Determinants of Intrauterine Device Use in Indonesia: Analysis of the Indonesia Demographic and Health Survey for 2002-2012

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Abstract

The Indonesia Demographic and Health Survey has shown decreasing trends in intrauterine device use from 6.2% in 2002–2003 to 3.9% in 2012. In this study, the aim was to identify the determinants of intrauterine device use at the individual level in Indonesia. This was a cross-sectional study using data from the Indonesia Demographic and Health Survey for the years 2002-2003, 2007, and 2012. We used the multivariate binomial logistic regression to analyze the data for women aged 15-49 years using modern contraceptive methods. The total sample included 13,289 women. Among these, intrauterine device use was 11.6% in 2002, 8.1% in 2007, and 7.2% in 2012. The multivariate analysis revealed age, parity, educational level, urban/rural living, and exposure to information media to be the main determinants of intrauterine device use. Compared with women younger than 20 years, use was 3.1 times more likely in those aged 20-35 years (95% confidence intervals = 1.3-7.5) and was 9.8 times more likely in those older than 35 years (95% confidence intervals = 3.9-23.95). Moreover, use was 2.3 times more likely among women with higher educational statuses than among women with no schooling (95% confidence intervals = 1.6-3.3), and information media exposure made women 1.4 times more likely to use those devices (95% confidence intervals = 1.2-1.6). Compared with women who had a parity of 1-2, those with parities of 3-4 and >4 had odds of 0.5 and 0.4 for intrauterine device use, respectively. Finally, women living in rural areas had odds of 0.6 for intrauterine device use compared with women living in urban areas. Although our data indicate that continued efforts are needed to improve the overall educational statuses of women, it seems that a practical short- to medium-term solution might be to improve exposure in the various information media, such as radio, television, pamphlet, etc.

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Introduction

Contraceptive use in developing countries aims to prevent unintended pregnancies among women of reproductive age.[1] Unlike other contraceptive methods, the intrauterine device (IUD) has an effectiveness that is comparable to that of female sterilization.[2] Indeed, IUDs provide highly effective, long-term, safe, and reversible contraception, and are the most widely used reversible contraceptives worldwide.[3]

In 2017, there were an estimated 1.6 billion women of reproductive age (15-49 years) living in developing countries. Approximately half of that group are thought to want to avoid pregnancy at any given time, and yet, only three-quarters use modern contraceptives.[1]

Moreover, only 14% of married or in-union women use IUDs, with levels varying worldwide. The usage rates for IUDs range from 1.1% in Oceania to 17.4% in Asia, and have been reported at levels of 3.8%, 4.7%, 6.4%, and 11.3% in Africa, Northern America, Latin America, and the Caribbean, and Europe, respectively. In South-East Asia, the prevalence of IUD use (8.4%) in 2015 was consistent with average levels, but was toward the lower end of the range in Indonesia (3.9%).[4] Moreover, the Indonesia Demographic and Health Survey (IDHS) for the years 2002-2003, 2007, and 2012 have indicated decreasing trends in IUD use of 6.2%, 4.9%, and 3.9%, respectively.[5]

IUD use is known to be influenced by several factors at the individual, service delivery, program, and policy levels.[6] At the

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individual level, these client's age,[7] parity,[8] number of living children,[9] education level,[8,10] and place of residence[11] are known to influence IUD use. In this study, the aim was to identify the determinants of IUD use at the individual level specific to Indonesia.

Materials and methods

A cross-sectional design was employed for this study, using data from the IDHS for the years 2002-2003, 2007, and 2012. The study population comprised women aged 15-49 years who were reported to be using modern contraceptive methods during those study periods. The primary outcome for this study is intrauterine device (IUD) use, defined as using IUD or not using IUD. There were 6 potential predictors of IUD use: age, parity, number of living children, education level, place of residence, and exposure to information media. Descriptive data are presented as number (percentage) or as mean ± standard deviation. Data were analyzed by multivariate binomial logistic regression, and odds ratios (ORs) were calculated with 95% confidence intervals (CIs). A p-value of <0.05 was considered statistically significant.

Results

During the three study periods sampled, 13,289 women were identified who met the inclusion criteria, of whom 1,193 (9.0%) were using IUDs and 12,096 (91.0%) were not using IUDs. The mean age of the respondents was 32.92±7.60 years. Most women had a parity of 1-2 (56.5%), had 1-2 living children (60.5%), had completed secondary education (44.7%), lived in rural areas (57.3%), and were not exposed to information media about family planning (54.0%). In the bivariate analysis, age, parity, number of living children, education level, place of residence, and exposure to information media were significantly associated with IUD use.

There was a trend of increasing IUD use as age increased. Compared with women aged <20 years, those aged 20-35 years were 3.1 times more likely to use IUDs (95% CI = 1.3-7.5), while those aged >35 years were 9.8 times more likely to use IUDs (95% CI = 3.9-23.95). Parity was also important, with lower likelihoods of IUD use as parity increased. Compared with women who had a parity of 1-2, those with parities of 3-4 and >4 had ORs of 0.5 and 0.4 for IUD use, respectively. Women with higher education levels were 2.3 times more likely to use IUDs than women with no schooling (95% CI = 1.6-3.3) were. Women living in rural areas had ORs of 0.6 for IUD use compared with women living in urban areas. Interestingly, women exposed to information media were 1.4 times more likely to use IUDs than their non-exposed counterparts (95% CI = 1.2-1.6) were (Table 1). Although each of these factors showed significant associations with IUD use in the multivariable analysis, the number of living children was unrelated.

Discussion

In the multivariate analysis, age, parity, education level, rural/urban residence, and information media exposure were all associated with current IUD use. The strongest predictor of current IUD use was a woman's age, which is consistent with the results of other studies.[12-14] Also consistent with existing research, parity was associated with a reduction in the odds of IUD use.[15-16] Of note, compared with women who had no more than one child, women who had three or more children were much more likely to rely on sterilization rather than on long-acting reversible contraceptives, including IUDs.[16]

Women who had higher educational levels were 2.3 times more likely to use IUDs than those with no education were, which is consistent with research from Ethiopia,[9] the United States,[16] Mali,[17] and Ghana.[18] A possible explanation could be that women who are better educated are more likely to have access to information about modern contraceptive methods. It is thought that increased educational attainment influences service use and decision-making power on reproductive health issues, particularly family planning,[9] and can help women exercise their reproductive health rights.[19] The importance of female education on the use of IUDs might be attributable to the fact that women with better educations are more likely to understand the benefits of having fewer children and the positive impact on their economic productivity.[20]

Rural residence was associated with an approximate six-fold reduction in the odds of IUDs use compared to urban residence (OR

0.56, 95% CI 0.495–0.642). This association has been reported in other studies,[12,20,21] with evidence that rural women are less likely than their urban peers to utilize maternal and family planning services.[22] It was also notable that women exposed to information about family planning via the television, radio, or newspaper were 1.4 times more likely to use IUDs than their peers who were not exposed were. Similarly, a study in Ethiopia showed that respondents who had access to the radio or television were nearly twice as likely to use modern contraceptive methods as women who had no such access.[21]

Conclusions

In conclusion, this study showed that age, parity, education level, urban/rural residence, and exposure to information media determine IUD use in Indonesia. This study benefited from having a large sample size and from covering all provinces in Indonesia, making the findings representative of all Indonesian women of reproductive age. However, this was only a cross-sectional study, which precludes making observations about the causal relationships between factors. Based on the findings of this study, it is recommended that female education should continue to be a priority of the Indonesian government, and that health workers should actively promote modern contraceptive use, especially IUDs.

Declaration of Interest

The authors report no conflict of interest.

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Variable	Non IUD use, n (%)	IUD use, n (%)	Total n (%)	p-value	OR*	95% CI OR
Age (years)						
< 20	263 (98.1)	5 (1.9)	268 (2.0)		1.0	
20-35	7,496 (94.0)	478 (6.0)	7,974 (60.0)	0.013	3.1	1.3–7.5
> 35	4,337 (85.9)	710 (14.1)	5,047 (38.0)	0.000	9.8	4.0–24.0
Parity						
1-2	6,832 (91.1)	670 (8.9)	7,502 (56.5)		1.0	
3-4	4,031 (90.4)	426 (9.6)	4,457 (33.5)	0.001	0.5	0.4–0.8
> 4	1,233 (92.7)	97 (7.3)	1,330 (10.0)	0.002	0.4	0.2– 0.7
Living children						
1-2	7,337 (91.3)	701 (8.7)	8,038 (60.5)		1.0	
3-4	3,871 (90.1)	423 (9.9)	4,294 (32.3)	0.116	1.4	0.9–2.0
> 4	888 (92.8)	69 (7.2)	957 (7.2)	0.513	1.2	0.7–2.2
Education level						
No education	463 (91.0)	46 (9.0)	509 (3.8)		1.0	
Primary	5,569 (94.2)	346 (5.9)	5,915 (44.5)	0.017	0.7	0.5–0.9
Secondary	5,367 (90.3)	576 (9.7)	5,943 (44.7)	0.994	1.0	0.7–1.4
High school/University	697 (75.6)	225 (24.4)	922 (6.9)	0.000	2.3	1.6–3.3
Place of living						
Urban						
Rural	4,936 (87.0)	737 (13.0)	5,673 (42.7)		1.0	
Exposure to information media	7,160 (94.0)	456 (6.0)	7,616 (57.3)	0.000	0.6	0.5–0.6
Unexposed						
Exposed	6,693 (93.3)	482 (6.7)	7,175 (54.0)		1.0	
	5,403 (88.4)	711 (11.6)	6,114 (46.0)	0.000	1.4	1.2–1.6

Table 1. Determinants of intrauterine device use in Indonesia between 2002 and 2012.

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