Varying family planning strategies across age categories: differences in factors associated with current modern contraceptive use among youth and adult women in Luanda, Angola

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Abstract

Background: The objective of this study is to identify factors associated with current modern contraceptive use among Angolan women. By differentiating by age groups (15-24 and 25-24), this study aims to help family planning program planners better tailor interventions to improve utilization of modern contraception.

Methods: A household survey was used to collect data from 1,545 women of reproductive age living in Luanda Province, Angola. Data on sociodemographic characteristics, reproductive behavior and intentions, contraceptive knowledge and use, and attitudes and beliefs regarding contraception and abortion were collected. The analyses were stratified based on age: 15-24 (youth) and 25-49 (adult). Multivariate logistic regression models were built for each age group, adding different subsets of variables in groups to see how relationships changed across the models.

Results: Common factors associated with modern contraceptive use among all ages include education level, perceived contraceptive accessibility, contraceptive knowledge, communication with partner about family planning in last year, and self-efficacy. Exposure to family planning information in the media in the last few months, perceived partner approval of family planning and marital status were all positively associated with current modern contraceptive use among women ages 15-24. Meanwhile, receiving information about family planning from a pharmacy in the last year was uniquely associated with current modern contraceptive use among women ages 25-49.

Conclusion: Young women in Luanda, Angola seem to have a unique set of factors affecting their contraceptive use. These findings highlight the need for family planning programs to cater services and messages towards specific age groups.

Word count: 250

1. Introduction

The critical role that family planning plays in improving maternal and child health outcomes has become widely recognized among governments and donors alike in the last decade. Additionally, many policy makers acknowledge the importance of expanding family planning programs in order to improve overall socioeconomic development in low resource countries [1-3]. In order to tailor programs to best meet the growing needs of women, studying factors associated with modern contraceptive uptake is necessary. Previous research conducted in Sub-Saharan Africa has demonstrated that individual factors such as household socioeconomic status, age, education, parity, socio-cultural beliefs, and spousal communication affect family planning use [4-9]. Though research typically generalizes contraceptive use among all women with age as a covariate, more recent studies have highlighted the need to differentiate by age when studying factors affecting contraception use, with many studies providing evidence that young women in particular need special attention in order to increase contraceptive prevalence, recognizing that improving availability, affordability, and youth-friendliness may not fully address the psycho-social barriers to contraceptive use among them [7,10-12].

The objective of this paper is to explore differences in factors associated with modern contraceptive use between young and adult women of reproductive age in Luanda, Angola. As the government and the private sector work to improve reproductive health in Angola, results from this study can help identify unique factors upon which family planning programs could intervene to improve utilization of modern contraception.

1.1 Background

In part due to the protracted nearly 30 year civil war that ended in 2002, there are limited data regarding the reproductive health status of women in Angola. Additionally, fertility levels and aspirations in Angola changed as a result of the conflict and migration associated with the civil war. In an analysis of war-related differences in reproductive preferences using data from a 1996 survey (a few years after a major outbreak of war), Agadjanian and Prata (2002) found a wartime drop and a post-war

rebound in fertility [13]. A study of war, migration and fertility in Angola, Agadjanina, and Avogo found that in a given year, migration related to the war was associated with a lower probability of birth than war-related migration [14].

Angola has been free of war since 2002, and over a decade of peace may have had an effect on fertility preferences. However, though the country has made substantial economic and political progress in recent years, women's health has continued to suffer. Estimates indicate that the maternal mortality ratio is 450 per 100,000 live births [15], and recent estimates of modern contraceptive prevalence in the country is approximately 12% [16]. With an estimated national population of over 24 million people in 2015 [17], the current and very high total fertility rate of 6.3 children per woman is reflected in the country's rapid population growth rate of 3.1% per year [18]. Total fertility rates are highest among the poorest and least educated (8.0) and lowest among those with secondary education or higher (3.3) and in the highest wealth quintile (4.5). In Luanda, the capital and largest city in Angola, the total fertility rate is 4.4 [19].

Existing data clearly indicate that a concerted effort is necessary to increase contraceptive prevalence throughout the country. A more recent study by Decker and Constantine (2011) used data from 2002 and found women's educational level, wealth, and area of residence influence contraceptive use. Women in urban areas had three times the contraceptive prevalence rates as their counterparts in rural areas (9.4% versus 3.0%). They also found age to be association with contraceptive use, with an especially low level of contraceptive use among adolescents, concluding that young women needed special attention with regards to family services in Angola [20]. Policy makers in Angola would be remiss to not take young women's needs into consideration when developing family planning strategies, given that 48% of the country is less than 15 years old [16] and fertility rates are high at 191 and 261 births per 1,000 women ages 15-19 and 20-24, respectively [19]. Fortunately, the National Strategic Plan for Reproductive Health (2010) has made a reduction in gender disparities and an increase in family planning coverage and options key objectives, with an overall intention of improving women's health [21]. Understanding the factors associated with women's use of modern contraception methods will play an important role in reaching this goal.

2. Methods

2.1 Sample

The study population is women aged 15-49 years who resided in the Luanda Province at the time of the survey, October through November of 2012. SINFIC, a local marketing firm, carried out the data collection on behalf of the University of California, Berkeley Bixby Center for Population, Health and Sustainability (Bixby Center) and Population Services International (PSI) Angola. A representative sample of women of reproductive age from all municipalities in Luanda Province was captured using a multi-stage random sampling design. The sample was distributed proportionally across the nine municipalities of Luanda Province. Within each municipality, interviewers randomly selected a number of "sampling points" (e.g. churches, hospitals, gas stations, etc.) from a sampling framework created for that purpose. A fixed number of participants were randomly selected from each sampling point and one woman from each household was asked to participate in the interview. In total, 1825 women of reproductive age living in Luanda were selected to be interviewed. Eighty-five percent completed the survey, 8% started but did not complete the survey, 6% refused to participate, and 2% did not participate due to other reasons. All women provided verbal consent before taking part in the interview. Ethical approval for this study was provided by the University of California, Berkeley Center for Protection of Human Subjects (CPHS # 2011-08-3521). Approval was also provided by the Ethical Committee at the Instituto de Saude Publica in Luanda, Angola.

2.2 Data Source

The study uses data collected with a survey instrument that was developed by researchers from the Bixby Center. The instrument was modeled on the Women's Questionnaire of the Demographic and Health Surveys[22] and Angola's Malaria Indicator Survey [19], with additional standardized questions included from the PSI Tracking Results Continuously survey tools. It was designed to assess women's knowledge, attitudes, and practices, as well as opportunities, ability, and motivation, related to childbearing and family planning. The survey also collected information regarding women's experiences with reproductive health services and their preferences related to the delivery of family planning services. All items and response options in the survey instrument were initially developed in English and later translated into Portuguese by the research team, with feedback

from PSI Angola. Once a final version was decided upon, the survey instrument was pilot tested among 30 women of reproductive age in Luanda, Angola. Feedback from this phase was incorporated and the final version was then back translated into English to ensure accuracy.

2.3 *Variables*

The dependent variable was current use of a modern method of family planning. It was dichotomous (yes/no) with no as reference group, which encompassed both non-users of any form of contraception and users of traditional methods. Given the small number of users of traditional (n=35, 2.6%), traditional method users were combined with those using no method at all for this analysis.

Independent variables of interest included sociodemographic and individual factors that were found to influence modern contraceptive uptake in literature. Socio-demographic variables included age, marital status, education and wealth quintile derived from a principal components analysis (PCA) of household assets, including building materials and household amenities, following the methodology used by Demographic and Health Surveys (DHS).

To determine contraceptive knowledge, respondents were asked to list contraceptive methods they had heard of, both spontaneously and with probing (0-12 methods). Knowledge of specific contraceptive methods was determined by the number correct answers in response to questions surrounding correct use and side effects. Accessibility of contraception and receipt of information on family planning from a pharmacy were both dichotomously coded (yes/no) in response to the questions: 1) *Are contraceptives accessible to you?*; 2) *In the last 12 months, have you received any information or counseling on family planning/contraception while visiting a pharmacy?* Exposure to family planning information in the last few months was dichotomously coded (yes/no) in response to whether they had heard about family planning on radio, television or in newspaper/magazine in last few months.

Recent couple communication was determined by measuring the number of times surveyed women had discussed family planning with her husband/partner in the last year (none, once or twice, more often). The contraceptive self-efficacy index was developed using PCA of variables included in the survey which measure self-efficacy, including: capability of using contraceptives; ability to use methods correctly and consistently to space births; communicate about preventing pregnancy; and negotiate contraceptive use and use contraception in the face of husband/partner opposition. "Perceived approval of family planning," was captured by the question: Do you think your husband/partner/boyfriend approves of couples using family planning? Responses were categorized dichotomously (yes/no or don't know), with no or don't know as the reference group.

2.4 Statistical Analyses

Descriptive statistics were analyzed to explore dependent and independent variables of interest. At the multivariate level, the relationship between select variables of interest and the dependent variable (current use of modern contraception) was estimated using a multiple logistic regression model. A one-way ANOVA analysis was used to determine the average value of each variable in the logistic model among contraceptive users compared to non-contraceptive users.

It was hypothesized *a priori* that factors associated with current modern contraceptive use would differ by age, thus, we stratified the analyses into two categories: women ages 15-24 and women ages 25-49. Additional analyses included all women of reproductive age. We were unable to stratify further due to limited sample size and power. Focusing on factors upon which family planning programs could intervene, we selected a number of variables from the data that we hypothesized could be related to current modern contraceptive use based on review of the literature. Bivariate analyses were used to investigate the association between each variable and the current modern contraceptive use. After identifying variables that were significantly associated at the p-value <0.10 level with the dependent variable, we engaged in a model building process wherein we built a series of multivariate models for each age group, gradually adding different subsets of variables to see how relationships changed across the models. Only significant variables were retained in the progression to later models.

In Model 1, we tested the significance of sociodemographic variables with current modern contraceptive use. Significant variables were retained and a question about perceived contraceptive accessibility was added to create Model 2. In Model 3, questions regarding contraceptive knowledge/exposure were added; in Model 4, questions regarding gender dynamics/social norms were added; and in Model 5, the self-efficacy scale was added. Each model contained only the significant variables from the previous models and the additional variable(s) of interest. Researchers used p-values and 95% confidence intervals to determine significance.

3. Results

The analytical sample was derived from a larger study sample of 1825 women of reproductive age living in Luanda and was restricted to fecund women of reproductive age who completed the survey (n=1342). Over half of the population was less than 25 years old (57%) and had at least secondary education (56%), while nearly three quarters were not married or cohabiting (data not shown).

As seen in Table 1, overall contraceptive prevalence was 55%, but women ages 25-49 (66%) were more likely to be currently using modern contraceptives than women ages 15-24 (48%). This trend was seen across many of the sociodemographic and other variables. There were some variables that did not adhere to this trend, most notably marital status, where married women ages 15-24 (76%) were more likely than married women ages 25-49 (68%) to currently be using modern contraceptives. Among single women the opposite was true: 45% of 15-24 year olds and 63% of 25-49 year olds were using modern contraception. Younger women with no exposure to family planning information in the media in the last few months had a low prevalence of modern contraceptive use (35%) compared to those who were exposed (58%); exposure to family planning messages did not appear to be associated with contraceptive use in older women.

The multivariate analysis assessed distinct differences in factors associated with current modern contraceptive use between women ages 15-24 (Table 2) and 25-49 (Table 3) while also indicating which factors influenced contraceptive use among all

women of reproductive age (Table 4). Factors associated with current modern contraceptive use in the final models among all three analysis groups include education level, perceived contraceptive accessibility, contraceptive knowledge, whether respondent had talked to her husband/partner about family planning in the last year, and self-efficacy. For young women, only condom knowledge positively influenced contraceptive use (odds ratio (OR)=1.44, 95% confidence interval (CI) 1.18-1.75), whereas contraceptive use among older women was positively associated with injectable contraceptive knowledge (OR=1.31, 95% CI 1.11-1.53) and contraceptive pill knowledge (OR=1.26, 95% CI 1.05-1.50). Additionally, exposure to family planning information in the media in the last few months was positively associated with current modern contraceptive use uniquely among women ages 15-24 (OR=1.98, 95% CI 1.39-2.82), as was perceived husband/partner approval of family planning (OR=2.39, 95% CI 1.63-3.51). Meanwhile, receiving information about family planning from a pharmacy in the last year was uniquely associated with current modern contraceptive use among women ages 25-49 (OR=2.51, 95% CI 1.40-4.51).

4. Discussion

In this study, we analyzed the factors associated with contraceptive use among women of reproductive age in Luanda, Angola, comparing findings among young women (age 15-24) and older women (age 25-49). The factors that were associated with current contraceptive use among all women were not unusual; education, perceived accessibility, and contraceptive knowledge were significant predictors in many studies of contraceptive use in other studies from the region [6-8,23,24]. Condom knowledge was the only method to have a positive impact on contraceptive use among young women. This may suggest the importance of condoms as the preferred method of contraception among young women. However, approximately 40% of young women could only name up to three contraceptive methods. The same percentage of young women could not get any questions correct surrounding knowledge of injectable and oral contraceptives. This indicates that IEC efforts targeting youth should focus on increasing knowledge of other methods beyond the condom. The limited knowledge of other modern methods besides male condoms could also be a reason why male condoms are the most used contraceptive.

Other factors that came up as important enablers of contraceptive use may require more creativity in understanding. For example, social cognitive theory suggests developing self-efficacy is a key part of the process to adopt new health behaviors [25]. The findings from this study confirmed previous research that found an association between self-efficacy and contraceptive use among both older and younger women [26-28]. At the same time, the role of men in women's use of contraception in Luanda should also be highlighted. Confirming the literature the highlights the influence male partners have on women's contraceptive use in low-resource settings [29-32], women of all ages who recently communicated with their husband about family planning had increased odds of current contraceptive use. Suggestions from other researchers that public health promotion efforts seeking to increase contraceptive use include men and target both males and females may apply to the Angolan context [32-34].

Meanwhile, for younger women, even the perception that their husband/partner supports family planning had a positive influence on their contraceptive use. Thus, it is not only important to increase young women's self-efficacy to use contraception, but also address barriers to partner communication and approval. In fact, based on findings from young female students in Vietnam, Bui et al. (2012) recommended that sexual promotion strategies aimed at young women address the influence of relationships on young women's self-efficacy to communicate about safe sex given its impact on contraceptive use [35]. Tailoring family planning messages for young women through media outlets may be important in Luanda, given that women ages 15-24 who were exposed to media messages on family planning in recent months were twice as likely to be using contraception.

Finally, as efforts are made to expand family planning services in Angola, the private sector should not be overlooked. Findings from women 24-49 years indicated the important role pharmacies can play in family planning counseling and services. This finding is supported by evidence from across Sub-Saharan Africa [36,37].

5. Conclusion

Findings highlight the need for family planning programming and information campaigns to cater services and messages towards specific age groups, for whom differing factors are associated with current modern contraceptive use. Different strategies may be more effective for increasing contraceptive prevalence among different age groups of women in Angola and elsewhere.

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Table 1: Percent modern contraceptive use across covariates from final models by age group among women of reproductive age in Luanda, Angola

	% modern contraceptive use (N)		
	15-24 (N=765)	25-49 (N=577)	All women (N=1342)
Wealth quintile			
1 (poorest)	42.1	59.3	49.2
2	41.8	59.5	49.8
3	49.0	69.1	57.2
4	48.4	68.1	56.9
5 (wealthiest)	55.1	73.5	62.8
Education			
No education/grades 1-6	29.2	50.0	42.6
Grades 7-9	38.0	69.8	49.3
Grades 10-13/university or more	55.9	68.9	61.5
Marital status			
Single	45.4	63.0	49.6
Married/cohabiting	75.9	67.8	68.8
Divorced/widowed	33.3	69.6	65.4
Exposed to any family planning information in the media in the last few months			
No	35.3	66.9	48.5
Yes	57.5	65.6	61.0
Thinks contraceptives are accessible			
No	25.7	37.1	29.4
Yes	62.2	76.3	69.0
Number of contraceptive methods knows of			
0-3 methods	40.7	59.4	46.1
4-8 methods	51.5	68.6	58.8
9-12 methods	64.4	68.6	67.3
Condom knowledge scale			
0 questions right	22.1	49.2	32.7
1 questions right	32.8	64.4	45.3
2 questions right	50.2	68.0	58.3
All 3 questions right	61.5	69.7	64.9
Injectable contraceptive knowledge scale			
0 questions right	40.1	56.6	43.6
1 questions right	34.3	54.3	40.7
2 questions right	55.4	59.3	57.4
3 questions right	57.0	61.7	59.4
All 4 questions right	64.8	76.6	72.2
Contraceptive pill knowledge scale			
0 questions right	38.8	50.0	41.4
1 questions right	37.0	53.1	41.7
2 questions right	46.1	63.7	54.1
3 questions right	63.0	70.7	67.6
All 4 questions right	59.4	76.3	68.0
Received information about family planning from pharmacy in last 12 months			
No	43.8	60.0	50.0
Yes	63.0	79.4	70.6

Thinks husband/partner approves of family

Table 2: Model building for factors significantly associated with current modern contraceptive use among women ages 15-24 in Luanda, Angola*

	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
	Model 1: Sociodemographic variables		Model 2: Add contraceptive accessability		Model 3: Add contraceptive knowledge/exposure		Model 4: Add gender dynamics/social norms		Model 5: Add self-efficacy scale	
Age										
15-19	--	Reference	--	Reference	--	Reference	--	Reference	--	Reference
20-24	2.91	2.10-4.03	2.83	2.00-3.99	3.35	2.40-4.67	2.26	1.57-3.24	2.07	1.44-3.00
Education										
No education/grades 1-6	--	Reference	--	Reference	--	--	--	--	--	--
Grades 7-9	2.06	1.00-4.26	1.74	0.81-3.72	--	--	--	--	--	--
Grades 10-13/University or more	3.36	1.65-6.84	2.58	1.23-5.42	--	--	--	--	--	--
Marital status										
Not married/cohabiting	--	Reference	--	Reference	--	--	--	--	--	--
Married/cohabiting	2.75	1.42-5.34	2.36	1.18-4.72	--	--	--	--	--	--
Thinks contraceptives are accessible										
No	--	--	--	Reference	--	Reference	--	Reference	--	Reference
Yes	--	--	4.21	3.01-5.88	3.55	2.51-5.02	2.89	2.01-4.16	2.79	1.93-4.04
Exposed to any family planning information in the media in the last few months										
No	--	--	--	--	--	Reference	--	Reference	--	Reference
Yes	--	--	--	--	1.98	1.41-2.77	1.88	1.33-2.67	1.98	1.39-2.82
One unit increase on condom knowledge scale (1-3)	--	--	--	--	1.62	1.35-1.94	1.55	1.27-1.88	1.44	1.18-1.75
Thinks husband/partner approves of family planning										
No	--	--	--	--	--	--	--	Reference	--	Reference
Yes	--	--	--	--	--	--	2.55	1.75-3.72	2.39	1.63-3.51
Have talked to husband/partner about family planning in last year										
No	--	--	--	--	--	--	--	Reference	--	Reference
Yes	--	--	--	--	--	--	2.10	1.42-3.09	1.90	1.28-2.82
One unit increase in composite score on self-efficacy scale (1-5)	--	--	--	--	--	--	--	--	2.10	1.46-3.02

*All models control for municipality, which was the study design variable

Table 3: Model building for factors significantly associated with current modern contraceptive use among women ages 25-49 in Luanda, Angola*

	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
	Model 1: Sociodemographic variables		Model 2: Add contraceptive accessability		Model 3: Add contraceptive knowledge/exposure		Model 4: Add gender dynamics/social norms		Model 5: Add self-efficacy scale	
Education										
No education/grades 1-6	--	Reference	--	Reference	--	Reference	--	Reference	--	Reference
Grades 7-9	2.44	1.44-4.16	2.17	1.22-3.85	1.94	1.03-3.67	1.90	0.99-3.64	1.78	0.93-3.40
Grades 10-13/University or more	2.36	1.47-3.77	1.87	1.12-3.11	1.99	1.12-3.56	2.23	1.23-4.04	2.03	1.13-3.67
Thinks contraceptives are accessible										
No	--	--	--	Reference	--	Reference	--	Reference	--	Reference
Yes	--	--	5.30	3.53-7.95	6.32	3.89-10.26	5.84	3.54-9.61	5.61	3.41-9.23
One unit increase in the number of contraceptive methods knows of (0-12)	--	--	--	--	0.91	0.84-0.99	0.90	0.83-0.98	0.90	0.83-0.98
One unit increase in injectable contraceptive knowledge scale (1-4)	--	--	--	--	1.32	1.13-1.55	1.31	1.12-1.54	1.31	1.11-1.53
One unit increase in contraceptive pill knowledge scale (1-4)	--	--	--	--	1.30	1.09-1.54	1.27	1.06-1.51	1.26	1.05-1.50
Received information about family planning from pharmacy in last 12										
No	--	--	--	--	--	Reference	--	Reference	--	Reference
Yes	--	--	--	--	2.67	1.50-4.76	2.61	1.45-4.70	2.51	1.40-4.51
Have talked to husband/partner about family planning in last year										
No	--	--	--	--	--	--	--	Reference	--	Reference
Yes	--	--	--	--	--	--	1.97	1.18-3.28	1.91	1.14-3.18
One unit increase in composite score on knowledge scale (1-5)	--	--	--	--	--	--	1.43	1.01-2.02	--	--
One unit increase in composite score on self-efficacy scale (1-5)	--	--	--	--	--	--	--	--	1.59	1.05-2.39

*All models control for municipality, which was the study design variable

Table 4: Model building for factors significantly associated with current modern contraceptive use among all women of reproductive age in Luanda, Angola*

	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
	Model 1: Sociodemographic variables		Model 2: Add contraceptive accessability		Model 3: Add contraceptive knowledge/exposure		Model 4: Add gender dynamics/social norms		Model 5: Add self-efficacy scale	
Age										
15-19	--	Reference	--	Reference	--	Reference	--	Reference	--	Reference
20-24	3.29	2.41-4.50	3.33	2.39-4.63	3.20	2.04-5.01	2.25	1.58-3.22	2.17	1.51-3.11
25-49	3.31	2.43-4.50	3.34	2.50-4.45	2.01	1.34-3.03	1.82	1.29-2.57	1.68	1.18-2.38
Education										
No education/grades 1-6	--	Reference	--	Reference	--	Reference	--	Reference	--	Reference
Grades 7-9	2.03	1.35-3.05	1.75	1.14-2.71	2.03	1.16-3.54	1.80	1.14-2.85	1.79	1.12-2.85
Grades 10-13/University or more	2.64	1.80-3.88	2.04	1.35-6.04	2.03	1.20-3.44	2.12	1.37-3.27	2.05	1.32-3.19
Marital status										
Not married/cohabiting	--	Reference	--	--	--	--	--	--	--	--
Married/cohabiting	1.44	1.06-1.94	--	--	--	--	--	--	--	--
Thinks contraceptives are accessible										
No	--	--	--	Reference	--	Reference	--	Reference	--	Reference
Yes	--	--	4.67	3.61-6.04	4.81	3.39-6.82	3.45	2.62-4.55	3.37	2.55-4.46
One unit increase in the number of contraceptive methods knows of (0-12)	--	--	--	--	0.91	0.86-0.97	0.96	0.92-1.01	0.95	0.90-1.00
One unit increase in condom knowledge scale (1-3)	--	--	--	--	1.29	1.09-1.53	1.30	1.13-1.50	1.26	1.09-1.45
One unit increase in injectable contraceptive knowledge scale (1-4)	--	--	--	--	1.22	1.09-1.38	1.17	1.06-1.29	1.13	1.03-1.25
Knows a place where can obtain a method of family planning										
No	--	--	--	--	--	Reference	--	--	--	--
Yes	--	--	--	--	1.58	1.04-2.40	--	--	--	--
Received information about family planning when visited health facility in last 12 months										
No	--	--	--	--	--	Reference	--	--	--	--
Yes	--	--	--	--	1.54	1.11-2.13	--	--	--	--
Thinks husband/partner approves of family planning										
No	--	--	--	--	--	--	--	Reference	--	Reference
Yes	--	--	--	--	--	--	1.84	1.39-2.44	1.72	1.29-2.29
Have talked to husband/partner about										
No	--	--					--	Reference	--	Reference
Yes	--	--					2.07	1.54-2.80	1.95	1.44-2.64
One unit increase in composite score on self-efficacy scale (1-5)	--	--							1.99	1.53-2.57

*All models control for municipality, which was the study design variable