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## **Determinants of Long-Term Contraceptive Method among Reproductive-Aged Women in Sulawesi Island (Data Analysis of IDHS 2017)**

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### **Abstract**

**Introduction:** Long-Term Contraceptive Methods are contraceptive methods that, once used, last for a long period, ranging from 3 years to a lifetime. LTCMs are considered highly effective compared to non-LTCMs, with a success rate above 95%. Overall, the coverage of LTCM usage in Indonesia remains low despite a noticeable increasing trend of 10.6% in 2012 and 13.2% in 2017. This coverage is far below the global average in SDGs in 2030, which was 35%, and the targets outlined in the BKKBN Strategic Plan for 2020 (25.11%) and 2024 (28.39%).

**Objective:** The aim of this research is to identify the determinants of LTCM usage among women of reproductive age and to determine predominant the factors most associated with LTCM usage on the island of Sulawesi.

**Method:** This cross-sectional study aims to identify the determinants of LTCM usage among reproductive-aged women in Sulawesi Island based on secondary data from the 2017 Indonesia Demographic and Health Survey (IDHS). The population in this study consists of all reproductive-aged women (15-49 years old) who are married and using contraception in the provinces of Southeast Sulawesi, South Sulawesi, West Sulawesi, Central Sulawesi, and North Sulawesi. The data utilized a survey with a complex sample design, and this taken into account during the analysis using weighting. The data analysis employed cox regression to estimate the prevalence ratio.

**Result:** Out of 2,703 respondents, 519 (22.5%) were using LTCMs. Statistical tests indicated associations between predisposing factors such as age, education, occupation, knowledge about family planning (FP), number of children, and economic status, reinforcing factors like decision-making autonomy regarding FP, and supportive factors such as access to FP services and FP information media with LTCM usage among reproductive-aged women in Sulawesi Island. The most influential supportive factor was access to FP services in the government sector, with a 30.1% influence, having a 2.2 times higher likelihood of LTCM usage with a p-value of 0.001 and 95% CI 1.79 - 2.88.

**Conclusion:** There is a relationship between predisposing factors such as age, education, occupation, knowledge about family planning (FP), number of children, and economic status, reinforcing factors influencing decision-making regarding family planning, and supportive factors of family planning service sources and media information on family planning, with the use of long-term contraceptive methods (LTCM) among women of reproductive age in Sulawesi Island. The most dominant factor associated is the supportive factor of family planning service sources in the government sector.

**Keywords:** Determinants; Contraception; Utilization LTCMs; IDHS 2017

## INTRODUCTION

The government in order to reduce the rate of population growth by pursuing various development programs by formulating four program areas based on the vision and mission of realizing quality families and optimizing balanced population growth [1]. The priority programs consist of accelerating the reduction of stunting, accelerating the elimination of extreme poverty, optimizing the Quality Family Village (KB Village) and the *Bangga Kencana* program (Family Development, Population and Family Planning) [2]. Family Planning as an effort to plan the birth of children, the distance and ideal age for childbirth, regulate pregnancy in accordance with reproductive rights [2]. The main target of the family planning program is women of reproductive-aged 15-49 years. Family planning is prioritized to control high population growth. [3] One of the government's efforts to control population growth is by socializing the "4T Risk" which consists of getting pregnant too young (<20 years), getting pregnant too old (>35 years), pregnancy spacing too close (<2 years) and giving birth too many times (>3 children). Efforts that can be applied to women of reproductive-aged with "Risk 4T" are to increase the use of contraceptive methods [4].

In general, there are various contraceptive methods, including LTCM and non-LTCM. Long-term contraceptive methods (LTCM) are contraceptive methods that are used once for a long period of 3 years to a lifetime, including types of contraception with high effectiveness compared to non-LTCM with success rates above 95% [5,6]. LTCM coverage in Indonesia is still low at 13.2% in 2017, still far from the global average in the SDGs of 35% in 2030 and the target designed in the BKKBN Strategic Plan of 25% by 2020 and 28% by 2024 [7]. Based on the Central Bureau of Statistics, the number of LTCM use in each province in Indonesia is still below the average national target. The results of research conducted by Anida, 2020 explain several factors in the form of age, number of living children, education, residence and source of family planning services associated with the use of LTCM in Banten Province [8]. Another study conducted by Robbiatul, 2014 also explained the factors of age, knowledge and decision making associated with the use of LTCM in South Sulawesi Province [9].

Most studies show that there are factors that influence the use of LTCM, so that the coverage of its use is still below the national target, including five provinces on the island of Sulawesi with low coverage. Southeast Sulawesi at 9.9%, South Sulawesi at 10.4%, West Sulawesi at 11.1%, Central Sulawesi at 14.2% and North Sulawesi at 16.3%, all five are still below the national average of 28% LTCM use. This certainly needs to be considered, considering that these five provinces include provinces that support family planning programs in efforts to develop sustainable human resources, implement better, healthier and more prosperous family planning [10].

Based on this explanation, researchers conducted research on the determinants of the use of LTCM in women of reproductive-aged on the island of Sulawesi to find out what factors play a role. The resulting information is expected to help in increasing the participation of LTCM use in Sulawesi Island to achieve national targets.

## METHOD

This research design used an observational analytic study with a cross-sectional design to analyze the determinants of LTCM use among women of reproductive-aged on Sulawesi Island using the 2017 Indonesian Demographic and Health Survey (IDHS) data. The population in this study were all women of reproductive-aged on Sulawesi Island, which included the provinces of Southeast Sulawesi, South Sulawesi, West Sulawesi, Central Sulawesi, and North Sulawesi. Inclusion criteria were women aged 15-49 years, married when interviewed, and using modern contraception. Exclusion criteria were incomplete/missing data on contraceptive use. The 2017 IDHS data collection was carried out in all regions of Indonesia covering 34 provinces. Data collection was conducted from July to September 2017. The data used survey data with a complex sample design. Prior to data analysis, the data were weighted by including sampling units, stratification and weighting to achieve the appropriate sample size.

The dependent variable is the use of LTCM assessed based on respondents who use Non-LTCM contraceptives and who use LTCM (MOW, MOP, IUD and Implant) according to the IDHS17 questionnaire No. 304. The independent variable refers to the theory put forward by Green and Kreuter, which shows that there are three main factors that can influence contraceptive use [21]. These factors include predisposing factors consisting of age categorized into 15-24 years, 25-34 years and 35-49 years, based on the WRA questionnaire No.106, the level of education that has been or is being followed, categorized into no school / elementary school, junior high school, high school and college, based on the WRA questionnaire No. 108-109, work in the WRA

questionnaire No. 913 is written several types of work, in this study it is categorized into not working and working, knowledge about family planning methods is categorized into low if the score  $<8$  and high  $\geq 8$ . The cut-off score of 8 was determined because the data distribution was not normal, based on WRA questionnaire No. 301 questions 01-13, the place of residence was categorized into rural and urban, based on WRA questionnaire No. 5, the number of children was categorized into  $\leq 2$  people and  $>2$  people, based on WRA questionnaire No. 208, and economic status was categorized into lower (very poor and poor), middle and upper (rich and very rich), based on household questionnaire No. 101-144, in the IDHS questionnaire the questions used were questions to determine economic status including asset ownership which was then analyzed by coding first.

Reinforcing factors consist of husband support is the role and support in giving consent to use contraception which is categorized into not supporting and supporting, based on WRA questionnaire No. 820A, the health worker support factor is the explanation of information issues related to family planning to respondents by health workers which is categorized into no and yes, based on WRA questionnaire No. 223, and the family planning decision-making factor is the party who makes the decision to use contraception which is categorized into acceptor (wife), husband and together, based on WRA questionnaire No. 819.

Supporting factors consisted of the source of family planning services is where respondents get family planning services categorized into private sector/other and government sector, based on the questionnaire WRA No. 325, and family planning information exposure factor is a form of communication or media used to provide knowledge, understanding and information related to family planning categorized into not exposed and exposed, based on questionnaire WRA No.815.

Data analysis was carried out in stages starting from univariate analysis to describe the characteristics of each research variable, bivariate analysis analyzed the relationship between the dependent variable and each independent variable. Furthermore, multivariate analysis using multiple cox regression with time-to-event made constant, to find out what variables affect the use of LTCM and what variables are most influential, seen from the largest prevalence ratio value, with a 95% confidence interval and a p value  $<0.05$ . In this study, cox regression was used to generate prevalence ratios from a cross-sectional design in situations with frequent outcomes ( $>20\%$ ). Model selection was done backward. Data analysis was performed using Stata 14.0 software.

## RESULT

In the 2017 IDHS, there were 6,896 female respondents aged 15-49 years from Sulawesi Island, with 4,608 married WRA respondents, and 2,341 who used modern contraception. Of the 2,341 respondents who met the inclusion and exclusion criteria, 34 respondents were excluded from the study due to incomplete/missing data (1.5%) so that the total sample in this study was 2,307 respondents.

### Univariate Analysis

Table 1 shows the distribution based on predisposing factors, with the highest number of women aged 35-49 years by 52.7%, education not in school/elementary school by 34.9%, working by 62.8%, having low knowledge about family planning by 51.6%, living in rural areas by 71.9%, the number of children  $\leq 2$  people by 57.3%, and lower economic status by 60.3%. In reinforcing factors, the highest number was in the presence of husband support at 98.2%, the absence of health worker support at 65.7% and joint family planning decision making at 56.7%. In the supporting factors, the highest number was in the group whose source of family planning services was in the government sector by 54.6% and getting information about family planning by 68.2%.

**Table 1.** Distribution Based on Predisposing, Reinforcing and Enabling Factors among WRA in Sulawesi Island

Variable	n	%	95% CI
<b>Predisposing Factors</b>			
<b>Age</b>			
15-24 years	298	12,9	11,3 – 14,8
25-34 years	794	34,4	32,0 – 36,9
35-49 years	1.215	52,7	49,9 – 55,4
<b>Education</b>			
No School/Elementary School	805	34,9	31,6 – 38,3
Junior High School	573	24,8	22,7 – 27,2
Senior High School	601	26,1	23,7 – 28,6

University	328	14,2	12,1 – 16,6
<b>Work</b>			
No	859	37,2	34,2 – 40,4
Yes	1448	62,8	59,6 – 65,8
<b>Knowledge about FP</b>			
Low	1.189	51,6	48,3 – 54,8
High	1.118	48,4	45,2 – 51,7
<b>Living</b>			
Rural	1.659	71,9	68,9 – 74,8
Urban	648	28,1	25,2 – 31,1
<b>Number of children</b>			
≤2 people	1.322	57,3	54,3 – 60,2
>2 people	985	42,7	39,8 – 45,7
<b>Economic status</b>			
Lower	1.392	60,3	56,2 – 64,3
Intermediate	395	17,1	14,9 – 19,6
Upper	520	22,6	19,3 – 26,1
<b>Reinforcing Factors</b>			
<b>Husband's support</b>			
No	41	1,8	1,2 – 2,5
Yes	2.266	98,2	97,5 – 98,8
<b>Support from health workers</b>			
No	1.516	65,7	63,0 – 68,3
Yes	791	34,3	31,7 – 37,0
<b>FP decision making</b>			
Wife	893	38,7	35,2 – 42,3
Husband	106	4,6	3,5 – 6,0
Together	1.308	56,7	53,3 – 60,0
<b>Enabling Factors</b>			
<b>Source of FP services</b>			
Private/other	1.048	45,4	41,6 – 49,3
Government	1.259	54,6	50,7 – 58,4
<b>Exposed to FP information</b>			
No	733	31,8	28,6 – 35,1
Yes	1.574	68,2	64,9 – 71,4

Table 2 shows that the proportion of LTCM use among WRA was 22.5% with IUD types at 4.7% and implants at 12.3%. Meanwhile, the proportion of non-LTCM use was 77.5% with the most common type of contraception being 3 month injections at 43.2%, followed by pills at 26.7%, 1 month injections at 5.0%, condoms at 2.1% and lactational amenorrhea (LAM) at 0.5%.

**Table 2.** Distribution of LTCM Use among Women in Sulawesi Island

Contraceptive Method	Total (n)	Percentage (%)
<b>LTCM</b>	<b>519</b>	22,5
IUD	109	4,7
Implant	285	12,3
MOP	5	0,2
MOW	120	5,2
<b>Non LTCM</b>	<b>1.788</b>	77,5
Pills	615	26,7
3 month injections	998	43,2
1 month injections	116	5,0
Condom	48	2,1
Lactational amenorrhea (LAM)	11	0,5
<b>Total</b>	<b>2.307</b>	<b>100</b>

### Bivariate Analysis

Bivariate analysis in this study used cox regression, to determine the relationship between the independent variable and the dependent variable with a confidence interval  $\alpha = 0,05$ . If the p value  $< \alpha$  it can be concluded that there is a relationship between the independent variable and the dependent variable. Meanwhile, if the p value  $< \alpha$ , it can be concluded that there is no relationship between the independent variable and the dependent variable. The results of the PR value are interpreted as 1) PR = 1 means no risk factor; 2) PR  $> 1$  means risk factor; and 3) PR  $< 1$  means protective factor.

Table 3 shows that the predisposing factors for the use of LTCM are mostly in the age group of 35-49 years at 29.1%, studying at university at 35.1%, working at 25.3%, having high knowledge about family planning at 27.1%, living in urban areas at 23.5%, the number of children  $>2$  people at 30.1%, and upper economic status at 29%. The results of statistical tests showed a relationship between age, education, occupation, knowledge about family planning, number of children, and economic status with the use of LTCM in women of reproductive-aged. Women aged 35-49 years had a 2.4 times chance of using LTCM with a p value of 0.001 and 95% CI 1.58 - 3.84. Women of reproductive-aged who had a college education had a 1.7 times chance of using LTCM with a p value of 0.001 and 95% CI 1.29 - 2.25. Women of reproductive-aged who worked had a 1.4 times chance of using LTCM with a p value of 0.003 and 95% CI 1.12 - 1.78. Women of reproductive-aged who had high knowledge about family planning had a 1.4 times chance of using LTCM with a p value of 0.001 and 95% CI 1.21 - 1.82. Women of reproductive-aged who had  $>2$  children had a 1.7 times chance of using LTCM with a p value of 0.001 and 95% CI 1.45 - 2.20 and women of reproductive-aged with upper economic status had a 1.3 times chance of using LTCM with a p value of 0.010 and 95% CI 1.07 - 1.73. Meanwhile, there was no relationship between place of residence and the use of LTCM in women of reproductive-aged.

The reinforcing factor showed that the use of LTCM was most prevalent in women of reproductive-aged with the support of their husbands by 22.5%, with the support of health workers by 23.8% and making joint decisions to use family planning by 27.5%. The results of statistical tests show that there is a relationship between family planning decision making, where joint decision making has a 1.7 times chance of using LTCM with a p value of 0.001 and 95% CI 1.42 - 2.25. While there is no relationship between husband support and health worker support with the use of LTCM in women of reproductive-aged.

Enabling factors showed that the use of LTCM was highest among women of reproductive-aged whose source of service in the government sector was 30.1% and getting information about family planning was 24.5%. The results of statistical tests showed that there was a relationship between the source of family planning services and family planning information media with the use of LTCM in women of reproductive-aged. Women of reproductive-aged whose source of service is in the government sector have a 2.2 times chance of using LTCM with a p value of 0.001 and 95% CI 1.79 - 2.88 and women of reproductive-aged who get information on family planning have a 1.3 times chance of using LTCM with a p value of 0.004 and 95% CI 1.10 - 1.65.

**Table 3.** Relationship between Predisposing, Reinforcing and Supporting Factors with the Use of LTCM among WRA in Sulawesi Island

Variable	Non-LTCM		LTCM		PR (95% CI)
	n	%	n	%	
<b>Predisposing Factors</b>					
<b>Age</b>					
15-24 years	263	88,2	35	11,8	1
25-34 years	665	83,7	129	16,3	1,37 (0,84 – 2,23)
35-49 years	861	70,9	354	29,1	2,46 (1,58 – 3,84)
<b>Education</b>					
No School/Elementary	639	79,4	166	20,6	1
School	464	81,0	109	19,0	0,92 (0,71 – 1,18)
Junior High School	473	78,6	129	21,4	1,03 (0,81 – 1,32)
Senior High School	212	64,9	115	35,1	1,70 (1,29 – 2,25)
University					
<b>Work</b>					
No	706	82,2	153	17,8	1
Yes	1.082	74,7	366	25,3	1,42 (1,12 – 1,78)
<b>Knowledge about FP</b>					
Low	973	81,8	216	18,2	1
High	815	72,9	303	27,1	1,49 (1,21 – 1,82)

<b>Living</b>						
Rural	1.293	77,9	367	22,1	1	
Urban	495	76,5	152	23,5	1,06 (0,82 – 1,37)	
<b>Number of children</b>						
≤2 people	1.099	83,2	222	16,8	1	
>2 people	689	69,9	297	30,1	1,79 (1,45 – 2,20)	
<b>Economic status</b>						
Lower	1.096	78,8	296	21,2	1	
Intermediate	323	81,8	72	18,2	0,85 (0,63 – 1,15)	
Upper	369	71,0	151	29,0	1,36 (1,07 – 1,73)	
<b>Reinforcing Factors</b>						
<b>Husband's support</b>						
No	33	78,8	7	21,2	1	
Yes	1.757	77,5	510	22,5	1,05 (0,59 – 1,89)	
<b>Support from health workers</b>						
No						
Yes	1.186	78,2	330	21,8	1	
<b>FP decision making</b>	603	76,2	188	23,8	1,90 (0,91 – 1,30)	
Wife						
Husband	756	84,7	137	15,3	1	
Together	84	79,5	22	20,5	1,33 (0,83 – 2,12)	
<b>Enabling Factors</b>	948	72,5	360	27,5	1,79 (1,42 – 2,25)	
<b>Source of FP services</b>						
Private/other						
Government	909	86,7	139	13,3	1	
<b>Exposed to FP information</b>	879	69,9	380	30,1	2,27 (1,79 – 2,88)	
No						
Yes	600	81,9	133	18,1	1	
	1.189	75,5	386	24,5	1,35 (1,10 – 1,65)	

### Multivariate Analysis

Multivariate analysis in this study used multiple cox regression. The initial stage of complete modeling was carried out by including all independent variables simultaneously with the dependent variable, then selecting variables that were considered important to be included in the model by looking at the p value <0.05 and excluding variables with p value >0.05. Gradually removing variables based on p value >0.05. After certain variables are removed from the model, the next step is to see the change in the PR value for the variables that are still in the model and then re-enter the model. The process will stop if there are no more variables with p value >0.05. The end result is the final multivariate model, the variable that has the most influence on the dependent variable can be seen from the largest PR value.

Table 4 shows that there is a relationship between age, education, knowledge about family planning, number of children, family planning decision making and source of family planning services with the use of LTCM among women of reproductive-aged. The most dominant variable associated with the use of LTCM is the source of family planning services in the government sector has a 2.2 times chance of using LTCM compared to the source of family planning services in the private sector/other after controlling for the variables of age, education, knowledge about family planning, number of children and family planning decision making.

**Table 4.** Full Model and Final Model Modelling of Determinants of LTCM Use among Women in Sulawesi Island

Variable	Crude			Full Model			Final Model		
	PR	95% CI	P Value	PR	95% CI	P Value	PR	95% CI	P Value
<b>Predisposing Factors</b>									
<b>Age</b>									
15-24 years	Ref			Ref			Ref		
25-34 years	1,37	0,84 – 2,23	0,197	1,26	0,86 – 1,84	0,219	1,30	0,90 – 1,89	0,155
35-49 years	2,46	1,58 – 3,84	<0,001	1,74	1,19 – 2,55	0,004	1,89	1,30 – 2,74	<0,001

<b>Education</b>									
No school/Elementary school	Ref			Ref			Ref		
Junior high school	0,92	0,71 – 1,18	0,534	0,94	0,73 – 1,21	0,646	0,98	0,76 – 1,25	0,877
Senior high school	1,03	0,81 – 1,32	0,757	1,08	0,84 – 1,38	0,544	1,18	0,93 – 1,50	0,157
University	1,70	1,29 – 2,25	<0,001	1,63	1,21 – 2,19	<0,001	1,94	1,49 – 2,53	<0,001
<b>Work</b>									
No	Ref			Ref					
Yes	1,42	1,12 – 1,78	0,003	1,08	0,89 – 1,31	0,415	-	-	-
<b>Knowledge about FP</b>									
Low	Ref			Ref			Ref		
High	1,49	1,21 – 1,82	<0,001	1,24	1,02 – 1,51	0,031	1,31	1,08 – 1,58	0,006
<b>Living</b>									
Rural	Ref			Ref					
Urban	1,06	0,82 – 1,37	0,624	1,09	0,89 – 1,33	0,369	-	-	-
<b>Number of children</b>									
≤2 people	Ref			Ref			Ref		
>2 people	1,79	1,45 – 2,20	<0,001	1,40	1,15 – 1,70	<0,001	1,38	1,14 – 1,68	<0,001
<b>Economic status</b>									
Lower	Ref			Ref					
Intermediate	0,85	0,63 – 1,15	0,310	0,94	0,72 – 1,22	0,668	-	-	-
Upper	1,36	1,07 – 1,73	0,010	1,23	0,96 – 1,56	0,093			
<b>Reinforcing Factors</b>									
<b>Husband's support</b>									
No	Ref			Ref					
Yes	1,05	0,59 – 1,89	0,844	0,79	0,44 – 1,42	0,441	-	-	-
<b>Support from health workers</b>									
No	Ref			Ref					
Yes	1,09	0,91 – 1,30	0,321	0,87	0,72 – 1,04	0,137			
<b>FP decision making</b>									
Wife	Ref			Ref			Ref		
Husband	1,33	0,83 – 2,12	0,226	1,41	0,92 – 2,14	0,106	1,42	0,94 – 2,16	0,092
Together	1,79	1,42 – 2,25	<0,001	1,59	1,30 – 1,96	<0,001	1,57	1,28 – 1,92	<0,001
<b>Enabling Factors</b>									
<b>Source of FP services</b>									
Private/other	Ref			Ref			Ref		
Government	2,27	1,79 – 2,88	<0,001	2,33	1,92 – 2,84	<0,001	2,22	1,83 – 2,69	<0,001
<b>Exposed to FP information</b>									
No	Ref			Ref					
Yes	1,35	1,10 – 1,65	0,004	1,21	0,97 – 1,50	0,090	-	-	-

## DISCUSSION

The results showed that the proportion of LTCM use among women of reproductive-aged on Sulawesi Island based on the 2017 Indonesian Demographic and Health Survey was 22.5% with the percentage of IUD by 4.7%, implants by 12.3%, MOP by 0.2% and MOW by 5.2%. Meanwhile, the proportion of non-LTCM use was 77.5% with the most widely used type being 3-month injections at 43.2%, followed by the use of pills at 26.7%, 1-month injections at 5%, condoms at 2.1% and lactational amenorrhea (LAM) at 0.5%. This achievement is still far from the global average in the SDGs in 2030 of 35% and the target designed in the BKKBN Strategic Plan in 2020 of 25% and 2024 of 28.% [6]. Long-term contraceptive methods are the most effective methods for controlling pregnancy and birth, which include intrauterine devices (IUDs), implants, vasectomy (MOP) and tubectomy (MOW). LTCM can prevent unwanted pregnancies 20 times better than Non-LTCM, including one form of birth control and economical [11]. Previous related research in seven countries explained the findings of the use of LTCM is still low at 16%, the use of IUDs and implants is still low, at 1.8%

and 10.4% respectively [12]. A related study showed a decrease in the number of unintended pregnancies between 1998-2011, and found a statistically significant relationship between the decrease and the use of LTCM [11].

The results of the next study found that the predisposing factors of the female group aged 35-49 years used the most LTCM at 29.1% due to the largest distribution at that age. The results of the analysis show that there is a relationship between age and the use of LTCM with a p value of 0.001, in line with other related research which explains that age statistically has a 1.1 times higher chance of using LTCM [13]. Next, there is a relationship between education and the use of LTCM in women of reproductive-aged, where women who studied up to college were 35.1% and had a 1.7 times chance of using LTCM with a p value of 0.001, in line with other related studies showing that higher education has a 1.7 times chance of using LTCM compared to those with low education [12, 13]. Next, there is a relationship between employment and the use of LTCM, where women who work as much as 25.3% have a 1.4 times chance of using LTCM compared to those who do not work with a p value of 0.003, in line with other studies showing that women who work have a 1.8 times chance of using LTCM [14]. Next, there is a relationship between knowledge about family planning and the use of LTCM in women of reproductive-aged, where women who have high knowledge about family planning as much as 27.1% have a chance of 1.4 times using LTCM with a p value of 0.001, in line with other studies which show that women with high knowledge about family planning have a 0.6 times chance of using LTCM compared to women who have low knowledge about family planning, one of the obstacles to family planning is poor knowledge, knowledge about family planning (FP) is one important aspect as an understanding of the various contraceptive methods available [15].

The next result shows that there is a relationship between the number of children and the use of LTCM in women of reproductive-aged, where women who have >2 children are 30.1% and have a 1.7 times chance of using LTCM compared to women who have  $\leq 2$  children with a p value of 0.001, this is in line with other studies showing that women who have >2 children have a 2.3 times chance of using LTCM, the number of children will make someone have the desire to use contraception, the number of children is related to family welfare, families with high family welfare will prioritize quality over quantity of children [16]. Furthermore, there was a relationship between economic status and the use of LTCM, where families with upper economic status as much as 29% had a 1.3 times chance of using LTCM compared to families with middle to lower economic status, with a p value of 0.010. This is in line with other studies which show that families with upper economic status have a 1.9 times chance of using LTCM compared to families with lower economic status. People with lower-middle economic status are more likely to choose non-LTCM contraceptive types because not all health care facilities are available for LTCM, especially IUDs and implants. The results of the next study showed that there was no relationship between place of residence and the use of LTCM both in rural and urban areas, this is in line with other studies that show there is no relationship between place of residence and the use of LTCM [17].

In reinforcing factor, there is a relationship between family planning decision making and the use of LTCM, where families who make family planning decisions together as much as 27.5% have a 1.7 times chance of using LTCM compared to families who make family planning decisions alone, either wife/husband alone with a p value of 0.001. In line with other studies, it shows that family planning decision making based on joint decisions has a 2.8 times chance of using LTCM compared to independent decision making [15]. The husband's role in the family planning programme is considered important because he is usually the decider in family policy. The results of the following study show that there is no relationship between husband support and health worker support with the use of LTCM in women of reproductive-aged, this is in line with other studies which show that husband support and health worker support are not related to the use of LTCM in women of reproductive-aged [16,17].

In enabling factors, there is a relationship between the source of family planning services and the use of LTCM, where women who conduct family planning services in the government sector as much as 30.1% have a 2.2 times chance of using LTCM compared to women whose source of family planning services in the private sector / other, with a p value of 0.001. In line with other studies that show women with a source of family planning services in the government sector have a 6.7 times chance of using LTCM, the condition of the service place and facilities that meet the standard of service is important in realising the success of the family planning programme, health facilities in the government sector have mostly collaborated with BPJS Health so that it can reduce the costs that need to be incurred in family planning services [18]. Furthermore, there is a relationship between family planning information media and the use of LTCM, where women who get information on family planning are 24.5% and are 1.3 times likely to use LTCM compared to women who do not get information on



family planning, with a p value of 0.004. Communication, education and information programmes on family planning include socialisation activities related to family planning programmes through the media. Adequate information will greatly help families to choose and determine the contraceptive method to be used. This is in line with other studies that show women who receive family planning information have a 2.1 times chance of using contraceptives compared to those who do not receive family planning information [19,20].

There are several limitations in this study, firstly, this study uses secondary data from the Indonesian Demographic and Health Survey, so there is a possibility of limited availability of other variables that may affect the use of LTCM, secondly, although this study focuses on WRA on the island of Sulawesi, there are geographical and demographic variations in it that cannot be considered in more detail, thirdly, the data used is 2017 data, which cannot fully show the preference of determinants of LTCM use at the present time.

## CONCLUSION

This study shows that there is a relationship between predisposing factors of age, education, occupation, knowledge about family planning, number of children and economic status, reinforcing factors for family planning decision making, and supporting factors of service sources and family planning information media with the use of long-term contraceptive methods (LTCMs) in women of reproductive-aged on the island of Sulawesi. The most dominant factor associated is the supporting factors of family planning service sources in the government sector, efforts to increase the use of LTCM are included in the BKKBN strategic plan so that efforts need to be made to increase the capacity of health services in the family planning programme. Long-term contraceptive methods are the most effective method for controlling pregnancies and births, but interest in their application is still lower than Non-LTCM. Therefore, it is targeted that in the source of family planning services, both in the public and private sectors, women of reproductive-aged not only get the desired contraceptive method, but also get counselling with health workers to obtain information about various contraceptive methods including LTCM.

## SUGGESTION

Seeing the low coverage of the use of LTCM on the island of Sulawesi, promotional efforts need to be made to build public awareness and understanding of the benefits and safety of using LTCM, this can be done through information media and extension programmes, ensuring easy access, affordable and available to the community, improving facilities and infrastructure for the use of LTCM services in all health facilities starting from the primary level both in the government and private sectors.

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