Factors Associated with Decision to Use a Long-Term Intra Uterine Device: A Path Analysis Evidence

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ABSTRACT

Background: Intra uterine device (IUD) is a highly effective contraceptive method with a 98-99 percent success rate over five years of IUD use. However, its share of modern method mix is pitifully small, at less than 5%, in 63 countries and only 5%–9% in a further 32 countries. Moreover, IUD's share is declining in many countries. The reasons for this are not well understood, particularly in Mojokerto, East Java, Indonesia, apart from growing popularity of injectables. This study aimed to examine factors associated with decision to use a long-term intra uterine device using a path analysis model.

Subjects and Method: A case control study was conducted at Puskesmas (community health center) Gondang, Mojokerto, East Java, Indonesia, from April to May 2018. A sample of 225 women was selected for this study by fixed disease sampling, comprising 75 IUD users and 150 non-IUD users. The dependent variable was IUD use. The independent variables were age, education, knowledge, attitude, self-efficacy, cultural belief, husband support, and peer support. Data on IUD use were taken from puskesmas Gondang. The data were collected by questionnaire and analyzed by path analysis.

Results: IUD use was directly and positively associated with positive attitude (b= 0.79; 95% CI= 0.19 to 1.40; p= 0.010) and low anxiety (b= 0.76; 95% CI= 0.16 to 1.37; p= 0.014). IUD use was indirectly associated with cultural belief, self efficacy, education, knowledge, husband support, and peer support.

Conclusion: IUD use is directly associated with positive attitude and low anxiety, and is indirectly associated with cultural belief, self efficacy, education, knowledge, husband support, and peer support.

Keywords: intra-uterine devise use, biopsychosocial factor, cultural belief, anxiety

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BACKGROUND

Long term contraceptive method is effective to reduce birth rate, and it can be used in the long term (Mappaware, 2016). The IUD is one of the best and ideal non-hormonal long term contraceptive types because of its very high effectiveness with mild side effects and can be used by almost all women. The effectiveness of the IUD ranged from 0.6-0.8 pregnancies per 100 women in the first year (Saifuddin, 2012) with mild to mild side effects, such as bleeding (menorrhagia or spotting menorrhagia) and more vaginal secretions (Hidayati, 2009). Unlike the female surgical contraceptive method with the smallest failure rate, which is 0.04 pregnancies per 100 women, but its permanent nature cannot be recovered (Saifuddin, 2012). Similarly, contraceptive implants are made from hormonal so it does not close the possibility at the beginning of the acceptor installation that does not have mens-

truation and irregular bleeding (Hidayati, 2009). Implant contraception also has many contraindications (Kurniawati, 2014).

The Health Profile of the Republic of Indonesia in 2015 showed the IUD acceptors of only 10.73% (Ministry of Health, 2016). East Java Province has decreased IUD acceptors, i.e. in 2015 (12.94%) (Ministry of Health, 2016) fell to 12.65% (Ministry of Health, 2017). Health Profile Data of Mojokerto Regency in 2015 showed that the IUD users were 7.1% (Mojokerto District Health Office, 2016) increased slightly in 2016 (8.3%) (Mojokerto District Health Office, 2017). IUD utilization trends in Mojokerto district show an increase in line with increasing age of EFA, but the percentage of users of injectable contraception and pill is still much larger (>60%). Gondang district, Mojokerto has low IUD participants compared to short-term contraceptives (Mojokerto District Health Office, 2017).

East Java Province had high contraceptive prevalence rate (CPR) number and low total fertility rate (TFR). Higher use of hormonal contraceptives (injections and pills) than IUDs is likely to increase TFR (Hartanto, 2016, BKKBN East Java, 2017).

This study aimed to examine factors associated with decision to use a long-term intra uterine device using a path analysis model.

SUBJECTS AND METHOD

1. Study Design
This was an analytic observational study with a case-control design. The study was conducted at Gondang community health center, Mojokerto, East Java, Indonesia, from April to May 2018.

2. Population and Samples
The population of the case was all women of IUD acceptors at Gondang community health center, Mojokerto. A sample of 225 women was selected for this study by fixed disease sampling, comprising 75 women with IUD and 150 women without IUD.

3. Study Variables
The dependent variable was women decision to use IUD. The independent variables were age, education, knowledge, attitude, self-efficacy, anxiety, cultural belief, husband support, and peer group support.

4. Operational Definition of Variables
Age was defined as the study subject's age at the time of study. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for 20-35 years and 1 for <20, >35 years.

Education was defined as the last formal education of the study subjects. The data were collected by questionnaire. The measurement scale was categorical.

Knowledge was defined as the level of knowledge of study subjects about IUDs. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for low and 1 for high.

Attitude was defined as any positive or negative response given by the study subjects on the IUD use. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for negative and 1 for positive.

Self-efficacy was defined as the women's belief about the ability to use IUD. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for weak and 1 for strong.

Anxiety was defined as fear or anxiety without a clear cause in the study subjects about the side effects of IUD. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for low (score <14) and 1 for high (score >14).

Culture belief was defined as the women's belief to something believed to be true about IUD use. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for negative and 1 for positive.

Husband support was defined as the husband's help on the selection of IUD in terms of information, judgment, instrumental, and emotion. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for weak and 1 for strong.

Peer group support was defined as peer's help in IUD selection in terms of information, judgment, instrumental, and emotion. The data were collected by questionnaire. The measurement scale was continuous, but for the purpose of data analysis, it was transformed into dichotomous, coded 0 for weak and 1 for strong.

The selection of IUD was defined as a selection of non-hormonal and long-term uterine contraceptives to help exclude or limit births. The data were collected by questionnaire. The measurement scale was categorical, coded 0 for no and 1 for yes.

5. Data Analysis
The data were analyzed using path analysis on Stata 13 to examine the relationships between the independent variables to the dependent variables.

6. Research Ethics
The research ethics approval was obtained from the Research Ethics Committee of Faculty of Medicine UNS/ Dr. Moewardi hospital, Surakarta, Central Java, Indonesia. The research ethics include informed consent, anonymity, and confidentiality.

RESULTS
1. Sample Characteristics
Table 1. Sample characteristics

No.	Characteristic	n	%
1	**Age**		
	<20 years, >35 years	91	40.4
	20-35 years	134	59.6
2	**Education**		
	<senior high school	107	47.6
	≥ senior high school	118	52.4
3	**Knowledge**		
	Low	134	59.6
	High	91	40.4
4	**Attitude**		
	Negative	118	52.4
	Positive	107	47.6
5	**Self efficacy**		
	Low	123	54.7
	High	102	45.3
6	**Anxiety**		
	Anxious	111	49.3
	Not anxious	114	50.7
7	**Cultural Belief**		
	Positive	126	56.0
	Negative	99	44.0
8	**Husband support**		
	Weak	110	48.9
	Strong	115	51.1
9	**Peer group Support**		
	Weak	127	56.4
	Strong	98	43.6

Table 1 shows that as many as 134 women (59.6%) were at 20-35 years of age. As many as 118 women (52.4%) had education ≥senior high school. Women who had low knowledge about IUD were 134 (59.6%). Almost half of women had negative attitude on IUD (118, 52.4%), low self efficacy (123, 54.7%), low anxiety (114, 50.7%), and positive cultural belief (126, 56.0%). As many as 115 women (51.1%) received strong husband support, but as

many as 127 women (56.4%) received weak peer group support.

2. Bivariate Analysis

Bivariate analysis was used to examine the relationship between age, education, knowledge, attitude, self efficacy, anxiety, cultural belief, husband support, and peer group support with IUD use. The results of bivariate analysis can be seen in Table 2.

Table 2 shows that women with education ≥senior high school were more likely to use IUD than women with education <senior high school (OR= 85.17; 95% CI= 20.03 to 362.18; p<0.001). Decision to

use IUD was increased by higher knowledge about IUD (OR= 2.04; 95% CI= 1.16 to 3.59; p= 0.013), positive attitude (OR= 2.74; 95% CI= 1.54 to 4.87; p<0.001), and low anxiety (OR= 2.69; 95% CI= 1.51 to 4.80; p= 0.001).

Decision to use IUD was increased by strong self-efficacy (OR= 1.38; 95% CI= 0.79 to 2.41; p= 0.256), but it was statistically non-significant. Weak husband support decreased women decision to use IUD (OR= 0.31; 95% CI= 0.17 to 0.55; p<0.001).

Table 2. The results of bivariate analysis

Independent variables	Decision to use IUD				OR	95% CI	p
	No		Yes				
	n	%	n	%			
Age							
<20, >35 years	39	42.9	52	57.1	0.16	0.08 to 0.29	<0.001
20-35 years	111	82.8	23	17.2			
Education							
<Senior high school	105	98.1	2	1.9	85.17	20.03 to 362.18	<0.001
≥Senior high school	45	38.1	73	61.9			
Knowledge							
Low	98	73.1	36	26.9	2.04	1.16 to 3.59	0.013
High	52	57.1	39	42.9			
Attitude							
Negative	91	77.1	27	36.0	2.74	1.54 to 4.87	<0.001
Positive	59	55.1	48	64.0			
Self efficacy							
Weak	86	69.9	37	30.1	1.38	0.79 to 2.41	0.256
Strong	64	62.7	38	37.3			
Anxiety							
High	86	77.5	25	22.5	2.69	1.51 to 4.80	0.001
Low	64	56.1	50	43.9			
Cultural belief							
Strong	95	75.4	31	24.6	2.45	1.39 to 4.32	0.002
Weak	55	55.6	44	44.4			
Husband Support							
Weak	59	53.6	51	46.4	0.31	0.17 to 0.55	<0.001
Strong	91	79.1	24	20.9			
Peer group Support							
Weak	78	61.4	49	38.6	0.58	0.32 to 1.02	0.057
Strong	71	73.5	26	26.5			

Figure 1 depicted the structural model of path analysis with parameter estimates. The decision to use IUD was directly affected by attitude and anxiety. It was affected indirectly by knowledge, education, self efficacy, husband support, peer group support, and cultural belief.
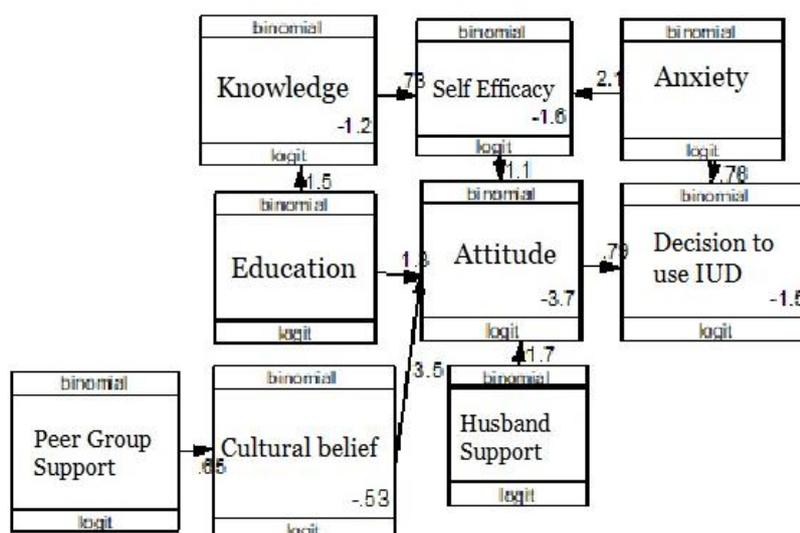
Figure 1. Structural model of path analysis with estimates

Table 3. The results of path analysis on women decision to use IUD

Dependent Variable		Independent Variable	b	95% CI Upper Limit	95% CI Lower Limit	p
Direct Effect						
Decision to use IUD	←	Attitude	0.79	0.19	1.40	0.010
Decision to use IUD	←	Anxiety	0.76	0.16	1.37	0.014
Indirect Effect						
Attitude	←	Cultural belief	3.51	2.64	4.34	<0.001
Attitude	←	Self efficacy	1.07	0.25	1.89	0.010
Attitude	←	Husband support	1.67	0.82	2.52	<0.001
Attitude	←	Education	1.30	0.48	2.12	0.002
Self efficacy	←	Anxiety	2.10	1.49	2.72	<0.001
Self efficacy	←	Knowledge	0.73	0.11	1.35	0.020
Knowledge	←	Education	1.51	0.93	2.10	<0.001
Cultural belief	←	Peer group support	0.65	0.12	1.19	0.017

3. Path Analysis

Table 3 shows the results of path analysis. Women decision to use IUD was directly and positively affected by positive attitude (b= 0.79; 95% CI= 0.19 to 1.40; p= 0.010) and low anxiety (b= 0.76; 95% CI= 0.16 to 1.37; p= 0.014).

Women decision to use IUD was indirectly and positively affected by knowledge, education, self-efficacy, husband support, peer group support, and cultural belief.

Attitude was positively affected by cultural belief (b= 3.51; 95% CI= 2.63 to 4.38; p<0.001), strong self efficacy (b= 1.07; CI 95%= 0.25 to 1.89; p= 0.010), education (b= 1.30; 95% CI = 0.48 to 2.12; p= 0.002), and husband support (b= 1.67; 95% CI= 0.82 to 2.52; p<0.001).

Self-efficacy was positively affected by low anxiety (b= 2.10; 95% CI= 1.49 to 2.72; p<0.001) and better knowledge (b= 0.73; 95% CI= 0.11 to 1.35; p= 0.020).

Knowledge was positively affected by education (b= 1.51; 95% CI= 0.93 to 2.10; p<0.001). Positive cultural belief was positively affected by peer group support (b= 0.65; 95% CI= 0.12 to 1.19; p= 0.017).

DISCUSSION

1. The effect of attitude on women decision to use IUD

The result of analysis showed that attitude had a direct effect on women decision to use IUD. The result of this study was in line with a study by Builu and Naidoo (2015) which stated that Negative attitudes of study subjects might affect them to not use the IUD. Negative attitudes tend to stay away from, avoid, and dislike the IUD.

Builu and Naidoo (2015) provided a review on various misperception toward IUD. These misperceptions included fear and anxiety about pain in IUD insertion (40%), fear of getting cancer from IUD (30%), worry about the negative sexual effect of using IUD (>30%), and anxiety about uterine perforation (30%).

2. The effect of anxiety on women decision to use IUD

The result of analysis showed that anxiety has a direct effect on women decision to use IUD. The result of this study was in line with Gemzel-Danielsson et al. (2018), which stated that the anxiety about the side effects of IUD might cause the study subjects to not use the IUD as a contraceptive.

A study by Gemzel-Danielsson et al. (2018) showed the anxiety of IUD insertion procedure might increase the level of pain. Anxiety begun with negative experiences of peers or relatives, so even though they heard from sources of information that might be irrelevant, it still contributed to negative perceptions. Anxiety about the side effects of IUD might decrease the interest in IUD selection.

3. The effect of cultural belief on women decision to use IUD

The result of analysis showed that cultural belief on IUD has an indirect effect on women decision to use IUD through attitude. The result of this study was in line with a study by Potter et al. (2015). Women who did not use IUD generally held unfavorable belief that IUD could move to the other part of the body, IUD could hurt the user when doing activities or having sex, and pregnancy could still occur even when women used IUD. These beliefs were hold by study subjects who decided not to use IUD.

A study by Potter et al. (2015) found that the belief in rumors or myths related to the IUD was dominated in most of the women including fear of pain, IUD expulsion, foreign objects in the body, and objects that potentially injured the body. Women also believed that IUD expulsion would occur when they have sex or even while bathing, so they would still be exposed to the risk of having an unwanted pregnancy. Women believed that the presence of foreign objects in their bodies would cause inconvenience and could injure their body. They believed that the IUD can cause infertility.

4. The effect of self efficacy on women decision to use IUD

The result of analysis showed that self efficacy has an indirect effect on women decision to use IUD through attitude.

The result of this study was in line with a study by Nurani (2017). Generally, people did not try to do anything new unless they think they can do it and it was useful for them. Low self efficacy lead to low women confidence in selecting the IUD.

A study by Nurani (2017) showed that there was a significant correlation between self efficacy and IUD selection on women in reproductive age. Strong self efficacy increased the likelihood of IUD use.

5. The effect of husband support on women decision to use IUD

The result of analysis showed that husband support has an indirect effect on women decision to use IUD through attitude.

The result of this study was in line with a study by Harahap, Santosa and Fitria (2014). The factor of husband support to the use of IUD contraception by mothers of couples in reproductive age showed a positive correlation which mean that the action to use IUD contraceptive device would be done well if they got support from family especially husband (Harahap et al., 2014).

There were four forms of husband support in the use of IUD contraception, including information support in the form of information about IUD that motivated the wives to use IUD, the support of a positive assessment of IUD so that it positively affected wives' perception about IUD, instrumental support in the use of the IUD which indicated the husband's responsibility for any problems encountered with the IUD insertion, such as financing, and emotional support such as not forbidding their wives to have a family planning just because the husband was afraid that his wife had an affair with another man without being caught (Muniroh, Luthviatin and Istiaji, 2014; Rokhmah, 2014; Burns, 2009).

6. the effect of education on women decision to use IUD

The result of analysis showed that education has an indirect effect on women decision to use IUD through knowledge and attitude.

The result of this study was in line with a study by Tibaijuka et al. (2017) which showed that the higher the educational level of a person, the more likely to choose long ter. This study was supported by Arifiana, Budihastuti and Qadrijati (2018) who stated that education through attitude has an effect on the use of long-term contraception.

Women educational level has an indirect relationship with IUD selection. Education was the basis for a person to gain a better knowledge of contraceptive devices and a positive attitude about contraception. The higher educational level, the higher the possibility of selecting the IUD as a contraceptive method. Higher educational levels have a positive impact on the use of IUD contraception (Asiimwe et al., 2013).

7. The effect of knowledge about IUD on women decision to use IUD

The result of analysis showed that knowledge about IUD has an indirect effect on women decision to use IUD through self efficacy.

The result of this study was in line with a study by Nobiling and Drolet (2012) which showed that the lack of knowledge of potential candidate users about IUD was one of the inhibiting factors of IUD use. A study by Gomez et al. (2015) showed that women in reproductive age with sufficient and good knowledge of IUD tend to choose the IUD with the highest probability in those with good knowledge.

8. The effect of peer group support on women decision to use IUD

The result of analysis showed that peer group support has an indirect effect on IUD selection through cultural belief. There was indirect association per group support and women decision to use IUD.

The result of this study was in line with a study by Anderson et al. (2015) which found that communication with female friends and family members has a very strong effect in obtaining information about contraception including the IUD. Negative (even usually wrong) information was more commonly acquired and would stick in memory than positive information in this communication model. Women were more likely to hear negative experiences about the IUD from social contact and television. Research on the effect of peers on motivation in using IUD showed that peer group was highly influential in motivating to use IUD (Baihaqi, 2016).

CONFLICT OF INTEREST
The authors declare that there is no conflict of interest regarding the publication of this article.

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