Determinants Of Modern Contraceptives Use In Indonesia: A Spatial Analysis

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ABSTRACT

Family planning in Indonesia is deemed as a strategic program to improve the quality of life for women. In reality, this program's development is influenced by social values and policy priorities in every region. Many studies have investigated the use of modern contraceptives in Indonesia, none of which presents the disparities in contraceptive use among regions. We conducted a descriptive and inferential analysis using secondary data from Government Performance and Accountability Survey (GPAS) 2019. This study determines the disparities in the use of modern contraceptives among married women between regions in Indonesia. Regional 1, as a pioneer of family planning program in Indonesia since 1969, has a higher modern contraceptive use prevalence (mCPR) than the national and other regions. Besides, the lowest mCPR is Regional 3 as the youngest of the program implementation. The three regions have diverse determinant factors of modern contraceptive use. This paper discusses the importance of considering the regional complexions to implement Indonesia's family planning program, especially modern contraceptives.

INTRODUCTION

The 25th anniversary of the International Conference on Population and Development (ICPD) emphasized the importance of universal access to various services for safe and reliable family planning methods (1). The commitment is in line with the third goal of Sustainable Development Goals (SDGs), ensuring universal access to sexual and reproductive health services, family planning, information and education, and integrating reproductive health into national strategies and programs (2,3).

Despite the international commitments, around 218 million women of childbearing age (15-49) in low-and middle-income countries want to avoid pregnancy but do not use contraception. Approximately 49% of the 111 million pregnancies each year are unwanted (4).

The family planning program in Indonesia established as a strategic plan to improve the quality of the population through birth control, increase the access and quality of maternal health services, improve the quality of family planning and reproductive health services, and increase the awareness and understanding of reproductive health and preparing family life for adolescents (5).
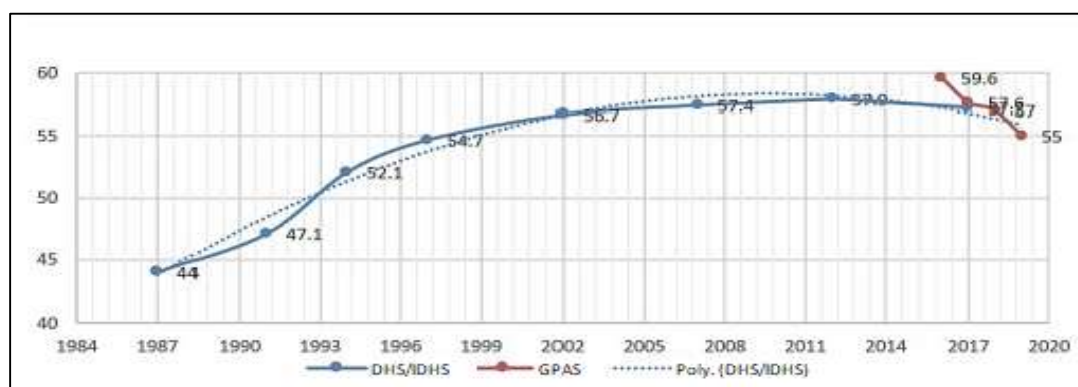

Figure 1: Trends of modern contraceptives use by IDHS and GPAS

Figure 1 shows the trends of modern contraceptive use by region based on the Indonesia Demographic and Health Survey (IDHS) and Government Performance and Accountability Survey (GPAS). According to the IDHS results, the improvement of modern contraceptives use primarily occurred in the period 1987–1997 (10.7 points), then slowly increased in the period 1997–2007 (2.7 points), and decreased in the 2007–2017 period (-0.2 points) (6–10). Based on the GPAS results, the sharp decline occurred in the 2016-2019 period (-4.6 points) (11–14).

Modern contraceptive use trends remain stagnant at around 50 points during Indonesia's five decades of family planning programs. This figure experienced consistency after the New Order era (after 1998). The Indonesian family planning program is no longer a national priority due to the decentralization (authority in the district/ city level). Local governments have essential roles in the development of the family planning program (15).
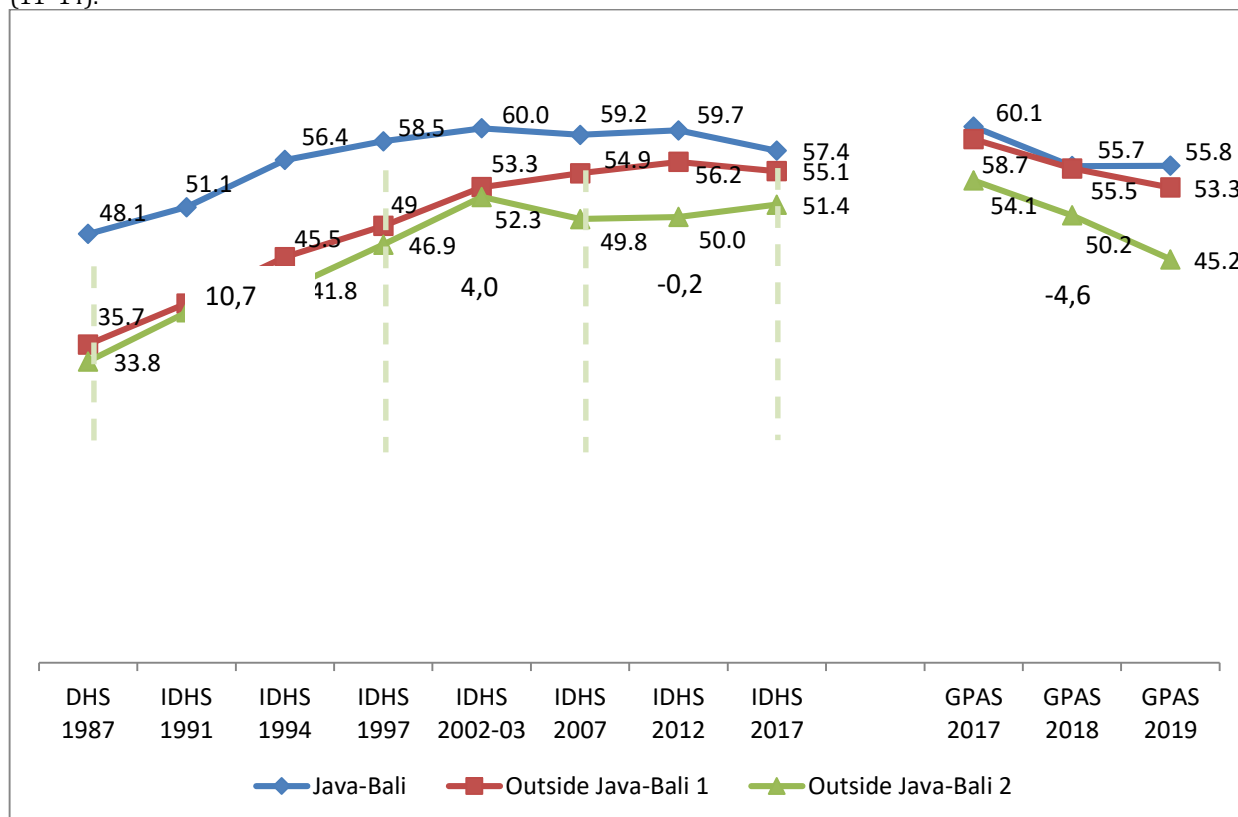

Figure 2: Trends of modern contraceptives use by area IDHS and GPAS results in Indonesia

Figure 2 shows the trends of modern contraceptives use according to the regions of Java-Bali (blue line), Outside Java-Bali I (red line), and Outside Java-Bali 2 (green line). The highest number of contraceptive use in the same period was in Java-Bali, then outside Java- Bali 1, and outside Java-Bali 2 (6–9,16–18) (11,13,14,19). These data reported the disproportionate use of modern contraceptive use among regions in Indonesia. For approximately 50 years, Indonesia's family planning has not been able to minimize the disparities. Much research on modern contraceptive use by region in Indonesia is mainly conducted based on healthcare facilities' working areas (20–22). However, none has performed a study on the contraceptives use disparities between regions. For this reason, this study is necessary to see the causes of these disparities. This study aims to map data spatially and analyze the determinants of modern contraceptive use disparities of married women among regions in Indonesia. The results are expected to have significant implications in providing family planning program design and implementation to achieve universal access to reproductive health services.

METHODS

Materials: The analysis uses secondary data sourced from the Indonesia Government GPAS 2019. This survey was conducted annually by the National Population and Family Planning Board (BKKBN). It aimed to measure the Population, Family Planning and, Family Development programs indicators in the 2015-2019 National Population and Family Planning Board Strategic Plan and the 2015-2019 National Mid-Term Development Plan. GPAS was designed to provide representative estimation at the national and provincial levels.

Survey Area

In this study, 34 provinces in Indonesia are grouped into several regions following the Indonesian government's classification procedure in 1969 that still relevant today (23). Provinces are grouped based on their level of population density and priority for family planning program implementation. Provinces in the 'Java-Bali' region (region 1/ R1) are the first to implement the family planning program outlined in Indonesia's first five-year development plan (1969-1974). It was followed by provinces 'outside Java Bali 1' (region 2/ R2) and 'outside Java Bali 2' (region 3/ R3) in two cycles of the next five-year development plan. The distribution of provinces and regions is presented in Figure 3.
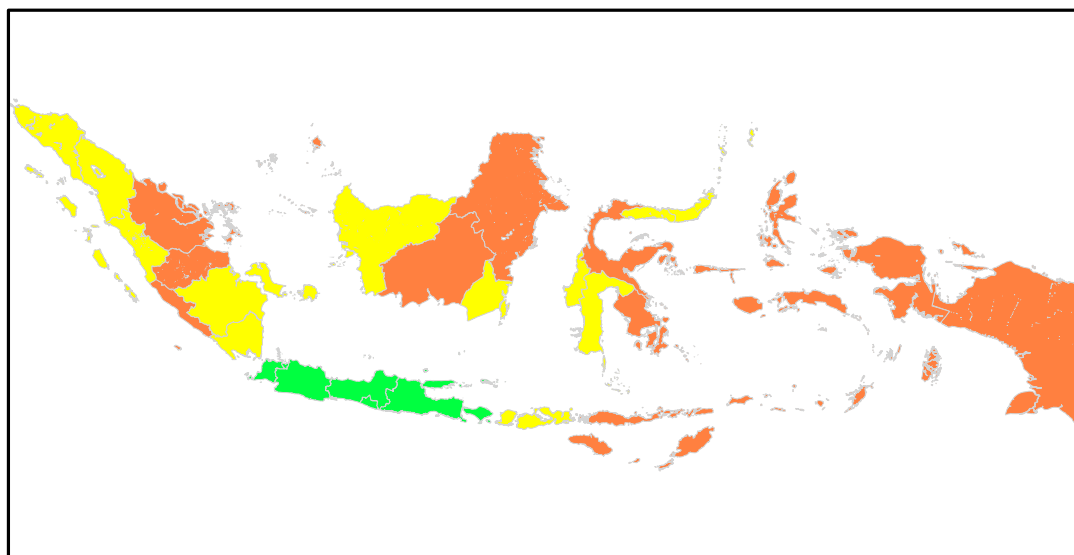
Figure 3: Provinces distribution based on the region in Indonesia

Region Java-Bali/Region 1/R1
Region Outside Java-Bali 1/Region 2/R2
Region Outside Java-Bali 2/Region 3/R3

Survey and Data Analysis

The 2019 GPAS used a three-stage sampling frame. The first stage used a list of villages throughout Indonesia with the classification of urban/ rural areas. The wealth index was considered during the village selection. The second sampling framework generated a list of clusters in the selected village. The third stage was a sample selection based on the enumerator's household listings by going door to door in the selected cluster.

The survey enumeration area consists of several nearby census blocks comprised of around 200 households. Stratified multistage random sampling was used as an overall sampling strategy. A total of 1,935 villages in Indonesia (spread across 34 provinces and 514 districts) were selected as clusters using the proportional probability sample method with sizes based on socioeconomic backgrounds (rural-urban and wealth index) of various regions in Indonesia.

Furthermore, around 35 households were selected from each cluster using a systematic random sampling technique that was carried out by registering all households (listing) by the enumerator/ interviewer in the selected cluster, resulting in 67,725 households.

Questionnaire trials were carried out in the prior data collection to assess the participants' ability to answer all the questions and observe how the questions fit into the application on mobile phones. Household recording practices were conducted during the trial to determine the number of households in the selected cluster used as a survey sample. The note-taking training was also intended so that interviewers can understand the ideal recording mechanism. The trial was carried out in March 2019 in Depok Village, Depok City, West Java.

The 2019 GPAS has four modules: household module, family, women age (15-49 years), and never-married adolescents aged 10-24. Survey data were digitally collected to ensure quality and to facilitate rapid data analysis. The interviewer was equipped with a mobile phone with an application covering all modules digitally and connected online to the server. Meanwhile, this study only focuses on the data of 46,220 married women from the GPAS 2019. The total sample in R1, R2, and R3 are 28,822, 11,376, and 6,022 married women.

The study uses descriptive and inferential analysis. The descriptive analysis describes the distribution of sociodemographic variables by region. The inferential analysis uses a logistic regression test and determines the most influential variables of modern contraceptive use among married women in Indonesia. The three models are Java-Bali, outside Java-Bali 1, and outside Java-Bali 2. It is possible to identify the independent variable with the most significant influence on each region's dependent variable.

Ethical Clearance

GPAS 2019 has received approval from the Ethics Review Committee number 454/LB.02/H4/2019. The survey is also based on the regulation of the Head of BKKBN number 11/2018.

RESULTS AND DISCUSSION

The spatial analysis of modern contraceptives prevalence rates (mCPR) portrays the disparities among regions in Indonesia. Regional 1 has a higher mCPR than the national and other regions. In contrast, the lowest mCPR is in Regional 3. Spatial analyses in various countries also show significant regional differences, as in Ethiopia, Ghana, and Rwanda (24–26). The modern contraceptives use (table 1) in this study highlights a pattern of age groups, which is at its peak in the 35-39 years age category and decreases with age. This pattern also applies to other regions (R1, R2, and R3). These results are consistent with the studies in Nigeria and Tanzania (27) that increasing age also improves married women's confidence and need for modern contraceptive use. In Ghana, modern contraceptives are 31 percent higher for married women aged 30–39 years than women aged 15–19 years (25). According to Table 1, married women with the age group 35-39 are significant in all regions and reach the peak of modern contraceptive use trends. It is in line with previous studies in Malawi, India, Ethiopia, and Uganda (28–31). The younger married women in the survey have lower use of modern contraceptives, while the older married women have higher use of modern contraceptives (28,32). The reasons young married women do not use modern contraception because they are newly married and hope to have children soon; also,

they still inexperienced in accessing family planning services (28). In contrast, young married women in Bangladesh tend to avoid pregnancy because they feel too young in childbearing/ rearing. Bangladeshis young married women choose education first, while Bangladeshis older marriage women have less interest in using contraception because of menopause and abstinence (33). Characteristics based on the residence show that the urban areas among regions have lower modern contraceptives than in rural areas. It is similar to other studies in Niger, Australia, and China (34,35). The modern contraceptive methods in rural areas are more dominated by contraceptive implant and injection; meanwhile, urban marriage women more likely to use an

intrauterine device (IUD) and oral contraceptive pills (36,37). A study in the Democratic Republic of the Congo finds that husband's refusal in family planning programs is the primary consideration for rural marriage women to decline contraception (38). The residence area affects modern contraceptive use in all three regions (the highest in R3 and the lowest in R2). The results in line with the research in Ghana and Malawi (28,39). Rural marriage women use modern contraceptives more than in urban areas, similar to previous Indonesia's (40). Several studies in Malawi and Bangladesh indicate that rural women are less likely to use contraception than urban women (28,41).

Table 1: Characteristics and Determinants of Modern Contraceptives Use among Married Women in Indonesia (Adjusted Odd Ratio)

Characteristics	R1 [Jave-Bali] [%]		AOR[LL-UL]	R2 [Java-Bali 1] [%]		AOR[LL-UL]	R3 [Java-Bali 2] [%]		AOR[LL-UL]
	mCPR	Traditional		mCPR	Traditional		mCPR	Traditional	
Age									
15-19	46.6	0.5	0.84[0.67-1.06]	51.8		**1.54[1.08-2.18]	34.1	0.7	1.30[0.81-2.09]
20-24	54.4	2.6	***1.32[1.18-1.47]	48.7	3.1	***1.60[1.33-1.93]	43.3	1.9	***2.10[1.61-2.74]
25-29	56.1	4.0	***1.55[1.41-1.70]	51.5	3.4	***2.02[1.73-2.36]	44.5	2.2	***2.22[1.78-2.78]
30-34	60.0	3.7	***1.80[1.65-1.96]	56.0	4.5	***2.38[2.07-2.75]	49.2	2.9	***2.41[1.96-2.95]
35-39	62.4	3.9	***1.90[1.75-2.06]	58.2	4.9	***2.42[2.11-2.77]	54.3	2.5	***2.67[2.20-3.25]
40-44	61.1	3.9	***1.69[1.56-1.84]	56.7	4.8	***2.13[1.85-2.44]	47.5	3.1	***1.87[1.53-2.28]
45-49	49.5	3.5	Ref	39.9	6.0	Ref	34.3	4.0	Ref
Residence									
Urban	54.3	5.1	Ref	48.4	6.4	Ref	42.0	3.7	Ref
Rural	61.8	1.7	***1.23[1.17-1.31]	55.0	3.6	***1.22[1.12-1.34]	48.6	2.3	***1.30[1.14-1.48]
Occupation									
Housewive	57.2	3.5	Ref 1.04[0.98-1.10]	54.2	4.3	Ref ***0.88[0.80-0.96]	46.3	2.6	Ref *1.13[0.99-1.29]
Working	58.3	4.0		49.9	5.1		46.3	3.1	
Religion									
Islam	57.7	3.4	Ref	53.3	4.2	Ref	50.6	3.0	Ref
Christian	47.9	9.2	0.92[0.73-1.16]	48.6	6.7	0.97[0.83-1.14]	30.4	1.9	**0.44[0.37-0.53]
Catholic	44.4	23.1	*0.72[0.51-1.02]	54.5	6.7	0.81[0.59-1.09]	42.0	3.0	**0.67[0.53-0.84]
Buddha	60.3	9.0	1.01[0.49-2.08]	25.4	7.1	0.78[0.28-2.16]	29.4		0.91[0.18-4.60]
Hindu	62.0	5.6	***1.74[1.17-2.57]	65.8		1.51[0.66-3.45]	58.6	1.3	0.95[0.39-2.29]
Insurance Ownership									
No	57.8	3.0	Ref **1.06[1.00-1.12]	53.6	3.7	Ref **1.11[1.02-1.22]	45.8	2.6	Ref ***1.20[1.06-1.35]
Yes	57.5	4.0		52.5	5.0		46.6	2.8	
Level of Education									
Unschooled	49.5	2.1	**0.75[0.57-0.98]	52.5	0.7	0.91[0.63-1.31]	28.1	1.2	*0.67[0.42-1.07]
Elementary School	60.1	1.7	1.10[0.98-1.24]	57.9	2.6	*** 1.27[1.06-1.53]	51.0	2.0	**1.29[1.01-1.65]
Junior High School	60.3	2.3	***1.17[1.04-1.31]	56.5	3.7	*** 1.31[1.09-1.56]	51.2	2.4	***1.38[1.08-1.76]
High School	55.6	5.4	***1.17[1.05-1.30]	49.1	6.0	**1.17[0.99-1.39]	43.4	3.1	**1.26[1.01-1.57]
Shorter duration Collage	52.8	8.3	** 1.22[1.04-1.43]	45.0	8.6	1.20[0.93-1.54]	40.1	4.8	1.12[0.81-1.56]

University	47.4	8.7	Ref	40.1	8.0	Ref	37.0	4.5	Ref
Ideal family size									
>2	53.2	3.5	Ref	50.9	5.3	Ref	45.3	2.8	Ref
0-2	59.7	3.7	***1.49[1.40-1.57]	54.7	3.8	***1.36[1.25-1.49]	47.4	2.8	***1.30[1.15-1.46]
Children Born Alive									
>2	66.4	3.4	***1.91[1.78-2.05]	59.5	6.0	***1.83[1.65-2.03]	54.6	3.2	***2.15[1.86-2.48]
0-2	54.6	3.7	Ref	48.8	3.6	Ref	41.3	2.5	Ref
Age of First Marriage									
10-14	55.9	0.7		60.6	1.2		46.3	1.8	
15-19	63.8	1.8		60.5	3.0		55.3	2.3	
20-24	58.7	4.3	***0.95[0.94-0.95]	53.4	4.9	***0.95[0.94-0.96]	46.0	3.0	***0.96[0.95-0.98]
25-29	49.3	7.3		40.8	8.0		35.2	4.2	
30-34	36.1	7.1		37.5	6.0		30.7	2.4	
35-39	15.9	3.6		7.9	2.3		4.3		
40-44									
Tribe									
Aceh	23.9		0.56[0.14-2.31]	41.5	4.7	***0.37[0.27-0.51]	24.9		*0.15[0.02-1.37]
Bali	59.9	6.3	**0.66[0.44-0.99]	56.8		0.51[0.18-1.44]	54.3	1.9	0.61[0.21-1.72]
Banjar	3.4	75.3	*0.04[0.00-1.31]	67.5	2.2	1.19[0.85-1.65]	53.2	2.2	0.66[0.38-1.15]
Banten	50.9	0.6	0.88[0.73-1.07]	60.0		0.78[0.30-2.01]	76.0		1.71[0.07-40.8]
Batak	35.4	9.1	**0.65[0.43-0.99]	42.6	10.9	***0.49[0.36-0.68]	30.2	3.4	**0.45[0.26-0.78]
Batawi	54.7	6.8	0.99[0.89-1.11]	36.0	13.3	0.33[0.08-1.44]	14.9		0.12[0.01-2.31]
Bugis	45.4	7.2	0.76[0.43-1.34]	47.9	5.4	***0.50[0.37-0.70]	45.9	3.7	***0.49[0.30-0.81]
China	55.7	12.6	1.27[0.77-2.07]	27.2	11.6	***0.27[0.11-0.66]	23.0		0.32[0.07-1.40]
Dayak	29.4		0.50[0.10-2.59]	69.3	0.6	1.30[0.84-2.00]	67.3	1.1	*1.61[0.96-2.71]
Jawa	59.4	4.3	***1.09[1.03-1.16]	54.4	6.0	***0.67[0.50-0.89]	52.6	3.8	*0.64[0.40-1.01]
Madura	54.0	0.4	***0.77[0.67-0.87]	58.3	0.5	0.80[0.44-1.44]	48.4	2.1	0.63[0.22-1.83]
Malayu	49.7	6.5	0.69[0.45-1.06]	57.5	2.8	*0.76[0.56-1.02]	50.7	2.4	**0.62[0.39-1.00]
Minangkabau	41.7	14.9	**0.67[0.48-0.95]	47.5	4.3	***0.53[0.38-0.73]	38.1	7.8	***0.45[0.26-0.79]
Sasak	35.4		0.80[0.60-1.08]	59.9	0.6	***0.58[0.43-0.77]	58.5		***0.45[0.29-0.72]
Others	53.6	6.4	0.68[0.07-6.28]	50.8	3.3	0.87[0.63-1.20]	39.5	2.1	0.99[0.13-7.32]
Sunda	56.8	1.8	Ref	66.2	5.7	Ref	65.0	2.0	Ref
Prosperity Level									
Low	62.9	1.7	***1.20[1.10-1.30]	55.7	3.5	1.02[0.90-1.15]	47.9	1.9	**1.22[1.03-1.43]
Middle	58.2	3.2	***1.08[1.02-1.15]	53.2	4.2	1.02[0.91-1.13]	48.8	2.4	***1.27[1.09-1.48]
High	53.7	5.5	Ref	48.1	6.7	Ref	40.5	4.5	Ref
Total	**57.6**	**3.6**		**52.9**	**4.5**		**46.3**	**2.8**	

Note: * significant 0.1 | ** significant 0.05 | *** significant 0.01 ; LL = lower limit ; UL = upper limit
Dependent variable : CEB with 2 categories [Binary] : Family Planning/FP : 0 [Not using modern contraceptive]   and 1 [using modern contraceptive]

The burdens to access contraception make the rural marriage women use less modern contraception than urban (42). Access to health facilities is also a determinant factor to use modern contraception. Marriage women who have access to primary health facilities have a higher chance of using contraception than married women with limited access (43). A solution to reduce this disparity is by allocating more human resources in rural areas (42). By the family planning officers' home visit, the information about modern contraception is more accessible. It can also help overcome the side effects of contraceptive use in rural areas (41).

However, the occupation status of married women suggests a different trend in each region. Working married women in R1 tend to use modern contraceptives, but it is not significant. Working married women in R2 have a marked tendency of 0.88 times compared to the housewives to use modern contraceptives. It means that married women who do not work are more likely to use modern contraceptives. Meanwhile, working married women in R3 are significantly determined to use modern contraceptives. The R1 and R3 regions' findings are consistent with the studies in Kenya and Nigeria, where married women who work outside the home or those who have formal jobs are more likely to use modern contraceptive methods than those who do not work (44,45). Unemployed married women had a lower chance (26%) to use modern contraceptives than married working women (25).

The significance of religion (Table 1) of the three regions shows the different modern contraceptives patterns. Islam, Catholicism, and Hinduism (R1) are significant in the use of modern contraceptives. The results on R1 are parallel to a study in Bengali, the eastern part of India (46). Meanwhile, in R3, most married women who use modern contraceptives are Christian, Catholic, Buddhist, and Hindu. In R2, none of the religions are significant. Study in Ethiopia highlights the religious society, especially some Muslim communities, is a strain of modern contraceptive use (47). However, other studies state that religion is a significant factor in modern contraceptive use (29,48). Religious communities' views on contraception vary. Hindu society does not prohibit contraception; all methods are acceptable, including permanent contraception (49). Several Islam communities (in Malawi, Ghana, and Bangladesh) have a lower level of modern contraceptive use than other religions (28,39,41). It is because of the pronatalist ideology of their faith (41). Catholic married women tend to use modern contraception more than Islam (28,50). Historically, Catholics have a lower rate of contraceptive use than Protestants due to the Roman Catholic Church's prohibition (41). Different religious understandings about contraception show that religion is one of the main obstacles in contraceptive use (51). Also, some religious principles are influenced by local customs (49). Insurance ownership in each region has a significant positive effect on modern contraceptive use in married women. This result is influenced by the Indonesia National Health Insurance (JKN) program implementation, which all Indonesian citizens guaranteed health in 2019. The program also affects Indonesian married women's participation and contraception choice because family planning is a part of health services and facilities (52).

At the education level, R1 to R3 show a decreasing pattern in marriage women modern contraceptives use. The decline is in line with the increased pattern of married women's education level. The highest percentage of modern contraceptives used in each region is at the Elementary School and Junior High School levels. This result differs from a study in Ghana, where women with secondary education (Junior High-High School) are 60 percent more likely to use modern contraceptives than unschooled women (25). Junior High School levels are significant in all regions. Previous research also stated that education affects the use of modern contraceptives (25,53,54). Married women with higher education have higher use of modern contraceptives (32,39). Ethiopia's study concludes that the government must build public awareness on modern contraceptives from formal education because it affects modern contraceptive use (47). Better education also contributes to women's empowerment (34). Both contribute to the decision-making rights related to reproductive health. Educated and empowered women have a better understanding of the benefits of using contraception to reduce unwanted pregnancies and their health (28). In summary, women with better and higher education can determine their knowledge and understanding of modern contraceptives. Nationally, around 56.5 percent of women know and understand modern contraceptive use's side effects (14). By province, married women with the highest knowledge and understanding of side effects are in West Sumatra, which is in R2 (79.7 percent). In contrast, the lowest is in North Maluku province (35.1 percent) in R3 (14). The results confirm that not all women understand the information about the side effects of modern contraceptive methods. A study in Ghana concludes that fewer details of side effects and misunderstandings on long-term contraception becomes women's barrier to access modern contraceptive services (55). In Nigeria and Ethiopia, knowledge about what to do when experiencing side effects can influence contraceptive use (56,57).

Married women who have more than two children in each region are less likely to use modern contraception than those with 0-2 children. Another study in Indonesia regarding modern contraceptive use supports this study (37). When the number of children born by married women is fewer, it is higher on modern contraceptive use than married women entering the reproductive age limit and with a large number of children (37). However, the results are different in Ghana. Modern contraceptive use is higher for currently married women with a parity of 1–2 (25). Related to the ideal family size, married women in R1 with the ideal family size [0-2] had a higher tendency (1.49) to use modern contraceptives than those who had more than two children. In R2, married women who have children as many as 0-2 have a higher tendency (1.36) to use modern contraceptives than those who have children more than two. In R3, married women who have 0-2 children have a higher tendency (1.3) to use modern contraceptives compared to those with >2. The three regions in this study show significant results on the variable number of ideal family size. In this study, respondents with a perception that the ideal family size was less than two tended to use modern contraceptive methods than respondents with more than two children. The odds ratio from each region is not too different. Regional 1 (Java-Bali) has a slightly higher odds ratio than R2 and R3. Regarding the ideal number of children and modern contraceptive use, husbands' role in determining the number of children is significant. Increasing the part of husbands in the modern contraceptive use through various approaches needs to be done by the government (58). The results of GPAS

2019 for currently married women aged 15-29 years shows 11.2 percent of husbands disagree if their partner uses the contraceptive method (14). It means that the husband's role in giving consent to their partner also affects contraceptive use. Other research in Indonesia points out that the husband's involvement in deciding long-term contraceptive use in currently married women was 2.3 times higher (59). Husband's support plays a significant role three times higher and 1.6 times higher (after being controlled with an accessibility factor) in married women to use modern contraceptives (60). The ideal number of children is also influenced by the intentions, hopes, family ideals, and social norms in society (61). Besides, married women with the number of children ever born alive more than two are significant to modern contraceptive use in all regions (33,62). The prosperity level has a significantly different pattern. R1 and R3 show that the three wealth quintiles are significant in the use of modern contraceptives. In comparison, the wealth quintile R2 is not significant. Several studies in Nigeria, Malawi, and Ghana show the disparities regarding wealth quintiles in modern contraceptives (32,63). The higher the prosperity level, the lower the modern contraceptive use percentages. In R3, married women with low and medium welfare levels (1.22 and 1.27) tend to use modern contraceptives. Other studies in Indonesia and Nigeria support this argument (45,64).

The modern contraceptives use based on Indonesian ethnicity is divided into the 15 largest ethnic groups (65). More than 50 percent of contraceptive use in R1 is found in the Java-Bali native ethnic groups (Javanese, Sundanese, Balinese, Madura, Betawi, Banten). Modern contraceptive use in the native ethnic groups in Regional 2 is still below 50 percent (Aceh, Batak, Minangkabau, Bugis). Still, there are several other native ethnic groups above 60 percent (Banjar and Dayak). The native ethnic groups in R3 use modern contraception above 50 percent is Sasak and Dayak. Other groups outside are still below 39 percent. In a study related to ethnicity and fertility in Indonesia (66), the Batak tribe has a high number of born-alive children (2.56) and the Acehnese (2.4). Both groups prefer a specific gender and a large number of family members (66). Another study has a similar result in the use of contraception among ethnicities (32). Javanese and Sundanese as the native ethnic group in R1 significantly impact contraceptive use in the three regions. It is different from the study in the United States, which points ethnic minority women tend not to use modern contraceptives (67). Women who experience discrimination based on ethnicity are less likely to use contraception (68). However, other research shows that the use of modern contraceptives varies by race (69). Fertility decision in Indonesia is related to the ethnicity values and the desire to have many children (66). The Minangkabau tribe prefers a daughter, while Javanese and Sundanese conclude girls and boys are the same (70). The Batak and Balinese communities have more desire for a son (71). Married women in both societies will continue to have more children and not use modern contraceptives to achieve their gender preference (70,72). It means that the gender composition of the children is also a critical factor for married women to determine the contraceptive used (73).

CONCLUSION
The study emphasizes the importance of considering regional ambiance to increase modern contraceptive use.

This analysis's variable is sensitive and can be used to assess the family planning program policies and development. The gaps in the Indonesia region reflect the half decades of family planning journey in this country. As further research, it needs to understand Indonesia's uniqueness, especially about local values in contraception and gender precedence. This research also references further research on the modern contraceptive use acceptable to all women of childbearing age in Indonesia.

AUTHORS' CONTRIBUTION
All authors contributed equally to this work. We discussed, analyzed, and wrote the manuscript at all stages. The authors read and approved the final manuscript.

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