Determinants of Consistent Condom Use Among Filipino Women: Results From the 2017 Philippine National Demographic and Health Survey

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Abstract

Background: Consistent condom use had been perennially low in the Philippines, despite being a tested and proven public health intervention to prevent unwanted pregnancy and sexually transmitted infections. Considering the high fertility rate, teenage pregnancy rate, and the rapidly increasing incidence of HIV in the country, we identify the determinants of consistent condom use in the country.

Methods: We used data from the individual recode of the 2017 Philippine National Demographic and Health Survey. We used logistic regression for survey data to identify factors associated with consistent condom use.

Results: Out of 25,074 respondents, only 261 (1.13%) have used condoms consistently with their most recent partner. Reach of information and education campaigns on contraceptive use via different media ranged from 62% via television to 7% via SMS. After adjusting for confounders, those who were able to ask their partners to use condoms during sexual intercourse has 6.10 times (adjusted odds ratio: 6.10; 95% Confidence Interval (95% CI): 2.00, 18.61) odds of consistent condom use than those who were unable to ask their partners to use condoms during sexual intercourse. Meanwhile, HIV knowledge (aOR: 1.17; 95% CI: 0.99, 1.39), hearing about contraception in television (aOR: 1.54; 95% CI: 0.99, 2.39), age (aOR: 0.98; 95% CI: 0.95, 1.00), and number of children (aOR: 1.09; 95% CI: 0.98, 1.20) have borderline significant associations with consistent condom use.

Conclusions: The low percentage of those who use condoms consistently, together with the low reach of information and education campaigns highlight the need to further intensify information and education campaigns to promote consistent condom use. Interventions to improve sexual agency and promote HIV knowledge should be implemented to address the burden of unwanted pregnancies and HIV in the Philippines.

Background

High fertility rates, high teenage pregnancy rates, and increasing HIV incidence are three of the most pressing reproductive health issues in the Philippines today. As of 2019, the Philippines has a total fertility rate of 2.98, which is the second highest in Southeast Asia, and is higher than the global average of 2.31 [1]. Similarly, the country has a teenage pregnancy rate of 9% as of 2017, which is also one of the highest in Southeast Asia, and has barely changed for the 20 years preceding it [2, 3]. Lastly, the country is also one of the few countries in the world where the incidence of HIV is rapidly increasing [4]. One of the health intervention that can address these three issues simultaneously is consistent condom use [5, 6].

Despite the established cost-effectiveness of condoms in preventing unwanted pregnancies and sexually transmitted infections (STIs), condom use has always been low in the Philippines. According to the 2017 Philippine National Demographic and Health Survey (NDHS), only 2% of currently married women and 3% of sexually active unmarried women have male partners who have ever used condoms [7]. A systematic review of condom use in the Philippines found 27 studies involving different populations in selected areas throughout the country [8]. The same review have found that the range of prevalence of consistent condom use ranged from 3% among men who have sex with men in Metro Manila to 74% among female sex workers (FSW) in Iloilo City [8–10]. The same review found that facilitators of condom use in the country include being single, frequent STI tests, greater educational attainment, higher monthly wage, higher perceived HIV risk, engaging with FSW, knowledge of HIV, longer employment period, personal decision, positive attitudes on condom use, HIV status, prevention of pregnancies and STIs, peer influence, type of work establishment and workplace support, access to health facilities and merchandise stores, health provider engagement, and government policies and regulations. On the other hand, barriers to condom use include perceived discomfort and displeasure, fear, marital status, lack of condoms, low knowledge, lack of money, low perceived HIV risk, stigma, substance abuse, use of other contraceptive methods, coercion, miscommunication and misinformation, preference of partners and peers, lack of sex education, discreet placements of condoms in stores and distance to stores, religion, HIV testing requirement, and high price of condoms [8–30]. However, data for most of these studies were collected before the enactment of the Reproductive Health Law and the Executive Order No. 12 in 2012 and 2017, respectively, which both aim to attain and sustain zero unmet need for modern family planning [31, 32]. Moreover, all of the studies have a limited geographic and demographic scope, and only two of them have focused on consistent condom use [13, 15].

In other countries, similar determinants were also found to be associated with consistent condom use [33]. Behavioral skills were found to be associated with consistent condom use among college students in China [34]. In another study involving female sex workers in China, environmental and structural support, perceived benefits and protection, and high safe sex self-efficacy were found to be associated with consistent condom use [35]. In a study involving people living with HIV in Ethiopia, rural residence and partner influence were found to be associated with consistent condom use [36]. In Indonesia, single women, women who lived in urban areas, HIV-positive women, and women involved in sex work have higher odds of using condoms consistently than other women [37].

To address the dearth of nationally representative studies on consistent condom use for the general population which could also serve as basis for further interventions to promote consistent condom use, this analysis aims to examine the determinants of consistent condom use among Filipino women aged 15–49.

Methods

Study population and sampling method

The 2017 Philippine NDHS is a nationally representative survey whose primary objective is to provide up-to-date estimates of basic demographic and health indicators. The survey utilized a two-stage stratified design utilizing the Master Sampling Frame designed by the Philippine Statistics Authority. The strata used were 117 major sampling domains in the country (81 provinces, 33 highly urbanized cities and 3 special areas). The first stage sampling involved the systematic selection of 1,250 primary sampling units throughout the entire Philippines. Such primary sampling units can be *barangays* (Philippine equivalent of village), a portion of a large barangay or two or more adjacent small barangays. Once these primary sampling units were selected, either 20 or 26 housing units were systematically random sampled. Non-replacement sampling was utilized to prevent bias. Survey weights were then computed. All women aged 15–49 years old who were either permanent residents of the selected households or visitors who stayed in the households the night before the survey were eligible to be interviewed. Other details of the sampling method utilized by the survey is available in its published manuscript [7].

Data collection, definition of variables, and data management

Two questionnaires administered using tablet computers by trained field interviewers were used for the 2017 NDHS. The questionnaires were translated to six local languages commonly spoken throughout the Philippines: Tagalog, Cebuano, Ilokano, Bikol, Hiligaynon, and Waray and were then pre-tested. Actual data collection was done on August 14 to October 27, 2017. Data processing began shortly after initiation of data collection, and a clean dataset was prepared by late 2017 [7]. For this analysis, we will use the Individual Recode dataset of the 2017 Philippine NDHS.

The survey collected data on socio-demographic variables, fertility levels and preferences, awareness and use of family planning methods, breastfeeding, maternal and child health, child mortality, awareness and behavior regarding HIV/AIDS, women's empowerment, domestic violence, and other health-related issues [7]. For this analysis, however, we will only make use of data on socio-demographic, awareness and use of family planning methods, and awareness and behaviors regarding HIV/AIDS. Specifically, the outcome variable for this analysis is consistent condom use, defined as the self-reported usage of male/female condom in every sexual encounter of the respondent with her most recent partner in the last 12 months. For this variable, we combined the categories for “did not use condom in last sexual intercourse” and “used condom inconsistently” as the no outcome group, while we considered those who used condoms consistently as having the outcome.

From the literature, known determinants of consistent condom use in the Philippines such as educational attainment, employment, HIV knowledge, and alcohol use will be included into the resulting regression models [13, 15]. In addition to this, we will also assess the effect of variables on consistent condom use: age, wealth index, marital status, HIV testing, tobacco use, intention and usage of traditional and other modern contraceptive methods, total children ever born, husband/partner's education level, whether it is justifiable for a wife to ask husband to use condom if he has STI, agency (measured as whether the respondent can ask partner to use condom) [38], decision-maker for using contraception, reading about contraception in the internet, heard about family planning on radio, tv, newspaper/magazine, and text message, age of partner, HIV testing, and household size.

The HIV knowledge questions were aggregated from the answers of respondents on eight yes or no items from the NDHS: (a) reduce risk of getting HIV by having sex with only one partner who has no other partners; (b) reducing risk of getting HIV by always using condom; (c) can get HIV from mosquito bites; (d) can get HIV by sharing food with somebody; (e) a healthy looking person can have HIV; (f) HIV can be transmitted during pregnancy; (g) HIV can be transmitted during delivery; (h) HIV transmitted by breastfeeding. For each item a respondent gets correctly, the respondent gets one point. The points from each item were added to comprise the HIV knowledge score, thus, those who have a higher HIV knowledge score have greater HIV knowledge as compared to those who have low knowledge. We also recoded some categorical variables to ensure that each category would have sufficient respondents.

Data Analysis

All data management and analyses were carried out in Stata 14.0 IC [39] and we used a level of significance of 0.05 [40]. After data cleaning and recoding, we declared our dataset as survey data using the weighting for the entire survey as sampling weight. All our subsequent analyses are weighted, except for analyses that do not have an option for weighting. Thus, proportions, means odds ratios, and p-values, except for tests of normality and rank-sum tests, were weighted. However, we still showed the number of observations, which are unweighted. Once we declared our dataset as survey data, we ran descriptive statistics for all variables of interest. We identified the proportions and

frequencies of the categories for each of our categorical variables. For our continuous variables, we described their range, distribution, and the appropriate measure of central tendency. We also described the number of respondents with missing data for each variable under study.

We then cross-tabulated the different exposure variables with our outcome variable. We note the p-values of the Pearson's chi-square test and crude odds ratios. For our continuous exposure variables, we performed either Wald test for normally distributed variables or rank-sum test for skewed variables, to assess their association with the outcome. Once we have done the cross-tabulations, we ran a correlation matrix to assess potential collinearity between variables. If variables will have a correlation coefficient of > 0.70 , one of the variables were removed from the analyses. Prior to doing multivariate analyses, we also excluded respondents with those who have missing data in any of the variables of interest by using Stata's *subpop* function to ensure that estimates and standard errors are computed correctly.

We used logistic regression for survey data to estimate the crude and adjusted estimates of the associations between the different exposure variables and consistent condom use. In choosing the variables to include our final model, we first categorized variables into proximal and distal risk factors. Proximal risk factors are risk factors that are closer to the outcome, while distal risk factors are risk factors that are more "upstream" and usually affect the outcome indirectly. In building our model, we first fit distal factors that are strongly associated with consistent condom use from our cross-tabulations. Once we have the distal factors in our model, we fit the proximal risk factors who were associated with the outcome in our cross-tabulations. Variables which may have unstable estimates due to autocorrelation and/or separation will be excluded from the analysis.

Results

A total of 25,074 women aged 15 to 49 years old, with a mean age of 30.14, from across the Philippines participated in the 2017 Philippine NDHS and were included in the analysis. Around 80% of the population are Roman Catholics, 42% are married, around 86% completed high school or college and 54% reportedly being employed at the time the survey was conducted. Around 51% were reported to be living in rural areas whereas 49% were found in the urban areas. Around three-fourths of respondents did not report alcohol consumption, while 5% reported tobacco consumption. With regards to HIV testing, 95% reported never being tested for the infection despite an average score of 5 in terms of HIV knowledge test. For information regarding family planning and contraceptive knowledge, television was reportedly the most frequent primary source of information (62%), followed by internet (37%), radio (34%) newspaper/magazine (20%) and short messaging service on mobile phone (7%). When asked about intimate relations, the average total lifetime number of sex partners in the observed population was 1.4. Only 261 (1.13%) have reported using condoms consistently with their latest sexual partner.

Without adjusting for confounding variables, there is strong evidence that educational attainment of respondent, wealth index, current marital status, contraceptive use and intention, belief that wife is justified to ask husband to use condom if he has an STI, agency, hearing information on contraception via internet and/or television were strongly associated with consistent condom use (Table 1). In addition to the said variables, HIV knowledge, age of respondent, age of most recent partner, and total children ever born were also strongly associated with consistent condom use (Table 2).

Table 1
Cross-tabulations of categorical exposure variables with consistent condom use (n = 25,074).

Cross-tabulations of categorical exposure variables with consistent condom use (n = 23,074).						
	Inconsistent condom use (0)	Consistent condom use (1)	Missing	p-value	Crude OR (with 95% CI)	p-value of OR
Educational attainment of respondent						
No education	236 (73.87%)	0 (0.00%)	77 (26.13%)	< 0.01	-	
Primary education	3,041 (77.77%)	27 (0.84%)	785 (21.39%)		0.36 (0.20, 0.63)	< 0.01
Secondary education	7,164 (57.89%)	102 (0.88%)	5,153 (41.23%)		0.51 (0.35, 0.73)	< 0.01
Higher	4,694 (53.37%)	132 (1.60%)	3,662 (45.03%)		1	
Missing	0 (0.00%)	0 (0.00%)	1 (100%)			
Employment (Respondent currently working)						
No	7,449 (54.72%)	112 (0.95%)	6,138 (44.34%)	0.28	1	
Yes	7,686 (63.86%)	149 (1.34%)	3,540 (34.80%)		1.21 (0.86, 1.72)	0.28
Alcohol consumption						
No	11,185 (57.83%)	168 (0.99%)	7,543 (41.18%)	0.06	1	
Yes	3,950 (62.09%)	93 (1.53%)	2,135 (36.38%)		1.43 (0.98, 2.10)	0.07
Wealth index						
Poorest	4,156 (70.56%)	42 (0.62%)	1,733 (28.82%)	0.01	1	
Poorer	3,494 (64.66%)	50 (1.17%)	1,947 (34.18%)		2.06 (1.17, 3.64)	0.01
Middle	2,924 (61.62%)	49 (1.17%)	1,883 (37.21%)		2.17 (1.28, 3.69)	< 0.01
Richer	2,492 (54.16%)	62 (1.21%)	2,021 (44.63%)		2.54 (1.53, 4.24)	< 0.01

	Inconsistent condom use (0)	Consistent condom use (1)	Missing	p-value	Crude OR (with 95% CI)	p-value of OR	
Richest	2,069 (48.22%)	58 (1.36%)	2,094 (50.41%)	< 0.01	3.22 (1.78, 5.84)	< 0.01	
Current marital status							
Never in union	480 (5.93%)	46 (0.55%)	8,126 (93.52%)		1		
Married	10,665 (92.64%)	170 (1.55%)	623 (5.81%)		0.18 (0.11, 0.28)	< 0.01	
Living with partner	3,779 (94.94%)	35 (1.19%)	173 (3.86%)		0.13 (0.06, 0.30)	< 0.01	
Widowed/Divorced/No longer living together or separated	211 (21.60%)	10 (1.58%)	756 (76.82%)		0.79 (0.31, 1.98)	0.61	
Ever been tested for HIV							
No	14,573 (58.35%)	245 (1.07%)	9,457 (40.58%)	0.24	1		
Yes	562 (71.27%)	16 (2.41%)	221 (26.32%)		1.84 (0.66, 5.15)	0.25	
Tobacco use							
Does not use tobacco	14,306 (58.54%)	246 (1.11%)	9,344 (40.35%)	0.59	1		
Uses tobacco	829 (66.06%)	15 (1.50%)	334 (32.44%)		1.20 (0.63, 2.29)	0.59	
Contraceptive use and intention							
Does not intend to use	4,749 (43.11%)	10 (0.01%)	5,809 (56.84%)	< 0.01	1		
Non-user intends to use later	2,456 (38.57%)	38 (0.74%)	3,580 (60.70%)		15.02 (6.75, 33.42)	< 0.01	
Using traditional method	1,905 (97.68%)	4 (0.31%)	49 (2.01%)		2.52 (0.46, 13.80)	0.29	
Using modern method	6,025 (92.12%)	209 (3.61%)	240 (4.27%)		30.81 (14.61, 64.97)	< 0.01	
Religion							

	Inconsistent condom use (0)	Consistent condom use (1)	Missing	p-value	Crude OR (with 95% CI)	p-value of OR
Roman catholic	10,977 (58.89%)	199 (1.19%)	6,965 (39.92%)	0.17	1	
Protestant	1,413 (58.65%)	33 (1.36%)	868 (39.99%)		1.15 (0.71, 1.85)	0.57
Iglesia ni Cristo	434 (58.24%)	6 (0.90%)	286 (40.86%)		0.77 (0.28, 2.13)	0.61
Aglipay	208 (62.65%)	0 (0.00%)	127 (37.35%)		-	
Islam	1,309 (57.84%)	6 (0.34%)	1,006 (41.82%)		0.29 (0.11, 0.78)	0.02
Other Christian	474 (58.16%)	14 (1.14%)	295 (40.70%)		0.97 (0.50, 1.87)	0.93
Other/None	320 (68.47%)	3 (0.55%)	131 (30.98%)		0.40 (0.11, 1.46)	0.16
Educational attainment of partner						
No education	265 (92.99%)	0 (0.00%)	14 (7.01%)	0.06	-	
Primary education	4,158 (94.22%)	35 (1.07%)	182 (4.71%)		0.52 (0.28, 0.99)	0.05
Secondary education	6,000 (94.30%)	85 (1.29%)	300 (4.40%)		0.63 (0.40, 1.00)	0.05
Higher	4,013 (91.30%)	85 (1.98%)	300 (6.72%)		1	
Missing	699 (7.68%)	56 (0.66%)	8,882 (91.65%)			
Wife justified asking husband to use condom if he has an STI						
No	2,308 (47.35%)	23 (0.56%)	2,461 (52.09%)	0.03	1	
Yes	12,827 (61.40%)	238 (1.25%)	7,217 (37.34%)		1.72 (1.04, 2.85)	0.04
Respondent can ask partner to use a condom						

	Inconsistent condom use (0)	Consistent condom use (1)	Missing	p-value	Crude OR (with 95% CI)	p-value of OR
No	3,893 (95.12%)	7 (0.25%)	198 (4.63%)	< 0.01	1	
Yes	10,551 (92.72%)	198 (1.84%)	598 (5.44%)		7.62 (2.45, 23.70)	< 0.01
Missing	691 (7.62%)	56 (0.66%)	8,882 (91.71%)			
Decision maker for using contraception						
Mainly respondent	1,043 (95.09%)	5 (1.57%)	41 (3.35%)	0.74	1	
Mainly husband/partner	494 (95.25%)	14 (3.41%)	6 (1.34%)		2.17 (0.41, 11.59)	0.37
Joint decision	6,219 (94.71%)	168 (2.59%)	175 (2.70%)		1.66 (0.35, 7.83)	0.52
Other	32 (93.36%)	0 (0.00%)	2 (6.64%)		1	
Missing	7,347 (41.69%)	74 (0.48%)	9,454 (57.83%)			
Read information about contraception on the internet						
No	11,198 (%)	157 (%)	5,672 (%)	< 0.01	1	
Yes	3,937 (%)	104 (%)	4,006 (%)		1.65 (1.12, 2.41)	0.01
Heard family planning on radio last few months						
No	9,181 (55.86%)	168 (1.10%)	6,846 (43.03%)	0.72	1	
Yes	5,954 (64.93%)	93 (1.18%)	2,832 (33.89%)		0.92 (0.60, 1.41)	0.72
Heard family planning on television last few months						
No	5,724 (56.58%)	73 (0.84%)	4,156 (42.58%)	0.04	1	

	Inconsistent condom use (0)	Consistent condom use (1)	Missing	p-value	Crude OR (with 95% CI)	p-value of OR
Yes	9,411 (60.37%)	188 (1.31%)	5,522 (38.32%)		1.46 (1.02, 2.10)	0.04
Heard family planning in newspaper/magazine last few months						
No	12,502 (58.77%)	206 (1.05%)	8,031 (40.18%)	0.21	1	
Yes	2,633 (59.62%)	55 (1.46%)	1,647 (38.92%)		1.37 (0.83, 2.25)	0.22
Heard family planning by text messages on mobile phone						
No	14,243 (59.11%)	240 (1.14%)	9,101 (39.75%)	0.91	1	
Yes	892 (56.46%)	21 (1.05%)	577 (42.49%)		0.97 (0.53, 1.75)	0.91
Domicile (Type of place of residence)						
Urban	5,062 (55.23%)	114 (1.26%)	3,840 (43.51%)	0.06	1	
Rural	10,073 (62.49%)	147 (1.01%)	5,838 (36.50%)		0.71 (0.49, 1.02)	0.07

Table 2
Continuous variables and their association with consistent condom use.

	Range	Mean	Median	Distribution	p-value of rank sum test	Crude OR (with 95% CI)	p-value of OR
HIV knowledge (n = 22,813)	0–8	5.18	5	Left-skewed	< 0.01	1.23 (1.06, 1.42)	< 0.01
Age of respondent (n = 25,074)	15–49	30.14	29	Right-skewed	0.03	0.98 (0.96, 0.99)	0.01
Age of most recent partner (n = 15,378)	10–95	37.14	37	Right-skewed	0.02	0.98 (0.96, 1.00)	0.02
Total lifetime number of sex partners (n = 17,701)	1–95	1.40	1	Right-skewed	0.21	0.99 (0.97, 1.01)	0.43
Household size (n=25,074)	1–21	5.39	5	Right-Skewed	0.39	1.02 (0.93, 1.12)	0.65
Total children ever born (n = 25,074)	0–18	1.77	1	Right-Skewed	< 0.01	0.88 (0.81, 0.97)	< 0.01

Prior to doing multivariate analysis, we assessed for potential autocorrelation between exposure variables. In this assessment, we see autocorrelation between age of partner and age of respondent ($r = 0.80$). There is also separation when we include contraceptive use and intention in the model. As a result, we no longer consider age of partner and contraceptive use and intention as exposure variables as we proceed with multivariate analysis. Among the exposure variables showing evidence of association with consistent condom use, we identify educational attainment of respondent, wealth index, current marital status, and age of respondent as distal variables. Alcohol use, employment status, and domicile, while not showing statistically significant relationships with the outcome in the cross-tabulations, were still included in the model as distal variables as they were found to be a determinant of the outcome in previous studies (8–30, 37). The remaining variables showing association with the outcome variable – contraceptive use and intention, belief that wife is justified to ask husband to use condom if he has an STI, respondent's ability to ask partner to use condom, hearing information on contraception via internet and/or television, HIV knowledge, and total children ever born – were classified as proximal variables. At this point, we no longer considered the other variables in subsequent analyses. We also exclude data from respondents with missing data in any of the remaining variables of interest. As a result, we exclude some 11,791 (47.1%) respondents, mostly those with missing data on consistent condom use or those who have not had any sexual activity yet and are left with 13,283 (52.9%) respondents.

After adjusting for other variables in the model, we find that there is strong evidence of association between agency and consistent condom use (Table 3). Specifically, those who were able to ask their partners to use condoms during sexual intercourse has 6.10 times (adjusted odds ratio: 6.10; 95% Confidence Interval (95% CI): 2.00, 18.61) odds of consistent condom use than those who were unable to ask their partners to use condoms during sexual intercourse. Associations between HIV knowledge, hearing about contraception in television, age, and number of children with consistent condom use were also borderline significant. A one-point increase in HIV knowledge score translates to 17% greater odds (aOR: 1.17; 95% CI: 0.99, 1.39) of consistent condom use. Meanwhile, hearing about contraception in television translates to 54% greater odds (aOR: 1.54; 95% CI: 0.99, 2.39) of consistent condom use than those who did not hear about contraception via television. A one year of increase in age decreases the odds of consistent condom use by 2% (aOR: 0.98; 95% CI: 0.95, 1.00), while the birth of each child increases the odds of consistent condom use by 9% (aOR: 1.09; 95% CI: 0.98, 1.20).

Table 3
Association of selected socio-demographic and sexual health variables with consistent condom use (n = 13,283).

	Adjusted odds ratio (95% CI)	p-value
Educational attainment of respondent		
Primary education	1	
Secondary education	0.95 (0.47, 1.89)	0.88
Higher	1.53 (0.75, 3.15)	0.24
Civil Status		
Married	1	
Living with partner	0.77 (0.35, 1.69)	0.51
Wealth index		
Poorest	1	
Poorer	1.53 (0.78, 3.01)	0.21
Middle class	1.48 (0.75, 2.94)	0.26
Richer	1.44 (0.72, 2.84)	0.30
Richest	1.21 (0.56, 2.66)	0.62
Age (common odds ratio)	0.98 (0.95, 1.00)	0.11
Alcohol consumption		
No	1	
Yes	0.81 (0.46, 1.44)	0.48
Domicile		
Urban	1	
Rural	0.89 (0.60, 1.33)	0.58
Respondent currently working		
No	1	
Yes	1.09 (0.72, 1.65)	0.69
Respondent can ask partner to use condom		
No	1	
Yes	6.10 (2.00, 18.61)	< 0.01
Reading about contraception on the internet		
No	1	
Yes	1.06 (0.69, 1.62)	0.80
HIV knowledge score (common odds ratio)	1.17 (0.99, 1.39)	0.07
Number of children (common odds ratio)	1.09 (0.98, 1.20)	0.11
Respondent believes that it is justified for the wife to ask husband to use condom if he has STI		
No	1	
Yes	1.15 (0.61, 2.20)	0.66
Hearing about contraception on television		
No	1	
Yes	1.54 (0.99, 2.39)	0.05

Discussion

Despite the proven effectiveness of consistent condom use in preventing unwanted pregnancies and STIs, only 1% of the respondents use condoms with their most recent partner consistently. This, together with the low reach of various campaigns on contraceptive use throughout different forms of media, underscore the need to strengthen sex education and promote optimal reproductive health behaviors, such as consistent condom use, in the general population. After adjusting for other variables, only agency showed a strong evidence of being associated with consistent condom use, which has been demonstrated in a previous study [41]. Other variables, such as HIV knowledge, age, hearing about contraception in television, and number of children showed borderline significant associations with consistent condom use. These variables have been previously identified to be associated with consistent condom use [8–30].

Sexual agency has been defined “as the strategic negotiations of an individual to situate oneself and one’s choices in a social context, maintain relationships and make sense of experiences”. However, because each individual has different experiences and grew up in different environments, there are structural inequalities in sexual agency [42]. A qualitative study exploring sexual agency among young women in the Philippines found that many Filipino women have avoided or have no sexual agency, explaining that their first sexual experience was succumbing to coercion or emotional pressures of being with their partners, or worse, being raped [43]. In another study involving Filipino women, low sexual agency, measured by her inability to ask a partner to use condoms during intercourse, was found to be associated with experiencing intimate partner violence. [38]. Since we find that a woman’s ability to ask a partner to use condoms during intercourse is very strongly associated with consistent condom use, there should be measures to strengthen sexual agency among Filipino women. This could be done by educating and empowering them to make choices on their sexuality and reproductive health as early as puberty. The recent passage of the Philippine Reproductive Health Law, which has specific provisions for adolescent and youth reproductive health guidance and counseling, reproductive health education for adolescents, and prevention and management of reproductive health guidance and counselling, is a step in the right direction [44], but there may be a need to revisit its implementing rules and regulations and further strengthen its implementation considering that inconsistent condom use and teenage pregnancy is still prevalent in the country [7]. A recent paper on sexual agency advocates going beyond focusing solely on sex education interventions in promoting sexual agency. Instead, they advocate for improving living conditions, education, and social support, opining that these have greater effect on improving sexual agency than sex education interventions [45]. The association between sexual agency and consistent condom use also highlights the need for a more intensified information and education campaign to promote modern contraceptive methods, particularly consistent condom use, among older women no longer reached by school-based sex education.

The other variables with borderline significant associations with consistent condom use – HIV knowledge, age, number of children, and hearing about contraception via television – have been shown to be associated with consistent condom use in previous studies as well [8–30]. The association between number of children and consistent condom use is intuitive; women who have had many children would tell their partners to use condoms consistently to prevent conception. The association between HIV knowledge and hearing about contraception via television with consistent condom use highlight the need to continue information and education campaigns on HIV via television, as this medium has been shown to be the most effective in encouraging consistent condom use. In information and education campaigns promoting HIV knowledge, the importance of modern forms of contraception, which includes condoms, should be highlighted. However, in doing so, misperceptions on modern contraceptive methods should be addressed [46]. More importantly, a nuanced understanding of how pleasure, power, and inequalities should be considered in devising interventions to promote modern contraceptive methods [47]. The consideration on pleasure is particularly salient in the Philippine context as the perception that condoms are not comfortable to use and causes displeasure has been found to be a barrier to condom use in a previous review. The same review mentions the need for a “collaborative, culturally-sensitive, and population-specific approach to develop and implement acceptable, sustainable and successful condom use interventions” [8]. This study adds that more than just condom use, interventions should focus on promoting **consistent** condom use as the benefits of preventing STIs and unwanted pregnancies can only come from consistent use of condoms. More importantly, the prevention of teenage pregnancy by consistent condom use also protects women from the stigma and economic hardship brought about by teenage pregnancy. Lastly, the negative association between age and consistent condom use may mean that younger women are more likely to use condoms consistently, which is a welcome sign after many years of reproductive health activism and shows that reproductive health policies in the recent years are starting to bear fruit, but it is noteworthy that consistent condom use remains poor and such associations are weak.

Many variables would have shown a significant result, if not for the low number of people who has the outcome (261 in the descriptive analysis and only 200 left in multivariate analyses). This resulted in wide confidence intervals, non-significant result for factors supposedly associated with the outcome, and residual confounding as we are constrained to select only the most powerful confounders to be included in the final model. We would have wanted to control for the effect of other known determinants of consistent condom use, such as religion, but ultimately decided against it for the sake of parsimony. How the outcome variable is defined also raises possible issues in misclassification. The outcome variable is a combination of two questions – the first one asking if they had used condoms in their most recent intercourse with

their most recent partner – and a follow-up question asking if they had used condoms consistently in the past 12 months. This implies that some respondents may be using condoms consistently with their most recent partner, but may not be with their other partners, hence answering that they are current non-users of contraception, and yet still get classified as using condoms consistently with their most recent partner. Alternatively, this could just be an inconsistency in how respondents report their data on contraceptive use and intention, and on condom use, which is quite common in studies using self-report data. Lastly, we have also excluded around half of respondents who have missing data for consistent condom use and/or partner variables, which potentially means selection bias due to missing data and limits the generalizability of our findings to Filipino women who currently have partners in their relationship.

Conclusion

Despite these limitations, interventions to promote consistent condom use should be implemented to address the exceptionally low prevalence of consistent condom use in the population. After adjusting for confounders, we find that women with greater sexual agency are more likely to use condoms consistently than women with low sexual agency. This implies that interventions to improve sexual agency, such as improving sex education, living conditions, and social support might also work to increase the prevalence of consistent condom use in the population. There should also be a more intensified information and education campaign to promote HIV knowledge via television as having high knowledge on HIV and hearing about contraception via television were both independently associated with consistent condom use. Younger women are also more likely to use condoms consistently, which implies that somehow, more recent reproductive health policies are starting to bear fruit. This finding also highlights the need for a more intensified information and education campaign to promote modern contraceptive methods, particularly consistent condom use, among older women no longer reached by school-based sex education. With better agency and education, we empower individuals to make responsible choices about their sexual and reproductive health, hopefully addressing the triple burden of teenage pregnancy, high fertility rate, and HIV/STIs in the country.

Abbreviations

FSW – Female Sex Workers

HIV – Human Immunodeficiency Virus

MSM – Men who have sex with men

NDHS – National Demographic and Health Survey

STI – Sexually transmitted infection

Declarations

Ethics approval and consent to participate

The study has undergone ethics approval at the Ateneo de Manila University Research Ethics Committee (Protocol ID: SMPH DATA 2020).

Consent for publication

Not applicable.

Availability of data and materials

The data for the 2017 Philippine National Demographic and Health Survey Individual Recode are available from the Demographic and Health Surveys Program Website (<https://www.dhsprogram.com/data/available-datasets.cfm>).

Competing interest

VCFP owns shares of GMA Network Inc., a Philippine Stock Exchange-listed company primarily involved in radio and television broadcasting. The other authors declare no competing interests.

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Contributions

VCFP, AMLA, and LBST conceived the study. VCFP and AMLA performed the statistical analysis. VCFP, CST, NAKA, RGJM, and LMBC wrote the first draft. AMLA, SJDLR and LBST gave feedback and reviewed the drafts of the manuscript. All authors read and approved the final manuscript.

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