through their socioeconomic status and household characteristics. Studies by Hirschman and Young [20], Philipov, Speder and Billari [21], Kohler [22] found women intend to bear more children when social and community capital is high, although the magnitude of this relationship depends on social context.

Accordingly, we hypothesize that community social capital facilitates the adoption of social attitudes that, in turn, shape women's future pregnancy intention related to reproductive and child health. The development of community social capital is influenced by the cultural and socio-economic characteristics of a given society's structure and serves to share and maintain socially desired attitudes through a complex matrix of biological, psychological and social factors. As suggested by Putnam and colleagues [19], social and community factors work to create both community homogeneity and community cohesion and these relationships serve as the foundation that shapes social attitudes such as pregnancy intention [8, 13, 23]. This can be interpreted as implying that living in communities with high levels of desired pregnancy intention may, in turn, lead to direct functional support, and promote particular maternal and child health behaviors among the women in these communities.

The dataset to be analyzed herein does not have the capacity to test every aspect of this conceptual framework, but does allow for the examination of some major variables. We therefore examine the components of the

community environment (community development and community social capital) that may either facilitate or exacerbate individual pregnancy intention. We specifically assess five community factors: community religion (Catholic vs. non-Catholic), community education, residential stability, electricity coverage, and female labor force participation. According to community social capital theory, we hypothesize cohabiting women living in communities with a higher level of community/social capital will have higher pregnancy intention. Furthermore, this study investigates the extent to which pregnancy intentions are homogeneous within communities, even after controlling for individual and spousal characteristics. Since the majority of births in the Philippines occur to women in a permanent relationship with a man [24], this study focuses on cohabiting women.

## Methods

### Sample and Data Collection

This study utilizes data from the Demographic and Health Surveys (DHS) carried out in the Philippines during 1998 and 2003; these were nationally representative surveys of Filipinas aged 15–49, using a two-stage sampling strategy. The surveys were designed to examine women's reproductive behavior and health; thus, they collected detailed information on fertility, family planning, infant, child and maternal mortality, and maternal and child health in the Philippines. Further information on the DHS can be found at [www.measuredhs.com](http://www.measuredhs.com). The DHS also defined a community by census tract.

Given the current research aims to gain a better understanding of the relationship between pregnancy intention and community context, the analyses focused on currently cohabiting fecund women aged 15–49 who expressed an intention for future childbearing. This selection yielded a total of 6,849 women from 752 communities in 1998, and 6,773 women from 819 communities in 2003. For our purposes, there is at least one limitation to the DHS data—the questionnaire did not allow for coding the degree of pregnancy intention; specifically, a woman who self-reported a strong pregnancy intention is categorized into the same group as a woman who has a very limited intention.

### Measures

#### *Dependent Variable*

Pregnancy intention was defined by future pregnancy [25] through the question: “Now I have some questions about

the future. Would you like to have (a/another) child or would you prefer not to have any (more) children?" Responses are categorized into two categories: to have a (another) child (coded as 1), and to have no more/none (the reference group and coded as 0). Pregnancy intention did not seem to change between 1998 and 2003; in both surveys, about 39% of the sampled cohabiting women reported they intended to have a child in the future (Table 1).

#### *Community-Level Explanatory Variable*

A mean score for each community was created by averaging all individual responses within each tract. The study sample within each tract was assigned with the computed mean score. Two sets of community factors are hypothesized to affect women's pregnancy intention: (1) *female labor force participation* [14, 26] and (2) *community social capital* [27]. The measures used in the DHS to assess community social capital include dominant religious group, community education, residential stability and community coverage of electricity. Measures of female labor force participation and dominant religious group were divided into quartiles, with the lowest as the omitted group. Community education was operationalized by the percent of individuals in a block having an incomplete primary education or lower. The measure of residential stability was assessed by the percentage of individuals in a block residing for 10 years or longer. Blocks with more than 80% of individuals having resided therein for 10 years or longer were categorized as "stable" residential blocks, while others were regarded as "unstable" residential blocks (the reference group). The indicator of community development, community coverage of electricity, was operationalized by the percentage of households in a block using electricity. Blocks with 100% electricity coverage were classified as "high community development," and the rest were regarded as "low community development" blocks (the reference group).

#### *Individual-Level Explanatory Variable*

Previous research has shown a significant association between childbearing background and pregnancy intention [13, 14]. Three measures related to childrearing status were used in this study: (1) parity (2) having young children under 3 years of age, and (3) currently pregnant. *Parity* was categorized as the *current number of surviving children* coded as zero, one, two, three, and four or more (the reference category). The dichotomous measure of *having young children under 3 years of age* was based on women's self-reports, and having no young child was coded as the reference category. Lastly, the measure of *currently being pregnant* was also coded dichotomously, with not pregnant as the reference group.

The current study includes several demographic and socioeconomic measures believed to be particularly likely to confound the associations between women's current employment status, current childrearing status, and pregnancy intention [13, 28, 29]. Female labor force participation in relation to fertility encompasses an essential aspect of work conditions that may contribute to conflicts between employment and childbearing [10, 30, 31]. In order to distinguish non-employment from employment and further to explore whether convenient working conditions play a crucial role in women's employment, we divided employment status into three categories: employed away from home (coded as 1), employed at home (coded as 2), and non-employed (the omitted group and coded as 0). The majority of people in the Philippines are Catholics. We categorized religious status into two categories: Catholic and non-Catholic. Table 1 shows the distribution of women's employment status and religious affiliation was similar in 1998 and 2003. Both surveys indicated that over 45% of women were unemployed, 37% worked outside the home, and that the remainder worked at home. About 80% of the sampled women were Catholic, and 20% reported another religious affiliation.

Other individual characteristics included were: *age*, *education attainment*, and *marital union status* (married or living together in union). The analysis also included spousal variables such as *age gap*, *education gap*, *partners' occupation*, and *fertility preference discussion with the partner* (never, not very often or very often) [32, 33]. Age gap was calculated by subtracting the female partner's age (in single years) from the male partner's age with two categories: less than 10 years and 10 years or more (the reference group). Using a similar strategy, education gap was calculated by subtracting years of schooling of the female partner from years of schooling of the male partner with two groups: male lower and equal or male higher (the reference group).

#### *Analytical Strategy*

Analyses began with bivariate tabulations that characterized the distribution of community-, individual- and spousal-level characteristics of the sample population by pregnancy intention. Then, to address our research questions, we used multilevel modeling techniques [34] to study the simultaneous associations between community context and pregnancy intention, adjusting for individual and spousal backgrounds. A two-level (level 1 = individuals, level 2 = census tract/community) random intercept logit model was utilized for a binary outcome of pregnancy intention. The random intercept is shared by all sampled women in the same census tract and this model incorporates the simultaneous effects of individual- and

**Table 1** Percentage distribution of individual- and community-level variables, Demographic and Health Surveys (DHS) 1998 and 2003 in the Philippines

	1998	2003
<i>Community-level covariates</i>	( <i>n</i> = 752)	( <i>n</i> = 819)
Female labor force participation		
Percentage of employed women aged 15–49	51.22	51.35
Community social capital		
Percentage who are members of the Catholic religious group	77.93	79.76
Proportion with incomplete primary education or lower	15.56	12.09
Percentage with $\geq 80\%$ with residential duration of $\geq 10$ years+	30.59	21.98
Percentage with electricity	28.32	31.26
<i>Individual controls</i>	( <i>N</i> = 6,849)	( <i>N</i> = 6,773)
Current childbearing status		
Number of surviving children		
0	7.52	9.40
1	19.05	20.51
2	21.00	22.30
3	17.99	16.56
4+	34.44	31.23
Has children under age 3		
Yes	46.77	41.37
No	53.23	58.63
Currently pregnant		
Yes	10.24	9.23
No	89.76	90.77
Socioeconomic status of women		
Age		
15–24 years old	16.76	17.80
25–34 years old	42.67	40.49
35–49 years old	40.57	41.71
Education		
Incomplete primary education or lower	14.42	13.38
Primary education (completed)	19.89	15.94
Secondary education (incomplete and completed)	37.13	41.74
Higher than secondary education	28.56	28.94
Employment status		
Working at home	16.48	15.42
Working outside home	37.38	37.33
Unemployed	46.14	47.25
Religion		
Roman catholic	80.92	80.52
Non-catholic	19.08	19.48
Union status		
Married	91.55	89.23
Living together	8.45	10.77
<i>Spousal characteristics</i>		
Age gap <sup>+</sup>		
Less than 10 years	91.31	90.89
10+ older	8.69	9.12
Education gap <sup>+</sup>		
Male lower	35.59	38.78
Male same or higher	64.41	61.23

**Table 1** continued

	1998	2003
Occupation of male partner		
Agriculture related	33.12	28.44
Professional, technician or manager	6.02	12.76
Others	60.87	58.81
Discussed fertility preference with partner		
Never	19.98	19.47
Not very often	39.11	50.38
Very often	40.91	30.15
<i>Outcome measure</i>		
Intention for another child		
Yes	38.80	38.55
No	61.20	61.45

+ Age gap is computed by “age of male partner minus age of female partner.” The computation of the age gap is same as education gap

*Note:* Community-level variables were based on census tract unit

community-level variables on the likelihood of pregnancy intention in terms of future childbearing. We used this multilevel model because it emphasizes the way individual pregnancy intention varied across communities and was able to examine whether the community environment independently influenced the likelihood of pregnancy intention after adjusting for individual and spousal characteristics. All analyses were weight adjusted for DHS sampling strategy. Descriptive statistics for the analytical sample are calculated using the survey commands in Stata version 10.0 [35]. HLM 6.0 programs for the 2-level multilevel logistic regression models [34] as the sample is potentially clustered on two levels: individual (level 1) and community (level 2).

## Results

Table 2 provides descriptive statistics stratified by pregnancy intention. Overall, reports of pregnancy intention were significantly higher among women living in the communities with the higher proportion of Catholic residents for both 1998 and 2003 and in the communities with 100% electricity coverage in 1998. Pregnancy intention was also significantly higher among women with fewer surviving children, those who were younger, had higher education attainment, were unemployed, and were non-Catholic for both surveys. And finally, women who reported a higher likelihood of having another child were less likely to discuss their fertility preference with their partners in 1998, but not in 2003.

### Does Community Context Affect Pregnancy Intention?

Multilevel logistic regressions simultaneously consider the effects of individual and community characteristics on pregnancy intention (Table 3). Community-level female

labor force participation showed a significant negative association with women’s pregnancy intention in 1998, but not in 2003. In 1998, cohabiting women living in tracts with the highest quartile of percentage of employed women were less likely to intend pregnancy, compared to women living in communities in the lowest quartile of percentage of employed women (OR = 0.69,  $P < 0.01$ ). This statistically significant relationship was also found in 2003.

Several measures in the concept of community social capital are significant; however, some act in contradictory directions. For both 1998 and 2003, women living in a tract where a high percentage of the population had incomplete primary education or lower had a 2–3 times higher odds of pregnancy intention, compared to women living in more highly educated communities. However, women in communities with a higher percentage of Catholic residents had significantly lower odds for pregnancy intention than women in communities with a lower percentage of Catholic residents. In 2003, women in the residentially stable communities, as measured by tracts where at least 80% of the residents had lived in the same house for 10 years or longer, had significantly higher odds of pregnancy intention, compared to women in communities with lower residential stability; this relationship was absent in 1998. And, individuals in the communities with 100% electricity coverage had significantly lower odds of pregnancy intention in 2003, but not was non-significant in 1998.

### Are Women’s and their Spouses’ Backgrounds Related to Pregnancy Intention?

In the presence of controls for a large number of observed characteristics of individuals, spouses, and communities, multivariate analyses found individuals who showed intention for another child were likely to be younger in both 1998 and 2003. In contrast, women who had lower future pregnancy intention were currently pregnant and

**Table 2** Percentages (%) / correlations (r) and crude OR with 95% CI for pregnancy intention; DHS 1998 & 2003 (Filipinas aged 15–49)

	1998 DHS			2003 DHS		
	%; r	OR	95% CI	%; r	OR	95% CI
<i>Community characteristics</i>						
Female labor force participation						
Percentage of employed women aged 15–49 (%)						
Q1 (ref = lowest track)	41.02	1.00		38.70	1.00	
Q2	38.18	0.89	(0.74, 1.06)	38.39	0.99	(0.83, 1.17)
Q3	37.46	0.86	(0.72, 1.02)	38.72	1.00	(0.85, 1.18)
Q4-highest	38.75	0.91	(0.76, 1.09)	38.33	0.98	(0.83, 1.17)
Community social capital						
Percentage catholic (%)						
Q1 (ref = lowest tract)	42.69	1.00		45.16	1.00	
Q2	39.98	0.89	(0.73, 1.09)	36.34	0.69*	(0.59, 0.82)
Q3	38.42	0.84	(0.69, 1.02)	36.82	0.71*	(0.60, 0.84)
Q4-highest	35.24	0.73*	(0.60, 0.89)	36.58	0.70*	(0.59, 0.83)
Proportion with incomplete primary education or lower (r)	−0.02	0.94	(0.60, 1.45)	−0.03	0.90	(0.58, 1.39)
Percentage with ≥80% with residential duration of ≥10 years+ (%)						
Yes	37.73	0.94	(0.81, 1.09)	37.04	0.92	(0.78, 1.09)
No (ref = no)	39.19	1.00		38.96	1.00	
100% with electricity (%)						
Yes	42.81	1.30*	(1.15, 1.48)	39.52	1.06	(0.93, 1.21)
No (ref = no)	36.45	1.00		38.20	1.00	
<i>Individual controls</i>						
Current childbearing status						
Number of surviving children (%)						
0	96.39	247.45*	(151.09, 405.26)	93.97	187.60*	(124.56, 282.56)
1	76.71	30.52*	(24.25, 38.41)	75.55	37.21*	(29.61, 46.77)
2	43.48	7.13*	(5.85, 8.69)	39.29	7.80*	(6.34, 9.58)
3	24.71	3.04*	(2.46, 3.76)	18.52	2.74*	(2.16, 3.48)
4 + (reference)	9.74	1.00		7.67	1.00	
Children under age 3 (%)						
Yes	37.95	0.94	(0.84, 1.04)	40.82	1.18*	(1.06, 1.31)
No (reference)	39.54	1.00		36.94	1.00	
Currently pregnant (%)						
Yes	42.73	1.20	(1.00, 1.44)	41.59	1.15	(0.96, 1.38)
No (reference)	38.35	1.00		38.24	1.00	
Socio-demographic characteristics						
Age (%)						
15–24 years old (reference)	68.92	1.00		69.68	1.00	
25–34 years old	44.95	0.37*	(0.31, 0.43)	47.34	0.39*	(0.34, 0.45)
35–49 years old	19.87	0.11*	(0.09, 0.13)	16.72	0.09*	(0.07, 0.10)
Education (%)						
Incomplete primary education or lower (reference)	31.43	1.00		27.81	1.00	
Primary education (completed)	25.80	0.76*	(0.63, 0.91)	26.98	0.96	(0.78, 1.19)
Secondary education (incomplete and completed)	40.46	1.48*	(1.24, 1.78)	39.64	1.70*	(1.41, 2.06)
Higher than secondary education	49.40	2.13*	(1.78, 2.56)	48.30	2.43*	(2.00, 2.94)
Employment status (%)						
Work outside home	38.67	0.94	(0.83, 1.07)	38.29	0.91	(0.81, 1.03)
Work at home	34.82	0.80*	(0.67, 0.94)	33.32	0.73*	(0.63, 0.86)

Table 2 continued

	1998 DHS			2003 DHS		
	%; r	OR	95% CI	%; r	OR	95% CI
Unemployed (reference)	40.14	1.00		40.51	1.00	1.00
Religion (%)						
Roman catholic (reference)	37.51	1.00		37.37	1.00	
Non-catholic	44.27	1.32	(1.13, 1.55)	43.45	1.29	(1.12, 1.49)
Union status (%)						
Married (reference)	37.40	1.00		36.67	1.00	
Living together	53.86	1.95*	(1.59, 2.39)	54.13	2.04*	(1.73, 2.41)
<i>Spousal characteristics</i>						
Age gap <sup>+</sup> (%)						
Less than 10 years (reference)	39.08	1.00		38.53	1.00	
10 years or more	36.30	0.89	(0.74, 1.07)	38.84	1.01	(0.85, 1.20)
Education gap <sup>+</sup> (%)						
Male lower	37.44	0.92	(0.82, 1.02)	38.40	0.99	(0.89, 1.10)
Male $\geq$ female (reference)	39.50	1.00		38.59	1.00	
Occupation of male partner (%)						
Agriculture related (reference)	34.21	1.00		32.80	1.00	
Professional, technician or manager	52.47	2.12*	(1.64, 2.74)	43.55	1.58*	(1.32, 1.90)
Discuss fertility preference (%)						
Never (reference)	45.47	1.00		39.17	1.00	
Not very often	37.52	0.72*	(0.62, 0.84)	39.34	1.01	
Very often	36.82	0.70*	(0.59, 0.82)	36.81	0.90	

<sup>+</sup> Age gap is computed by “age of male partner minus age of female partner.” The computation of age gap is same as education gap  
OR odds ratio; CI confidence interval

Note: Bivariate analyses present crude OR that does not adjust for other covariates. \*  $p < 0.05$ . Community-level variables were based on census tract unit

were living with a partner, rather than married, in both surveys. Unexpectedly, women’s employment status and religious affiliation were unrelated women’s pregnancy intention in 1998 and 2003, although these relationships were significant in bivariate analyses. Furthermore, spousal characteristics did not show consistent and significant associations with pregnancy intention across the two waves of surveys (Table 3).

## Discussion

Researchers have often hypothesized community context affects individual attitudes, but this hypothesis has rarely been examined to discover whether community context independently affects an individual’s attitude, such as pregnancy intention, after adjusting for individual and spousal characteristics. This study used 1998 and 2003 national surveys, and demonstrated the importance of contextual effects on pregnancy intention, even when controlling for individual and spousal characteristics using multilevel logit models.

In the analyses, community social capital affects pregnancy intention and two potential mechanisms are considered to assess how the community context affects pregnancy intention. As expected, individuals living in communities with a larger proportion of community members who had completed primary education or higher have significantly lower pregnancy intention. Surprisingly, individuals living in communities where a higher proportion of Catholics are significantly *less* likely to intend to become pregnant. The direction of the association between pregnancy intention and community religion is contrary to what may be expected in light of the correlation between likelihood of using the family planning method and Catholic doctrines. One possible explanation for the association between community religion and pregnancy intention among cohabiting Filipinas is that women who lived in communities with higher proportions of Catholics may be more *supportive* to the fertility norms of decreasing family size than the women who lived in areas with smaller Catholic populations. Previous research has also found social and economic transformation in Spain lessened the religiosity of Catholics [36]. In the Philippines, economic

**Table 3** Adjusted OR and 95% CI of the multilevel random intercept logit models predicting pregnancy intention; DHS 1998 & 2003 (Filipinas aged 15–49)

	1998 DHS			2003 DHS		
	OR	95% CI	P-value	OR	95% CI	P-value
<i>Community characteristics</i>						
Female labor force participation						
Percentage of employed women aged 15–49 (ref = Q1-lowest track)						
Q2	0.71	(0.57, 0.89)	0.003	0.88	(0.71, 1.09)	0.250
Q3	0.66	(0.53, 0.83)	0.001	0.95	(0.77, 1.16)	0.606
Q4-highest	0.69	(0.54, 0.87)	0.002	0.96	(0.77, 1.19)	0.692
Community social capital						
Percentage Catholic (ref = Q1-lowest tract)						
Q2	0.79	(0.63, 0.99)	0.044	0.59	(0.48, 0.74)	0.000
Q3	0.65	(0.52, 0.82)	0.001	0.59	(0.46, 0.74)	0.000
Q4-highest	0.69	(0.55, 0.88)	0.003	0.70	(0.55, 0.90)	0.006
Proportion with incomplete primary education or lower	2.11	(1.14, 3.91)	0.017	2.91	(1.59, 5.32)	0.001
Percentage with $\geq 80\%$ with residential duration of $\geq 10$ years+ (ref = no)	1.09	(0.92, 1.30)	0.307	1.22	(1.01, 1.48)	0.040
100% with electricity (ref = no)	1.20	(1.00, 1.45)	0.056	0.80	(0.66, 0.96)	0.015
<i>Individual controls</i>						
Current childbearing status						
Number of surviving children (ref = 4+)						
0	251.44	(151.97, 416.02)	0.000	307.36	(191.09, 494.37)	0.000
1	27.93	(21.87, 35.66)	0.000	34.23	(26.42, 44.35)	0.000
2	5.98	(4.88, 7.32)	0.000	6.08	(4.85, 7.63)	0.000
3	2.55	(2.05, 3.16)	0.000	2.20	(1.71, 2.83)	0.000
Has children under age 3 (ref = no)	0.71	(0.60, 0.84)	0.000	1.06	(0.90, 1.25)	0.457
Currently pregnant (ref = no)	0.27	(0.20, 0.37)	0.000	0.20	(0.15, 0.27)	0.000
Socio-demographic characteristics						
Age (ref = 15–24 years old)						
25–34 years old	0.84	(0.68, 1.04)	0.112	1.01	(0.83, 1.24)	0.886
35–49 years old	0.29	(0.22, 0.38)	0.000	0.30	(0.23, 0.38)	0.000
Education (ref = Incomplete primary education or lower)						
Primary education (completed)	0.71	(0.56, 0.90)	0.006	0.96	(0.70, 1.31)	0.782
Secondary education (incomplete and completed)	0.92	(0.73, 1.16)	0.491	1.07	(0.81, 1.40)	0.649
Higher than secondary education	1.01	(0.84, 1.44)	0.480	1.36	(1.02, 1.83)	0.038
Employment status (ref = Unemployed)						
Work outside home	0.92	(0.78, 1.07)	0.282	0.95	(0.81, 1.11)	0.493
Work at home	0.96	(0.77, 1.19)	0.684	1.02	(0.83, 1.26)	0.834
Religion (ref = Roman catholic)						
Non-catholic	1.07	(0.89, 1.29)	0.483	1.12	(0.92, 1.36)	0.275
Union status (ref = married)						
Living together	0.89	(0.67, 1.16)	0.383	0.65	(0.51, 0.82)	0.000
<i>Spousal characteristics</i>						
Age gap <sup>+</sup> (ref = less than 10 years)						
10 years or more	0.73	(0.57, 0.94)	0.013	0.85	(0.67, 1.07)	0.171
Education gap <sup>+</sup> (ref = male $\geq$ female)						
Male lower	0.86	(0.74, 1.00)	0.051	0.88	(0.76, 1.03)	0.110

Table 3 continued

	1998 DHS			2003 DHS		
	OR	95% CI	P-value	OR	95% CI	P-value
Occupation of male partner (ref = agriculture related)						
Professional, technician or manager	1.23	(0.85, 1.79)	0.263	1.05	(0.81, 1.36)	0.723
Others	0.88	(0.74, 1.05)	0.151	0.92	(0.77, 1.11)	0.376
Discuss fertility preference (ref = never)						
Not very often	0.78	(0.63, 0.96)	0.018	1.27	(1.05, 1.55)	0.016
Very often	0.69	(0.56, 0.85)	0.001	1.08	(0.87, 1.35)	0.464

<sup>+</sup> Age gap is computed by “age of male partner minus age of female partner.” The computation of age gap is same as education gap  
OR odds ratio; CI confidence interval. The multilevel random intercept logit models adjust OR for other covariates

Note: Community-level variables were based on census tract unit

recession may also decrease the religious bond and result in a two-child social norm being more likely to be accepted by Catholic communities. The implications of such pregnancy intention declines would affect components aimed at designing population policies addressing maternal and child health.

In multivariate analyses both community religion and community education have shown their consistent and significant associations with pregnancy intention across two waves, but the significant effect of community education was not found in the bivariate analyses. In other words, community religion demonstrated its independent effect on women’s pregnancy intention; the effect of community education was contingent when individual- and other community-level covariates being equal. The findings suggest that pregnancy intention is either independent or contingent upon contextual-level risk factors in the community.

Another mechanism affecting pregnancy intention is a community’s social capital (i.e., physical capital), which was operationalized here as residential stability. A community with stable residents ought to represent increased social interactions between community members. Women living in communities with greater residential stability are significantly more likely to intend to have another child. This implies stable communities form a conventional social norm and this shapes women’s pregnancy intention. It may also be possible that individuals who move need to take some time to establish a new social network, causing community members with a higher percentage of recent moves to have a lower proportion of the childbearing women with pregnancy intention.

In addition, an aspect of community social capital is community socioeconomic status (SES). Analyses indicate that 100% electricity coverage decreased women’s pregnancy intention in 2003 and support the common hypothesis that pregnancy intention might be lowered as

community SES increases. Analyses from the 1998 DHS also provide the evidence for this common hypothesis on the negative association between female labor force participation and pregnancy intention. A possible interpretation for combining these two pieces of information involves the degree of community development and changes in the labor market since the late 1990s. When community development reaches a certain level and traditional agricultural work begins to decrease, individuals living in developed communities do not need as many children to help with agricultural work. As a result of these changes, increased female labor force participation and community development may decrease a woman’s pregnancy intention. Given that the distribution of social resource depends on community SES, as pregnancy intention decreases in developed communities, women of low SES in less developed communities are expected to be much more vulnerable to poor outcomes of maternal and child health. National programmatic strategies and policies aimed at socioeconomic development should take specific components of community SES into consideration, especially with respect to issues of maternal and child health.

This study contributes to our understanding of how the community influences the pregnancy intention of cohabiting women; nonetheless, the study does have limitations. First, because this study consists of a secondary analysis of existing data, the key measures are somewhat limited. In particular, community interaction and functional support are important components in social capital theory [23]. Due to a lack of specific information, this study could only estimate the impact of certain selected variables on pregnancy intention. Second, the DHS surveys did not collect data on work history so this analysis was unable to clearly distinguish between the work experiences of women, particularly when they had a negative effect on pregnancy intention; this was also true for variables associated with the ecological and social context surrounding the work

experience. Third, unmeasured situational factors leading to pregnancy intention, such as a good intimate relationship, may make a contribution as to whether a cohabiting woman has intention for a child. Due to data limitations, this analysis is unable to consider and/or assess such factors. Last, although the survey data was collected carefully, the respondents were asked to report on pregnancy intention, which may raise the problem of uncertainty. Studies have shown that women may rationalize an unwanted pregnancy as a wanted birth or vice versa, depending on the pregnant outcomes [37–39]. Yet, cross-sectional data is limited to distinguish this issue as future pregnancy outcome is unknown.

This study extends prior research using the multilevel analyses that contribute important knowledge to the current literature with limited evidence on community context and pregnancy intention. Further research is essential to continue to explore how community context affects a woman's pregnancy intention. In addition to the horizontal aspect of community social capital, research should also further examine how the vertical aspect of the community context impacts pregnancy intention, such as whether the bonding between community members and the government affects women's pregnancy intention. Further investigation could also consider the cross-level interactions between the individual and the community characteristics. For instance, women who face the greatest barriers to a greater intention for pregnancy, such as those with a low income, a large number of children or marriage problems, may benefit the most from a community context that is supportive of future pregnancy intention and improving maternal and child health consequences.

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