

Improving a long-acting reversible contraception usage by understanding client perspectives

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ABSTRACT

BACKGROUND Despite the limited use of long-acting reversible contraception (LARC) in Indonesia, they have proven to be cost-effective in family planning programs. This study was aimed to identify the elements of ideas and views that people hold and their association with the use of LARC (intrauterine devices and implants) as a means of improving its utilization in Nusa Tenggara Barat (NTB) Province, Indonesia.

METHODS Data were derived from the Improving Contraceptive Mix Methods survey of 6,384 respondents in Bima District, Central Lombok, and North Lombok, NTB Province, in 2015. Confirmatory factor analysis was used to identify suitable elements of 19 variables and generate three ideation elements on attitude, knowledge, and interpersonal communication. Subsequently, the association of three ideation elements with LARC use in NTB was examined.

RESULTS Multivariate analysis revealed that LARC use was higher among women with a positive attitude toward LARC and high frequency of interpersonal communication. Women with positive attitudes had 7 times greater odds of using LARC than women with negative attitudes (adjusted odds ratio [aOR] = 7.18; 95% confidence interval [CI] = 6.09–8.55). Women with a high frequency of interpersonal communication were 2.4 times more likely to use LARC than women with low communication frequency (aOR = 2.40; 95% CI = 1.94–2.99).

CONCLUSIONS To increase the use of LARC in NTB, family planning programs should not only focus on improving women's knowledge but also prioritizing the promotion of positive attitudes toward LARC and facilitating interpersonal communication.

KEYWORDS contraception, long-acting reversible contraception

Contraceptive use in developing countries has reduced maternal mortality by 40% in the last 20 years by reducing unwanted pregnancies and improving child survival, especially by extending the pregnancy interval. Furthermore, the risk of infant mortality (ages <1 year) would fall by 10%, while in ages 1 to 4 years, the risk would drop to 21%, given space between siblings of two years.¹ Long-acting

reversible contraception (LARC) that includes intrauterine devices (IUDs) and implants have proven to be convenient for users and effective in preventing unwanted pregnancy. Over time, the use of LARC was also confirmed to be a cost-effective method in family planning programs and have fewer side effects than short-acting contraceptives, such as pills, injectable methods, and condoms.^{2,3}

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Despite the essential advantage of LARC use, the 2012 Indonesia Demographic and Health Survey indicated that contraceptive use was dominated by short-acting methods. As a result, the Indonesian total fertility rate (TFR) has remained stagnant for the last decade at 2.6 children per woman.⁴ Nusa Tenggara Barat (NTB), has a higher TFR (2.8 children per woman) than the national rate in Indonesia, which far from achieving the 2015–2019 Indonesia National Population and Family Planning Board target indicator of 2.28 children per woman. Contraceptive prevalence rate in NTB was 56%, which LARC use is 5.4% for implant and 3.8% for IUD, still far below the 2014 national target of 27.5%.⁵ NTB is one of the seven provinces where the availability of contraception is 100% facilitated by the government, based on its low human development index ranking.⁶

The socioeconomic approach of demographic transition was used to increase contraception use (including LARC) because economic development reduces a death rate.⁷ On the other hand, the demographic transition theory failed to explain low fertility rates appeared at either low or high economic development. Hence, ideation theory was proposed to answer the decline of fertility rates. Those two models have different point of view, where the socioeconomic require the need of couples or household to adapt, while ideation refers to how new concepts (or new behaviors) diffuse through a community by utilizing communication and social interaction among individuals and groups.⁷ Ideation theory was constructed with three elements—cognitive, emotional, and social interaction—and works individually and synergistically to influence health outcomes.⁸ The aspects of ideation include psychosocial attitudes, knowledge, perceived risk, norms, and self-image.⁸ Besides, emotional aspects include self-efficacy and preferences, while aspects of social interaction consist of interpersonal communication, social support, social influence, and personal advocacy.⁹ Several previous studies have stated that ideational factors are determinants of fertility decline due to increasing contraceptive use.^{8,10–13} The more positive elements a person has, the greater the tendency of that person to adopt certain behaviors including LARC use. The use of ideation or ideas and beliefs that people hold with regards to their health allows program managers to identify psychosocial factors that predict target behaviors. This study was

aimed to identify those factors and their association with the use of LARC, as a means of improving its utilization in NTB Province.

METHODS

Data source and study design

The study uses secondary data with a structured questionnaire consisting of several topics: household members, family planning knowledge, history of contraceptive, family decision making, the perception of innovation from Improving Contraceptive Mix Method in NTB at 2015. The survey located in North Lombok, Central Lombok, and Bima Districts and conducted by the Center for Health Research, Universitas Indonesia from January 2015 until December 2016. A multistage cluster design was employed in this study. Fifty villages from each district were selected using a probability proportionate to size sampling, followed by selecting one hamlet per village by simple random sampling. Fifty women aged 15–49 years were randomly selected from the total sample of 7,473 married subjects. The study sample was comprised of married women who used LARC as their most recent contraceptive method (IUD and implant). Respondents who were widows and single parents ($n = 32$), had never used contraceptives ($n = 919$), and used permanent contraception ($n = 56$), were excluded. Moreover, those with a missing covariate ($n = 82$) were also excluded from the analysis resulting in a total of 6,384 respondents.

This study used variables of socioeconomic background, population demographics, respondent knowledge, number of children, willingness to use LARC, discussions with husbands about family planning, the ideal number of children, and the use of LARC. The dependent variable was the utilization of any LARC, implants or IUD.

The key independent variables were the dimensions of LARC use ideation derived from 19 items, including knowledge about the most suitable methods for birth spacing, limiting the number of children, and responses to four questions concerning the duration of long-acting and permanent methods (LAPMs) use, namely IUDs, implants, tubectomies, and vasectomies (used as proxy for knowledge and classified under the cognitive dimension of ideation).⁹ Other variables were age, education, socioeconomic status, number of living children, and districts.

Socioeconomic status was evaluated from 16 household facilities and assets (main material of floor, wall, and roof; main source of drinking water; toilet availability; toilet type; final fecal disposal type; location of kitchen; electricity availability as well as possession of radio, television, telephone or mobile phone, fridge, bicycle, motorcycle, or car). By using principal component analysis, there was one continuous data of socioeconomic index. For the analysis, the index was transformed into five quintiles (Q1–Q5) categorized to poorest, poor, middle, rich, and richest.

For univariate analysis, attitude toward LARC was scored from 0–100 and classified into two levels, positive attitude (≥ 70 scores) and negative attitude (0–69 scores). Before conducting bivariate and multivariate, all the ideation elements (knowledge, attitude, and interpersonal communication) were analyzed with confirmatory factor analysis that resulting continuous data and then divided into five quintiles (Q1–Q5). Knowledge of LAPM and interpersonal communication variables were divided into three categories: low (Q1), moderate (Q2, Q3, and Q4), and high (Q5), while attitude was divided into two categories: negative attitude (Q1–Q4) and positive attitude (Q5). Ethical clearance for this study was obtained from the Institutional Review Board of Faculty of Public Health, Universitas Indonesia (No: 57/UN2.F10/PPM.00.02/2018).

Analysis

Two analytical methods were conducted for the study. First, confirmatory factor analysis with varimax rotation was used to determine three dimensions of ideation (knowledge, attitude, and interpersonal communication). Kaiser-Meyer-Olkin test was conducted to determine whether the sample size was adequate for factor analysis. Second, the derived factor was scored as a categorical variable based on quintile, along with other independent variables in bivariate and multivariate logistic regression models, and used to predict LARC use. Bivariate analysis using the chi-square test was conducted to independently determine the association between ideation elements and other independent variables toward LARC use. Afterward, a multivariate analysis was performed to examine the association between three dimensions of ideation with LARC use, after adjusting for the covariates. Covariates with p -values < 0.05 were included in the logistic regression analysis. An adjusted

odds ratio (aOR) was obtained after three ideations were controlled by other variables significantly associated with LARC use. No interaction was found between the main outcome and other variables in the final model. The test results were considered statistically significant if p -values ≤ 0.05 . All statistical analyses were performed using SPSS version 22 (IBM Corp., USA).

RESULTS

The study found that out of 6,384 respondents, only 17.0% of them used LARC; IUDs was the most preferred implant (Table 1). It showed that the percentage of short-acting contraception use among women to be 83.0%, with the injection method chosen by the majority of women in NTB (71.5%). Women older than 35 years with low education, had 1–2 children, lived in North Lombok district, and came from very poor economic status, tended to use LARC. This study showed that the majority of women had a negative attitude toward IUDs and implants. It also found that, among LARC, women had more positive attitude to implants over IUDs. Knowledge of LAPM showed that the majority of respondents knew about contraceptive methods for birth spacing (97.3%) and duration of implant use (65.6%). LARC users were found to discuss family planning more with their husbands than with their friends and families.

The association between ideation variables (knowledge, attitudes, and interpersonal communication) and LARC use is shown in Figure 1. The study found that in the lowest quintile, only 3.1% of women used LARC. On the other hand, LARC use among women in the highest quintile was 10 times higher (31.4%) than that in the lowest quintile. LARC use increased steadily as the cumulative level of ideation increased.

In the study, factor analysis was carried out on 19 variables to determine the ideal ideation elements. The factor analysis showed the sampling adequacy was 0.790 with $p < 0.01$ showing the variables could be furtherly analyzed. The results of the confirmatory factor analysis with varimax rotations explained 47.75% of the data variations. The 19 variables were significantly reduced to three: attitudes toward LARC, LAPM knowledge, and interpersonal communication. From the factor analysis, knowledge about birth

Table 1. Characteristic of respondents

Methods	Bima, n (%) (N = 2,014)	Central Lombok, n (%) (N = 2,186)	North Lombok, n (%) (N = 2,184)	Total (N = 6,384)
Distribution of modern contraception use				
LARC	253 (12.6)	263 (12.0)	570 (26.1)	1,086 (17.0)
Implant	212 (10.5)	193 (8.8)	458 (21.0)	863 (13.5)
IUD	41 (2.0)	70 (3.2)	112 (5.1)	223 (3.5)
Non-LARC	1,761 (87.4)	1,923 (88.0)	1,614 (74.0)	5,298 (83.0)
Injections	1,692 (84.0)	1,529 (70.0)	1,345 (61.6)	4,566 (71.5)
Pills	61 (3.0)	391 (17.9)	266 (12.1)	718 (11.2)
Natural methods	7 (0.3)	2 (0.1)	1 (0.1)	10 (0.2)
Others*	1 (0.1)	1 (0.1)	2 (0.1)	4 (0.1)
Sociodemographics				
Age among women with LARC use (years)				
<25	18 (7.1)	22 (8.4)	66 (11.6)	106 (9.8)
25–34	84 (33.2)	99 (37.6)	213 (37.4)	396 (36.5)
35–49	151 (59.7)	142 (54.0)	291 (51.1)	584 (53.8)
Education among women with LARC use				
Low	137 (54.2)	197 (74.9)	502 (88.1)	836 (77.0)
Moderate	100 (39.5)	42 (16.0)	42 (7.4)	184 (16.9)
High	16 (6.3)	24 (9.1)	26 (4.6)	66 (6.1)
Number of living children				
0	5 (0.2)	77 (3.5)	31 (1.4)	113 (1.8)
1–2	1,144 (56.8)	1,519 (69.5)	1,496 (68.5)	4,159 (65.1)
>2	107 (5.3)	139 (6.4)	330 (15.1)	576 (9.0)
Economic status among women with LARC use [†]				
Poorest	76 (30.0)	51 (19.4)	291 (51.1)	418 (38.5)
Poor	91 (36.0)	54 (20.5)	119 (20.9)	264 (24.3)
Middle	51 (20.2)	72 (27.4)	85 (14.9)	208 (19.2)
Rich	25 (9.9)	55 (20.9)	62 (10.9)	142 (13.1)
Richest	10 (4.0)	31 (11.8)	13 (2.3)	54 (5.0)
Attitude toward LARC use [‡]				
IUD				
Easy to use	345 (17.1)	454 (20.8)	732 (33.5)	1,531 (24.0)
Effective	425 (21.1)	673 (30.8)	805 (36.9)	1,903 (29.8)
Easy to obtain	428 (21.3)	629 (28.8)	813 (37.2)	1,870 (29.3)
No side effect	293 (14.5)	394 (18.0)	572 (26.2)	1,259 (19.7)
Long-lasting	425 (21.1)	774 (35.4)	782 (35.8)	1,981 (31.0)
Implant				
Easy to use	561 (27.9)	593 (27.1)	943 (43.2)	2,097 (32.8)
Effective	561 (27.9)	789 (36.1)	1,077 (49.3)	2,427 (38.0)
Easy to obtain	619 (30.7)	732 (33.5)	1,003 (45.9)	2,354 (36.9)
No side effect	410 (20.4)	463 (21.2)	768 (35.2)	1,641 (25.7)
Long-lasting	527 (26.2)	851 (38.9)	992 (45.4)	2,370 (37.1)

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Table 1. (continued)

Methods	Bima, n (%) (N = 2,014)	Central Lombok, n (%) (N = 2,186)	North Lombok, n (%) (N = 2,184)	Total (N = 6,384)
Knowledge				
Suitability of contraception method				
For birth spacing	1,922 (95.4)	2,172 (99.4)	2,116 (96.9)	6,210 (97.3)
For child limitation	609 (30.2)	908 (41.5)	966 (44.2)	2,483 (38.9)
Duration of LARC use				
IUD	435 (21.6)	674 (30.8)	619 (28.3)	1,728 (27.1)
Implant	1,128 (56.0)	1,512 (69.2)	1,546 (70.8)	4,186 (65.6)
Tubectomy	431 (21.4)	532 (24.3)	419 (19.2)	1,382 (21.6)
Vasectomy	227 (11.3)	349 (16.0)	316 (14.5)	892 (14.0)
Interpersonal communication				
Discuss family planning with husband				
Never	1,456 (72.3)	1,022 (46.8)	1,388 (63.6)	3,866 (60.6)
1–2 times	515 (25.6)	777 (35.5)	553 (25.3)	1,845 (28.9)
Frequent	43 (2.1)	387 (17.7)	243 (11.1)	673 (10.5)
Discuss family planning with other family members				
Never	1,879 (93.3)	2,004 (91.7)	1,943 (89.0)	5,826 (91.3)
1–2 times	119 (5.9)	117 (5.4)	165 (7.6)	401 (6.3)
Frequent	16 (0.8)	65 (3.0)	76 (3.5)	157 (2.5)
Discuss family planning with friends				
Never	1,542 (76.6)	590 (27.0)	1,795 (82.2)	3,927 (61.5)
1–2 times	429 (21.3)	808 (37.0)	265 (12.1)	1,502 (23.5)
Frequent	43 (2.1)	788 (36.0)	124 (5.7)	955 (15.0)

LARC=long-acting reversible contraception; IUD=intrauterine device

*Others=herbs and massage; †economic status index was constructed using 16 household facilities and assets variables using principal component analysis; ‡attitude toward LARC was scored from 0–100 and classified into positive (≥70 scores) and negative attitude (0–69 scores)

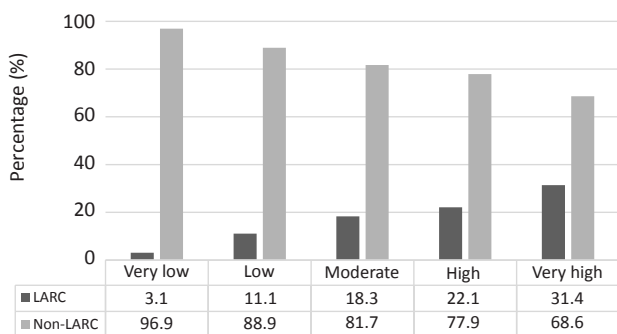


Figure 1. The use of long-acting reversible contraception (LARC) and non-LARC among married women aged 15–49 years by the level of ideation in 2015

spacing contraception method was not able to be analyzed any further.

Bivariate analysis (unadjusted) with chi-square showed that all sociodemographic and ideation

factors were individually associated with LARC use. Multivariate analysis was then performed to ascertain the association between ideation variables and LARC use behavior, after adjusting for confounding by the sociodemographic variables. The study found that the number of living children and districts were confounding factors to ideation and LARC use behavior. There was no interaction between independent and confounding variables. From three ideation elements, only attitudes and interpersonal communication were associated to LARC use after controlling for all confounding variables. As shown in Table 2, women with a positive attitude toward LARC had seven times greater odds of using LARC than women with negative attitudes, after controlling for the number of children and the districts (aOR = 7.18, 95% CI = 6.09–8.24). Women with a high frequency of interpersonal

Table 2. Ideation and the use of LARC

Variable	Unadjusted		Adjusted	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
Ideation				
Attitude toward LARC				
Negative	1.00		1.00	
Positive	7.41 (6.42–8.55)	0.001	7.18 (6.09–8.24)	0.001
Knowledge				
Low	1.00		1.00	
Moderate	0.83 (0.69–0.98)	0.027	0.88 (0.72–1.06)	0.182
High	1.5 (1.24–1.82)	0.001	1.05 (0.84–1.31)	0.657
Interpersonal communication				
Low	1.00		1.00	
Moderate	1.14 (0.94–1.38)	0.190	1.55 (1.25–1.93)	0.001
High	1.53 (1.27–1.84)	0.001	2.40 (1.94–2.99)	0.001
Sociodemographics				
Age (years)				
<25	1.00		-	
25–34	1.32 (1.05–1.66)	0.018		
35–49	1.95 (1.56–2.43)	0.001		
Education				
Low	1.00		-	
Moderate	0.75 (0.63–0.88)	0.001		
High	1.15 (0.87–1.53)	0.311		
Number of living children				
0	1.00		1.00	
1–2	3.15 (1.38–7.19)	0.007	2.33 (0.97–5.58)	0.058
>2	4.91 (2.14–11.23)	0.001	3.80 (1.58–9.15)	0.003
Household socioeconomic status				
Poorest	1.00		-	
Poor	10.68 (0.57–0.81)	0.001		
Medium	0.64 (0.54–0.77)	0.001		
Rich	0.87 (0.70–1.07)	0.191		
Richest	0.85 (0.62–1.16)	0.308		
Districts				
Bima	1.00		1.00	
Central Lombok	0.95 (0.79–1.15)	0.601	0.93 (0.76–1.15)	0.519
North Lombok	2.46 (2.09–2.89)	0.001	2.21 (1.85–2.65)	0.001

LARC=long-acting reversible contraception; OR=odds ratio; CI=confidence intervals

communication were 2.4-folds more likely to use LARC than women with low communication frequency (aOR = 2.40, 95% CI = 1.94–2.99).

DISCUSSION

This study found that LARC users increased commensurate with the cumulative level of ideation.

Similar results were likewise shown by research on modern contraceptive use in the Philippines,¹⁰ Guinea,¹² and four other developing countries (Nepal, Honduras, Egypt, and Tanzania), where modern contraceptive use increased along with greater cumulative levels of ideation.¹⁴ This study shows that the ideation model could be used in designing communication interventions to increase the use of

LARC. Program implementation should focus on any such ideation factors.

Women with high interpersonal communication tended to use LARC compared to those with poor interpersonal communication. This study shows the importance of health communication interventions that construct positive attitude toward LARC and facilitate interpersonal communication about family planning with husbands, other family members, and friends. The number of living children and districts were the confounding variables on the association between ideation and LARC use in NTB. Knowledge was the only ideation component that was not associated with LARC use.

The study also demonstrates the relevance of ideation theory in the program to increase LARC use. The more ideation variables women have, the higher their likelihood to use it. From 19 variables, three were ideation factors (attitudes toward LARC, knowledge about LARC, and interpersonal communication) explaining 47.75% of data variation.

The study found that a positive attitude toward LARC was the most significant ideation factor predicting its use. As previously noted, women with positive attitudes toward LARC had a seven times greater likelihood of using it than women with negative attitudes. The value of a positive attitude was also indicated by several previous studies.^{14,15} Thus, promoting a positive attitude toward LARC can be one of the foundations for the program manager of family program to increase its use in NTB.

Several factors are needed to change attitudes, including message sources, message characteristics, and the target characteristics of the message. A message source is defined as the characteristics of the person delivering the message, where someone who is physically and socially attractive can produce a greater change in attitudes. Information sources that are trusted are strongly related to the impact of the message. Message characteristics refer to the information being delivered, while target characteristics are defined as the recipient's background, such as gender, age, economy, and education.¹⁶ Changes in attitude require an information approach that can arouse emotions and draw added value from behavior.¹⁷ The current study revealed that to increase LARC use, health promotion involving experts and trusted sources of information are needed. The key strategies for intervention programs

may involve women who are attractive, active, and happy with their family and communicate the benefits of IUDs and implants which are easy to use, effective, easy to obtain, no side effects, and long-lasting.

The use of LARC was also higher in women with more frequent interpersonal communication. Women who often discussed family planning with husbands, other family members, and friends used LARC 2.4 times higher compared to women who did not discuss. Some previous studies showed the importance of interpersonal communication in determining contraceptive use, including LARC.¹⁸⁻²¹ A systematic review of behavior change techniques and contraceptive use in developing countries revealed that involving male partners to initiate contraceptive use is the most effective intervention.²² Thus, an intervention program that promotes LARC use should focus on motivating women of childbearing age to discuss family planning, especially LARC, with their husbands, friends, or other family members.

Another finding in this study shows that the majority of married women in NTB, aged 14–49 years, use short-acting contraception. The study found that LARC use in NTB was only 17.0%. However, the result was higher than the preliminary report of the 2017 Indonesia Demographic and Health Survey (IDHS).²³ The data difference can be explained by the scope of the population, where IDHS represented all provinces in Indonesia, while this study only covered three districts in a single province, though with a larger number of respondents per district. Nevertheless, the LARC use in NTB was still below the 2015 national target of 20.5%,²⁴ and the effort to increase that number needs to be continued.

In NTB, implants were the preferred method compared to IUDs. The results of this study show that implant use was three times higher than the preliminary report of the 2017 IDHS, which showed similar proportions for implants (4.7%) and IUDs (57.2%). The higher number of implants indicated greater acceptance in the community. This information should be notified by program managers when designing a program to increase LARC use.

LARC users were mostly women aged 35–49 years. In efforts to control the population, the use of LARC needs to be encouraged at younger ages (<35 years). To avoid health risks due to pregnancy and birth, women are advised to give birth within the age range of 25–35 years. It aims to reduce health risks that may occur during

pregnancy, childbirth, and post-partum. The use of contraception provides parents with the right to provide love, nutrition, and monitoring optimal development for children to produce high-quality generations.¹

The findings of this study should be interpreted in light of some limitations. The cross-sectional method cannot establish temporality between the current use of LARC and the independent factors included in the survey. The study relied on the respondents' memories concerning their contraception histories. We used just five questions to measure the respondents' knowledge. Other variables, such as the effectiveness and side effects of LARC and knowledge of places to obtain service, should be included in future studies. Despite these limitations, the large sample size and the analytical methods used (bivariate and multivariate) indicate that the results are relevant and can form the basis for LARC's use improvement program in NTB.

In conclusion, this study shows that knowledge is not enough to increase the use of LARC in NTB. Increasing positive attitudes toward the methods and frequency of interpersonal communication about family planning are mandatory and must be considered as one of the strategic interventions for health providers to increase LARC use in NTB. Communicating the benefits of IUDs and implants as easy to use, effective, easily obtained, lacking side effects, and long-lasting, as well as motivating women to discuss family planning, especially LARC, with their husbands, friends, and other family members, are the key messages that must be delivered to childbearing age couples.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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