

Factors Associated with Reasons for Contraceptive Discontinuation among Indonesian Women: A Multinomial Logistic Regression Analysis

Sari Kistiana^{1*}, Sri Lilestina Nasution¹, Mugia Bayu Raharja²

^{1*}Research and Development Center of Family Planning and Family Welfare, National Population and Family Planning Board, Jl. Permata No.1 Halim Perdana Kusuma, Jakarta Timur, Indonesia

²Research and Development Center of Population, National Population and Family Planning Board, Jl. Permata No.1 Halim Perdana Kusuma, Jakarta Timur, Jakarta, Indonesia

*Corresponding Author: Sari Kistiana Email: sarikistiana@gmail.com

ABSTRACT

Contraceptive discontinuation for reasons other than the desire for pregnancy is a public health concern because of their association with negative reproductive health outcomes. In Indonesia, even though contraceptive use is generally rising, contraceptive discontinuation remains high and is increasing. This study aimed at assessing factors of reasons for contraceptive discontinuation. This study used data from the 2018 Indonesian Population, Family Planning, and Family Development Program Performance and Accountability Survey. Only 1212 married women who had been using contraception within 12 months before the survey were included. Multinomial logistic regression was used to estimate the likelihood of discontinuing for biological/physical, psychological, or access reasons, by environmental, lifestyle, healthcare services, and heredity factors. The commonest reason for discontinuation was biological/physical (56%), followed by physical (26%) and access (18%). The predictors of biological/physical reasons for contraceptive discontinuation were women who had modern hormonal method discontinued (OR=2.53, CI: 1.53-4.19), low education (OR=2.04, CI: 1.50-2.78), low wealth status (OR=1.48, CI: 1.02-2.17), unemployed (OR=1.45, CI: 1.07-1.96), made contraceptive decision by herself (OR=0.70, CI: 0.50-0.97) and age 15-24 (OR=0.52, CI: 0.31-0.87). Understanding the factors of the reasons for contraceptive discontinuation will help in planning and evaluating interventions to reduce contraceptive discontinuation while trying to increase contraceptive use and reduce unmet need. It is suggested to strengthen adequate counseling services and informed choice, as well as provide easy access and good follow-up services to modern users.

Keywords: Contraceptive discontinuation, Family planning, Indonesia

Correspondence:

Sari Kistiana

Research and Development Center of Family Planning and Family Welfare, National Population and Family Planning Board, Jl. Permata No.1 Halim Perdana Kusuma, Jakarta Timur, Indonesia

Email: sarikistiana@gmail.com

INTRODUCTION

As the total fertility rate slowly decreases and contraceptive prevalence gradually rises, women's reproductive intentions will depend on the effectiveness, continuity, and satisfaction of contraceptive use¹, as an outcome indicator of the quality of the family planning services. The continuity of contraceptive use is related to strong family planning programs, adequate counseling, informed choice of method, the range of methods available, easy access, and good follow-up services^{1,2}. On the other hand, unplanned pregnancies, termination of pregnancies, and unintended births are attributable to contraceptive discontinuation for reasons other than wanting to become pregnant²⁻⁷.

The contraceptive discontinuation varies greatly by the level of contraceptive use and by type of methods. In most of the countries, the discontinuation was lower among long-acting reversible contraceptive (IUD and implant) users^{1-3,6,8,9}. The decision to discontinue contraception involves several factors, the acceptability of contraceptive options, current and future circumstances, and fertility desire⁴. Reasons cited with contraceptive discontinuation were method-related reasons (side effects, wanted a more effective method, inconvenient to use, difficult to use, health concerns), contraceptive failure (become pregnant

while using), access (availability or cost), non-method related reasons (infrequent sex/husband away, marital dissolution/separation, difficult to get pregnant/menopausal, belief that contraception was no longer needed, husband opposed) and other reasons (other, false rumor, fatalistic, don't know)^{5,6,10}. Literature suggests that age, parity, prior use of a method, and duration of use were significant predictors of reasons for contraceptive discontinuation¹⁰. The predictors can be categorized as Blum proposed one method called the "Force Field and Well Being Paradigms of Health". This model refers to four inputs of health that together affect the wellbeing of an individual: lifestyle, heredity, environment, and access to medical services¹¹.

Indonesia has launched a family planning program since 1967 and successfully increased modern contraceptive use and reduced fertility since then⁷. However, over the past decades, although the TFR has declined from 2.6 children per woman in 2007 to 2.4 children per woman in 2017, the prevalence of modern contraceptive use remained relatively steady, 57%¹². Not only the adoption of the modern method is stagnant but the continuity of these methods also remains a concern: 46% pill users, 28% injectable users, and 27% condom users discontinue the method within a year of adoption¹² and the

discontinuation rate is increasing⁷. Thus, promotion of contraceptive continuation and re-adoption among past users is better than promotion to recruit a large number of new users at one time and not take care of them¹, because unwanted and mistimed pregnancies would increasingly result from discontinuation methods rather than not ever using a contraceptive at all.

Most studies in Indonesia have focused on trends and determinants of current contraceptive use, the post-adoption contraceptive behavior was not well addressed. The increasing trend of traditional methods, high unwanted pregnancy and childbearing, high unmet need, and high discontinuation rate demand an analysis of the correlates on reasons associated with contraceptive discontinuation in Indonesia. Accordingly, this study aims to examine the factors associated with the reasons for discontinuation in Indonesia.

METHODS

Study population

This study used the 2018 Performance and Accountability Survey of Population, Family Planning, and Family Development Program (SKAP 2018). SKAP was a provincially and nationally representative survey that provided current information on fertility, family planning, reproductive health, and family development. The SKAP included information from 67,526 households, 60,599 women age 15-49 years, 69,515 families, and 22,210 youth age 15-24, across 34 provinces and the rural and urban areas in Indonesia. This study included information on women age 15-49, who had been using contraception in the 12 months prior to the survey. However, only women who were in union (currently married/cohabiting with a male partner) were included in the study. The analysis also excluded married women who discontinue for reasons to become pregnant or wanted to become pregnant. Thus this analysis is restricted to the 1212 married women who had been used contraception in the 12 months before the survey (weighted).

Reasons for discontinuation

The women's questionnaire reports reasons for contraceptive discontinuation through the following question, 'Can you tell me the main reason that you stop using a method?' the options listed included: infrequent sex/husband away, husband/partner opposed, preferred more effective method, no method available, health concerns, fear of side effects, lack of access/too far, costs too much, inconvenient to use, can't get pregnant/menopausal, interferes with body's normal processes, and other. From these options, the dependent variable, reasons for discontinuation other than pregnant or wanted to become pregnant, have been categorized into three: '*biological/physical reasons*', '*psychological reasons*', and '*access reasons*'. The biological/physical reasons include infrequent sex/husband away, health concern, can't get pregnant/menopausal, and interferes with the body's normal processes. The psychological reasons are husband/partner opposed, preferred a more effective method, fear of side effects, and inconvenient to use. Access reasons such as lack of access/too far, costs too

much, and other reasons (for example knows no method or knows no source).

Independent variables

When selecting independent variables for the multinomial model, this study based the approach on Blum's Model of Health Determinants. Blum explains that four factors contribute to the overall health of an individual: lifestyle, environment, medical services, and heredity¹¹. The independent variables were grouped into four categories hypothesized to influence reasons for contraceptive discontinuation.

The environmental factors (husband's employment status, place of residence, wealth status and religion); lifestyle factors (employment status, educational level, number of living children, knowledge on modern contraceptive method, method of contraception discontinued, duration of use last method; and decision making for contraceptive use); health care service related with the availability and access of primary health care (health insurance coverage, informed choice, and discussed family planning with a staff member at a health facility); heredity factors (women's age) are hypothesized to influence the reasons for contraceptive discontinuation.

Statistical analysis

Descriptive statistics, bivariate analysis, and multinomial logistic regression have been carried out. All four groups' possible factors that might have influenced the reasons for discontinuation were included in the bivariate analysis based on cross-tabulations using the Chi-square test. Multinomial logistic regression was used to identify the predictors of reasons for discontinuation among married women. The p-value was set at 0.05.

Ethical approval

Ethics approval for SKAP was obtained from The Ethics Committee of the National Population and Family Planning Board, Indonesia. The secondary data analysis for this study was conducted after obtaining the permission from the Research and Development Center of Family Planning and Female Welfare, National Population and Family Planning Board of Indonesia.

RESULTS

This study was a secondary data analysis that included 1212 married women age 15-49 whoever used contraceptives 12 months before the survey. Among married women who discontinued, the single main reason for discontinuation was for biological/physical reasons (56%); however psychological reasons accounted for 26% of discontinuations and access accounted for 18%. The most common reason among biological/physical reasons were interfering with body's processes (19%), infrequent sex or husband away (17%), and health concerns (16%). About 15% of women reported discontinuing contraceptive use due to fear of side effect and only 1% husband or partner opposed to the use of contraception. Only 6% of respondents discontinued due to unavailability of method and 5% because of the cost of contraceptive (Figure 1).

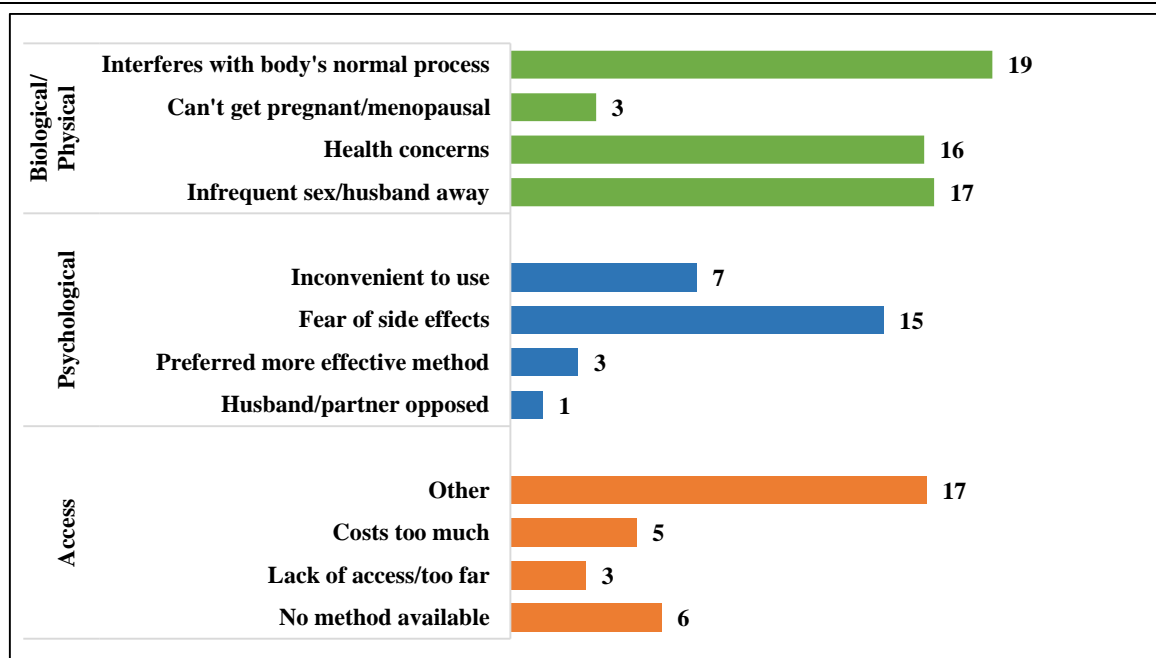


Figure 1: Percentage of Reasons for Contraceptive Discontinuation by Three Categories

Table 1 presents the percentage distribution of environmental, lifestyles, healthcare services, and heredity factors associated with reasons for contraceptive discontinuation with a level of statistical significance was set at 5%. The bivariate analysis finds that the commonest reason for contraceptive discontinuation in all four groups factors was biological/physical reason, except among women who had been using modern non-hormonal/traditional methods, the most common reason for discontinuation was access. As shown in Table 1, Contraceptive discontinuation for biological/physical reason was high among married women who live in a rural area, low wealth status, unemployed, low level of education, had more than two living children, had a good knowledge of modern contraceptive method, had been

using a contraceptive method for more than two years, used modern-hormonal contraceptive method, contraceptive use decides by herself, received a complete informed choice and in older age (35+).

The result of the Chi-square test reported that place of residence ($P=0.004$), wealth status ($P=0.000$), employment status ($P=0.014$), educational level ($P=0.000$), number of living children ($P=0.001$), knowledge on modern contraceptive method ($P=0.021$), duration of use ($P=0.033$), methods of contraceptive discontinued ($P=0.000$), decision making for contraceptive use ($P=0.000$), informed choice ($P=0.032$), and age ($P=0.031$) were factors that were significantly associated with the reasons for discontinuation of a contraceptive method (Table 1).

Table 1: Bivariate association between environmental, lifestyle, healthcare services, heredity factors and reasons for contraceptive discontinuation

Independent Variables		Reasons for Contraceptive Discontinuation (%)			n	p (value)
		Biological/physical	Psychological	Access		
Environmental factors						
Husband's employment status	Not working	57.1	38.1	4.8	21	0.201
	Working	55.8	26.1	18.2	1190	
Place of Residence	Urban	52.3	30.0	17.8	681	0.004
	Rural	60.3	21.7	18.1	531	
Wealth status	Low	63.8	17.6	18.6	392	0.000
	Middle	52.1	34.3	13.6	242	
	High	52.0	28.8	19.2	577	
Religion	Muslim	55.8	26.7	17.5	1,125	0.286
	Non-Muslim	55.3	21.2	23.5	85	
Lifestyle factors						
Employment status	Not working	58.7	24.9	16.4	803	0.014
	Working	50.0	29.0	21.0	409	
Educational level	Low (Junior high and below)	62.2	19.7	18.1	659	0.000
	High (Senior high+)	48.1	34.2	17.7	553	
Number of living children	0-2	53.1	29.6	17.4	818	0.001
	2+	61.3	19.6	19.1	393	
	Poor	51.4	21.1	27.5	109	0.021

Knowledge of modern contraceptive method	Good	56.2	26.8	17.0	1104	
Duration of use	0-2 years	52.9	30.2	17.0	507	0.033
	>2 years	57.9	23.5	18.6	703	
Method of contraceptive discontinued	Modern hormonal	58.9	25.7	15.4	1065	0.000
	Modern nonhormonal/traditional	32.7	30.6	36.7	147	
Decision making for contraceptive use	Herself	56.6	28.8	14.6	753	0.000
	Not herself	54.3	22.2	23.5	460	
Healthcare services						
Health insurance coverage	Yes	58.0	25.0	17.0	752	0.142
	No	52.2	28.5	19.3	460	
Informed choice	Complete	61.4	22.9	15.7	389	0.032
	Incomplete	48.5	32.4	19.1	204	
	No IC	54.5	26.5	19.0	620	
Discussed FP with a staff member	Yes	57.1	21.9	21.0	315	0,068
	No	55.2	27.8	16.9	898	
Heredity factors						
Age	15-24	46.7	33.6	19.7	137	0.031
	25-34	55.7	28.7	15.6	436	
	35-49	57.6	23.2	19.2	639	

These observed associations in the bivariate analysis were reassessed by multinomial logistic regression to identify an adjusted association with reasons for contraceptive discontinuation. Table 2 shows the results of the multinomial logistic regression analysis examining the effects of variables on the odds of women choosing

biological/physical and access reasons over psychological ones for contraceptive discontinuation. Several independent variables are significantly related to the biological/physical reasons or access reasons, among married women in Indonesia as shown in Table 2 where odds ratios are statistically significant ($p < 0.05$).

Table 2: Coefficients from multinomial logistic regressions of factors associated with reasons for contraceptive discontinuation.

Independent variables		Psychological vs. Biological/physical			Psychological vs. Access		
		OR	CI 95%	p-value	OR	CI 95%	p-value
Environmental factors							
Place of Residence							
	Urban	0,837	0.610-1.148	0.270	0.820	0.550-1.222	0.330
	Rural	1	-	-	1	-	-
Wealth status							
	Low	1.485	1.017-2.167	0.041	1.258	0.786-2.015	0.339
	Middle	0.659	0.456-0.952	0.026	0.560	0.337-0.929	0.025
	High	1	-	-	1	-	-
Lifestyle factors							
Employment status							
	Not working	1.448	1.068-1.963	0.017	1.065	0.728-1.559	0.744
	Working	1	-	-	1	-	-
Educational level							
	Low (Junior high and below)	2.043	1.504-2.776	0.000	1.665	1.125-2.465	0.011
	High (Senior high+)	1	-	-	1	-	-
Number of living children							
	0-2	0.807	0.570-1.142	0.225	0.840	0.545-1.294	0.429
	2+	1	-	-	1	-	-
Knowledge of modern contraceptive method							
	Poor	0.711	0.412-1.228	0.221	1.716	0.921-3.196	0.089
	Good	1	-	-	1	-	-
Duration of use							
	0-2 years	0.854	0.637-1.146	0.294	0.836	0.570-1.226	0.359
	>2 years	1	-	-	1	-	-
Method of contraceptive discontinued							
	Modern hormonal	2.530	1.529-4.189	0.000	0.577	0.335-0.995	0.048
	Modern nonhormonal/traditional	1	-	-	1	-	-
Decision making for contraceptive use							
	Herself	0.695	0.500-0.967	0.031	0.574	0.380-0.866	0.008

Not herself	1	-	-	1	-	-
Healthcare services						
Informed Choice						
Complete	1.089	0.778-1.524	0.618	1.013	0.649-1.580	0.954
Incomplete	0.713	0.480-1.060	0.095	1.046	0.631-1.735	0.861
No IC	1	-	-	1	-	-
Heredity factors						
Age						
15-24	0.523	0.314-0.873	0.013	0.850	0.448-1.610	0.617
25-34	0.961	0.688-1.342	0.815	0.827	0.538-1.271	0.386
35+	1	-	-	1	-	-

A multinomial logistic regression model with -2 log-likelihood for the overall model fit test to assess the hypothesized model. After independent variables were

applied, the results of the model fitting show a decrease in -2 log-likelihood from 2,060.101 to 1,907.209, thus this was the fitted model (Table 3).

Table 3: Model fitting information

	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	2,060.101			
Final	1,907.209	152.892	28	0.000

Simultaneously parameter estimation test resulted in the Chi-square if 152.892 with significance 0.000 ($p < 0.05$). It means at least one independent variable has a significant association with the dependent variable. The test on the determination coefficient using Nagelkerke R-Square

0.138, means the variability of dependent variable can be explained by the variability of independent variables was 14% (Table 4). The classification table shows that the overall accuracy of the model was 57% (Table 5).

Table 4: The Pseudo R-Squares results

Pseudo R-Square	
Cox and Snell	0.119
Nagelkerke	0.138
McFadden	0.064

Table 5: Classification table results

	Predicted			
	Biological/Physical reasons	Psychological reasons	Access reasons	Percent Correct
Biological/Physical reasons	604.58	44.40	26.63	89.5%
Psychological reasons	232.51	65.50	20.75	20.5%
Access reasons	172.52	22.84	22.13	10.2%
Overall Percentage	83.3%	11.0%	5.7%	57.1%

Married women in low economic status were about 1.485 times more likely to discontinue using contraceptives due to biological/physical reasons over psychological reasons than those with high economic status. On the other hand, women with middle economic status were about 0.659 times less likely to continue for biological/physical reasons and 0.560 times less likely to discontinue for access reasons over psychological reasons compared with those in high wealth status. Regarding working status, unemployed women were about 1.448 times more likely to discontinue using

contraception for biological/physical reasons over psychological reasons than their counterparts. Women with low educational level were 2.043 times more likely to discontinue due to biological/physical reasons and 1.665 times more likely to discontinue due to access reasons over psychological reasons compared to highly educated women. Other lifestyle factors, such as the method of contraceptive discontinued and decision making for contraceptive use were important predictors of the biological/physical reasons and access reasons for discontinuation. Women who had been using the modern

hormonal methods were about 2.530 times more likely to discontinue due to biological/physical reasons and 0.577 times less likely to discontinue due to access reasons over psychological reasons compared with non-hormonal/traditional users. Women who themselves decide to use contraception were 0.695 times less likely to discontinue using for biological/physical reasons and 0.574 times less likely to discontinue for access reasons over psychological reasons than women who did not decide themselves on contraceptive use. Age is also a statistically significant predictor of contraceptive discontinuation for biological/physical reasons over psychological reasons. Women aged between 15-24 were about 0.523 times less likely to discontinue using contraception compared to women aged 35 and older.

DISCUSSION

In this study, biological/physical reasons are the most common reason for discontinuation. Among all the reasons categorized as biological/physical, the commonest subset was interfering with the body's normal processes, such as prolonged bleeding or amenorrhea. A study conducted in New Zealand found that menorrhagia and intermenstrual bleeding were the reasons for discontinuing use¹³. In some cases, abnormal bleeding or spotting limits a woman's ability to pray, have intercourse, or do activities⁹. Another subset reason which was higher in this category was a health concern. This was similar to previous studies, which also found that health concerns, as a subset of biological/physical reasons in this study, was the most common reason for discontinuing contraceptive use^{8,9,14}. This study also implied that discontinuation due to access was the least common reason for stopping use, which is consistent with previous findings^{6,7}.

Previous use of the modern hormonal contraceptive method was the strongest identified factor of biological/physical reasons for contraceptive discontinuation. The results agree with a previous study that the highest rates of discontinuation are for hormonal methods^{9,14}. This is possibly due to the increasing concern of women about their health, as women continue to use hormonal methods, they experienced amenorrhea or irregular bleeding patterns. Women who used injection, Depo-Provera, in 12 months reported experience amenorrhea (55%) and in 24 months amenorrhea was experienced by 68% of users⁹. Other reasons might be a biological basis, perhaps related to diet, nutrition, or other metabolic factors for variation in women's tolerance of hormonal contraception¹⁵. As expected, women's education is negatively associated with biological/physical reasons for contraceptive discontinuation. This might be those with higher education had greater awareness and knowledge in contraceptive methods and also show a greater preference for smaller families. This finding is supported by other research as well^{7,16,17}.

Women who have relatively low wealth status more likely to discontinue a method for biological/physical reasons compared to those who were at higher wealth status. This might be in connection with false and misleading information about family planning, thus they would have a negative attitude towards contraception. This finding also in line with studies done in Southern Ethiopia, Bangladesh, and Philippines^{16,18,19}. This will be associated with an unwanted pregnancy, for those who are already limited

financial resources of the family, another child will create an additional burden.

This study also found that women who were working were had a significantly lower probability to discontinue due to biological/physical reasons, which is similar to the study done in Kuwait, Ethiopia, and Philippines^{6,19,20}. Working women perhaps have a possible conflict between work and maternal roles, also there is an exposure to support spacing or limiting of children. Women who are working may have higher social interactions where they exchange information and expand general awareness and knowledge of reproductive health.

Women who decide by themselves to use the contraceptive methods were less likely to discontinue due to biological/physical reasons. Those women may exhibit greater confidence and self-efficacy, thus rely on their judgement. Another possible explanation could be others'/partners' or joint consent in contraceptive use as a force for women to choose methods that they do not like. This finding is also in line with studies done in Senegal, Philippines and South Africa^{19,21,22}. Interestingly, this study revealed that younger women were less likely to discontinue for biological/psychological reasons compared to women who were older (age 35 and above), and this could be due to the belief that younger women were in a shorter period of using contraception, they might have less experienced of health concerns or they might think not yet reaching menopausal period or can't get pregnant. This is in agreement with previous studies conducted in Ethiopia^{6,23}. However another study conducted in the Philippines highlighted that younger women tend to have a higher discontinuation rate¹⁹.

This study utilized data from SKAP 2018 which generate nationally and provincially representative data. The strength of the study is the data in SKAP was collected by teams of trained interviewers mostly from the provincial state university, and SKAP has developed a data mobile collection application using smartphone. The study had some limitations. Some health systems factors such as service availability and quality were not assessed in the study for the information that was not available in the SKAP. Second, this study is based on retrospective self-reports about reasons for contraceptive discontinuation, thus subject to errors and inconsistencies. Last, since this study was based on cross-sectional analysis, it was not possible to provide information about cause-consequences relationships.

CONCLUSION

The results suggest that improving service quality of family planning, such as comprehensive counseling and education, follow-up visits in the initial few months, increase availability and accessibility of long-term contraceptive methods and monitor users could reduce contraceptive discontinuation in Indonesia. Adequate counseling can make women have an informed choice, forewarn on the possible minor and serious side-effects of contraceptives, and reassured about health concerns as the commonest reasons for discontinuation of biological/physical reasons. This study also suggests a further research to investigate reason for contraceptive discontinuation by adding gender or family balancing variables as predictors in contraceptive discontinuation.

ACKNOWLEDGMENTS

The authors gratefully acknowledge comments and helpful reviews from Dr. Sabarinah, M.Sc, Faculty of Public Health, Universitas Indonesia. The authors are also thankful Dr. Lalu Makripudin, M.Si from the National Population and Family Planning Board of Indonesia for the support to conduct this study.

CONFLICT OF INTEREST

The authors have no conflict of interest to disclose.

AUTHOR'S CONTRIBUTION

SK & SLN conceptualize and wrote the first draft of the paper. SLN conducted the statistical analysis. SK, SLN and MBR involved in the interpretation of results, writing and editing the manuscript. All authors read and approved the final manuscript and contributed equally to this study.

REFERENCES

1. Blanc AK, Curtis SL, Croft TN. Monitoring contraceptive continuation: Links to fertility outcomes and quality of care. *Stud Fam Plann.* 2002;33(2):127–40.
2. Ali MM, Cleland J, Shah IH. Causes and consequences of contraceptive discontinuation: evidence from 60 Demographic and Health Survey. WHO; 2012.
3. Bradley SEK, Croft TN, Rutstein SO. The Impact of Contraceptive Failure on Unintended Births and Induced Abortions: Estimates and Strategies for Reduction. DHS Analytical Studies No. 22. Calverton, Maryland, USA: ICF Macro; 2011.
4. Azuik EC, Ikeako LC, Ezeobi I, Ezebialu I, Umeobika JC, Obi KM, et al. Predictors of discontinuation of contraceptive use among Nigerian women: Results of 2013 Nigeria Demographic and Health Surveys. *J Sci Res Stud.* 2017;4(7):171–6.
5. Jain AK, Winfrey W. Contribution of Contraceptive Discontinuation to Unintended Births in 36 Developing Countries. Vol. 48, *Studies in Family Planning.* 2017.
6. Weldemariam KT, Gezae KE, Abebe HT. Reasons and multilevel factors associated with unscheduled contraceptive use discontinuation in Ethiopia: Evidence from Ethiopian demographic and health survey 2016. *BMC Public Health.* 2019;19(1):1–16.
7. Bradley SEK, Schwandt HM, Khan S. Levels, Trends, and Reason for Contraceptive Discontinuation. DHS Analytical Studies No. 20. Calverton: ICF Macro; 2009.
8. Nwe Tin K, Thae Maung M, Win T. Factors that Affect the Discontinuation of Family Planning Methods in Myanmar: Analysis of the 2015-16 Myanmar Demographic and Health Survey. DHS Working Paper No. 145. Rockville: ICF; 2019.
9. Castle S, Askew I. Contraceptive Discontinuation: Reasons, Challenges, and Solutions. 2015;(December).
10. Agrahari K, Mohanty SK, Chauhan RK. Socio-Economic Differentials in Contraceptive Discontinuation in India. *SAGE Open.* 2016;6(2).
11. Jones & Bartlett Learning. System Foundations. In: Belief, Values and Health [Internet]. Available from: https://samples.jblearning.com/076374512x/shi4e_ch02.pdf
12. BKKBN, BPS, Kemenkes. 2017 Survei Demografi dan. Survei Demografi dan Kesehatan Indonesia 2017. Jakarta: BKKBN; 2018. 1–446 p.
13. Colli E, Tong D, Penhallegon R, Parazzini F. Reasons for contraceptive discontinuation in women 20-39 years old in New Zealand. *Contraception.* 1999;59(4):227–31.
14. Alvergne A, Stevens R, Gurm E. Side effects and the need for secrecy: characterising discontinuation of modern contraception and its causes in Ethiopia using mixed methods. *Contracept Reprod Med.* 2017;2(1):1–16.
15. Vitzthum VJ, Ringheim K. Hormonal contraception and physiology: A research-based theory of discontinuation due to side effects. *Stud Fam Plann.* 2005;36(1):13–32.
16. Mahumud RA, Hossain G, Sarkar AR, Islam N, Hossain R, Saw Aik S, et al. Prevalence and associated factors of contraceptive discontinuation and switching among Bangladeshi married women of reproductive age. *Open Access J Contracept.* 2015;(January):13.
17. Asimwe JB, Ndugga P, Mushomi J, Menyenye Ntozi JP. Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis. *BMC Public Health.* 2014;Sep 8(14):926.
18. Nageso A, Gebretsadik A. Discontinuation rate of Implanon and its associated factors among women who ever used Implanon in Dale District, Southern Ethiopia. *BMC Womens Health.* 2018;18(1):1–10.
19. Laguna EP, Po ALC, Perez AE. Contraceptive use dynamics in the Philippines: Determinants of contraceptive method choices and discontinuation. DHS Furth Anal Reports No 35. 2000;
20. Shah NM, Shah MA, Chowdhury RI, Menon I. Reasons and correlates of contraceptive discontinuation in Kuwait. *Eur J Contracept Reprod Heal Care.* 2007;12(3):260–8.
21. Barden-O'Fallon J, Speizer IS, Calhoun LM, Corroon M. Women's contraceptive discontinuation and switching behavior in urban Senegal, 2010-2015. *BMC Womens Health.* 2018;18(1):1–9.
22. Kriel Y, Milford C, Cordero J, Suleman F, Beksinska M, Steyn P, et al. Male partner influence on family planning and contraceptive use: Perspectives from community members and healthcare providers in KwaZulu-Natal, South Africa. *Reprod Health.* 2019;16(1):1–15.
23. Shiferaw Yideta Z, Mekonen L, Seifu W, Shine S. Contraceptive Discontinuation, Method Switching and Associated Factors among Reproductive Age Women in Jimma Town, Southwest Ethiopia, 2013. *Fam Med Med Sci Res.* 2017;06(01):6–11.