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ORIGINAL CONTRIBUTION

Meta-Analysis Study: Selection of Long-Acting Contraceptive Methods

Dita Apriliana Sari [1*], Meitria Syahadatina Noor [2], Eko Suhartono [3], Syamsul Arifin [4]
Silvia Kristanti Tri Febriana [5]

[1,2,3,4]Faculty of Medicine and Health Sciences, Lambung Mangkurat University, Indonesia

[5]Faculty of Medicine and Health Sciences, Lambung Mangkurat University, Indonesia

Abstract— Births are controlled by the Family Planning Program. Most women of childbearing age are at a loss to choose contraception. Many women not using contraception because of the lack of information about contraception that is right for them. This causes uncontrolled births and increases maternal morbidity and mortality. Based on preliminary studies in several journals, there are inconsistencies or differences in research results on the variables of between knowledge and age with the selection of long-acting reversible contraceptives. Analyzing the greater relationship between knowledge and age with the selection of long-acting reversible contraceptives.: Meta analysis by searching the Google Scholar and NCBI. After going through the identification and selection stage, 20 articles were included in the meta-analysis. Pooled Odds Ratio (pOR) is calculated using a fixed-effect model for data analysis according to the heterogeneity test using Review Manager 5.4.1. The pOR value for the knowledge variable is 1,76 (95% CI 1,31-2.37) with a mean effect size value of 0,4888 and for the age variable 1,15 (95% CI 0,088- 1,51) with a mean value effect size of 0,4056. The knowledge variable has a greater than a age variable.

Index Terms— Knowledge, Age, Long-acting reversible contraceptives

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Introduction

Birth is controlled by the Family Planning Program. The majority of women of childbearing age are confused about choosing contraception. This is due to the limited availability of methods and the safety concerns of these methods, according to Muhammad (2009). Additionally, lack of knowledge about the requirements and safety of methods, as stated by Rismawati (2020), can influence the choice of contraceptive methods.

Many women of childbearing age do not use contraception because of insufficient information about the appropriate methods for them. This results in uncontrolled births and an increase in maternal morbidity and mortality rates.

Furthermore, several risk factors influence contraceptive method selection, such as health status, side effects, consequences of failure or unwanted pregnancies, the number of planned children, spousal support, and socio-cultural factors. According to Saifuddin (2012), no contraceptive method is universally safe and effective for all clients, as each method has individual suitability and compatibility.

Contraceptive use is an action that helps individuals or couples avoid unwanted births, achieve desired births, regulate the interval between pregnancies, and control the timing of births within a marital relationship (WHO, 2013; Tin et al., 2024). Indonesia's Women

[*]Email:ditaapril94@gmail.com

of Childbearing Age (WCA) population is the highest in Southeast Asia, at 70%. However, in terms of contraceptive use, Indonesia ranks fourth in Southeast Asia, with 65% of users, far below Thailand (86%), Cambodia (82%), and Vietnam (76%) (Ministry of Health, 2018).

In 2017, the Maternal Mortality Rate (MMR) was 305 per 100,000 live births, with most deaths occurring during pregnancy, childbirth, and the postpartum period. Efforts to reduce maternal mortality include increasing contraceptive use among women of childbearing age (Ministry of Health, 2017). Family Planning acceptors in Indonesia have increased from 47.5% in 1991 to 57.9% in 2012. However, this is still below the Medium-Term Development Plan (RPJM) target of 62% for 2017 and the Sustainable Development Goals (SDGs) target of 68% for the same year (BKKBN, 2019). Of these, 47.3% of family planning acceptors prefer non-long-acting contraceptive methods (Ministry of Health, 2013).

Several risk factors regarding contraceptive choices include knowledge and age. Knowledge is crucial in shaping an individual's actions because behavior based on knowledge tends to be more long-lasting than behavior that is not. For example, knowledge about family planning includes understanding its concept, benefits, and where to access services (Gerungan, 2011). Individual use of health services varies, influenced by factors such as demographics (age, gender, marital status), social structure (education, occupation, race, hobbies, religion), and trust in health services (health beliefs). According to Notoatmodjo (2014), age influences an individual's behavior, including the use of long-acting contraceptive methods. Women of older age groups tend to be less interested in using long-acting methods.

Research by Ningrum et al. (2018) shows a relationship between a wife's age and the selection of long-acting contraceptive methods, with an OR value of 1.300. In contrast, research by Fransisca et al. (2021) found no relationship between age and the use of long-acting methods. Regarding the knowledge factor, Sarika et al. (2021) found a correlation between knowledge and the selection of long-acting contraceptive methods, which differs from Misrina's (2018) study, which stated that knowledge does not influence the use of long-acting contraceptive methods.

Based on the above background, the researcher intends to conduct a study titled "Meta-Analysis: Selection of Long-Acting Contraceptive Methods (Review of Knowledge and Age Factors)."

Method

This research is categorized as a meta-analysis study. The researcher utilized several related research articles to combine data, derive new information, and perform quantitative testing. This meta-analysis study was conducted on observational studies to determine the strength of relationships (effect size) and the magnitude of differences in each variable.

The strategy for searching publication articles from the past five years (2017–2022) involved accessing electronic databases such as Google Scholar, using both Indonesian and English. Articles were screened based on the 2009 PRISMA-P checklist, ensuring that articles not meeting inclusion criteria were excluded.

The next step was identifying the research question by formulating a review question, serving as the foundation for the study. The SPIDER framework was employed to formulate the research question, as the referenced articles did not involve interventions. The explanation of the SPIDER framework applied in this study is as follows:

a. S (Sample): The sample in this study consisted of journals related to the selection of long-acting contraceptive methods.

b. PI (Phenomenon of Interest): The phenomenon of interest refers to the "how" and "why" of behaviors and experiences. In this study, the phenomenon of interest includes the relationship between age, gender, and education level with medication adherence in hypertensive patients.

c. D (Design): The research design is observational, using a cross-sectional method.

d. E (Evaluation): The evaluation focuses on the strength of the relationship between age, gender, and education level with medication adherence in hypertensive patients.

e. R (Research Type): The research type is quantitative.

Research protocol

A research protocol is a detailed plan encompassing the scope of the study, procedures, criteria for assessing quality (inclusion and exclusion criteria), and the scale of the research to be conducted. The research protocol for meta-analysis can adopt the concept of Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

Data search strategy

The literature search for this study was conducted to gather data through electronic media from databases such as Google Scholar and NCBI. The keywords used included "pengetahuan," "usia," "METODE KONTRASEPSI JANGKA PANJANG (MKJP)," "pasangan usia subur pdf,"

as well as "knowledge," "age," "LONG TERM CONTRACEPTION METHODS," "long-acting reversible contraceptives," and "fertile age couple pdf."

Data extraction

Data extraction was performed using the PRISMA method and a table containing information such as the article type, journal name, year, title, keywords, research methods, and other relevant details.

Result and Discussion

a. Meta-analysis of the relationship between knowledge and the selection of long-acting contraceptive methods

A total of 11 research articles were combined to analyze the relationship between knowledge and the selection of long-acting contraceptive methods. Of these, 9 articles stated a relationship, while 2 articles indicated no relationship. Below are the results of the meta-analysis on the relationship between knowledge and the selection of long-acting contraceptive methods using the RevMan 5.4.1 application:

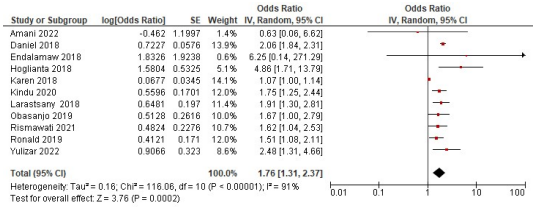

Fig. 1 *Forest plot of the research study on the relationship between knowledge and the selection of long-acting contraceptive methods*

Based on Figure 1, the results of the study show heterogeneity. This is evidenced by the heterogeneity test result with a *p*-value < 0.05 (p = 0.00001) and a variation between studies (I^2) > 50%, which is 91%, indicating a high level of heterogeneity. Therefore, a Random Effects Model was used in this analysis.

The data analysis on the forest plot shows a relationship between knowledge and the selection of long-acting contraceptive methods with a *p*-value < 0.05 (p = 0.0002) and a pooled Odds Ratio of 1.76 with a 95% confidence interval (CI 95% = 1.31 – 2.37). This suggests that respondents with a higher level of knowledge are 1.76 times more likely to choose long-acting contraceptive methods compared to respondents with lower levels of knowledge.

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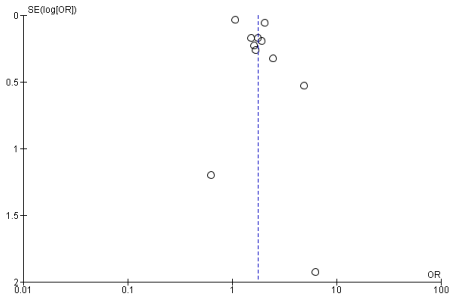

Fig. 2 *Funnel plot of the relationship between knowledge and the selection of long-acting contraceptive methods*

Figure above shows that the funnel plot exhibits publication bias, which is evident from the asymmetry of the plot distribution on the right and left sides of the vertical line. On the right side, there are 6 plots, with 4 of them appearing related (stacked together) and tending

to touch the vertical line. Meanwhile, on the left side, there are 5 plots, with 1 plot touching the vertical line.

The Effect Size for each study is indicated in the SE column of the Forest plot and is used to calculate the combined Effect Size of the studies on the relationship between knowledge and the selection of long-acting contraceptive methods in the table below.

Table I
Average combined Effect Size of the relationship between knowledge and the selection of long-acting contraceptive methods.

No	Research	*N*	Effect Size (ES)	ES Max	ES Min
1.	Amani	11	1.1997	1.9238	0,0576
2.	Daniel		0.0576		
3.	Endalamaw		1.9238		
4.	Hoglianta		0,5325		
5.	Karen		0.0345		
6.	Kindu		0.1701		
7.	Larastsany		0.197		
8.	Obasanjo		0.2616		
9	Rismawati		0.2276		
10	Ronald		0.171		
11	Yulizar		0.323		
Mean of effect size			0,4888		

Based on Table, it is known that the average effect size of the relationship between knowledge and the selection of long-acting contraceptive methods is 0.4888. This indicates that knowledge has a moderate to high effect (0.40 < effect size ≤ 0.75) on the selection of long-acting contraceptive methods.

The heterogeneity test results from 11 research articles related to the knowledge variable, with a total sample size of 9,082, show high heterogeneity, indicated by a p-value of < 0.00001 and an I^2 value of 91%. This means that the data exhibits a high level of heterogeneity, so a Random Effects Model was used in the analysis.

The high heterogeneity in the combined studies could be caused by differences in the study populations. The largest sample size was found in Karen's (2018) study, with 2,292 participants, while the smallest sample size was 71 in Hoglianta's (2018) study.

Additionally, about 81.82% (9 articles) of the studies showed a relationship, while 18.18% (2 articles) did not. According to Melsen et al. (2013), heterogeneity may occur due to systematic differences between studies, such as differences in study design, research populations, diagnostic methods, intervention applications, or outcome definitions.

Some degree of heterogeneity can be avoided to some extent by using strict study selection criteria based on design, population type, and outcomes. The article selection in this study had inclusion criteria such as the same study design (cross-sectional), multivariate analysis, and the same type of subjects (hypertensive patients). However, population size, sample size, and research location were not part of the inclusion criteria.

Based on these factors, it is most likely that the heterogeneity in this study is influenced by differences in study population sizes, sample sizes, and research locations, with considerable variation between the largest and smallest sample sizes.

The total sample size in the 11 research articles included in this study is 9,082 samples. Based on the analysis using Revman 5.4.1, the pOR value obtained is 1.76 with a 95% confidence interval ranging from 1.31 to 2.37. The combined effect also resulted in a Z-value of 3.76 and a p-value of < 0.0002. Statistically, the combined effect is significant if the p-value is < 0.05. Therefore, it can be concluded that there is a relationship between knowledge and the selection of long-acting contraceptive methods, with respondents who have higher knowledge being 1.76 times more likely to choose long-acting contraceptives compared to those with lower knowledge.

The results of combining the 11 articles in this study indicate a relationship between knowledge and the selection of long-acting contraceptive methods. This could be attributed to the percentage distribution of articles with results showing a relationship (81.82%, or 9 articles) versus those with no relationship (18.18%, or 2 articles), along with the significant difference in sample sizes—6,182 samples showing a relationship and 2,900 not showing one.

The funnel plot for the knowledge variable in this study shows publication bias, indicated by the asymmetric distribution of plots (points) around the vertical line. On the right side, there are 7 plots, 4 of which appear related (overlapping) and tend to touch the vertical line, while on the left, there are 5 plots, with one touching the vertical line. According to Sterne et al. (2011), the plot would form a symmetric distribution if there were no bias, but the funnel plot appears asymmetric with gaps on both sides of the graph when bias is present.

In this study, there is a high level of data heterogeneity, which could lead to publication bias. According to Anwar (2014), one limitation of meta-analysis is publication bias, as it relies on data from published studies. This means the results may not accurately reflect the true conditions, as negative findings are less likely to be published. Publication bias is often cited as a cause of asymmetry in funnel plots. However, asymmetry can also occur due to lower methodological quality (Sedgwick & Marston, 2015; Nadeem et al., 2023).

The results from the 11 research articles regarding knowledge and the selection of long-acting contraceptive methods show that the highest p-OR value was found in the study by Endalamaw (2018), which was 6.25. This means that respondents with high knowledge are 6.25 times more likely to choose long-acting contraceptive methods compared to those with low knowledge. On the other hand, the lowest p-OR value was found in the study by Amani (2022), which was 0.83, indicating that respondents with high knowledge are 0.83 times more likely to choose long-acting contraceptive methods compared to those with low knowledge.

After combining the studies in the meta-analysis, the results showed a p-value of <0.0002 and a pooled odds ratio of 1.76 (CI 95%: 1.31 - 2.37), indicating a relationship between knowledge and the selection of long-acting contraceptive methods.

The average effect size for knowledge, calculated from the meta-analysis, was 0.4888, which suggests that knowledge has a high effect on the selection of long-acting contraceptive methods. In Bolarinwa's (2020) study, a relationship was found between knowledge (p=0.05, P-OR=1.67), indicating that women with good knowledge of long-acting contraceptives (LARCs) tend to be more interested in using them. Tesfa (2018) also found a relationship between knowledge (p=0.008, P-OR=6.250), showing that respondents with good knowledge were more likely to participate in the use of long-acting contraceptive methods. Behavioral changes are highly influenced by knowledge, as those with higher knowledge are quicker to adopt new, beneficial behaviors.

Getahun (2018) reported that statistical analysis showed a relationship between knowledge (p=0.087, P-OR=2.060) and the selection of long-acting contraceptive methods. The researcher argued that women with better knowledge of LARCs have a greater understanding of the advantages of these methods. Wondie (2020) also found a relationship between knowledge (p=0.001, P-OR=1.75) and the choice of long-acting contraceptive methods.

However, Kikula (2022) showed that there was no relationship between knowledge (p=0.1115, P-OR=0.63) and the choice of long-acting contraceptive methods. Despite good knowledge, some women still did not choose LARCs, as factors such as not wanting more children played a dominant role. Additionally, some women with knowledge of LARCs still wanted to have more children.

Sarangih (2018) reported a relationship between knowledge (p=0.003, P-OR=4.857) and the selection of long-acting contraceptive methods, noting that correct knowledge influences the selection of contraceptive methods. Rismawati et al. (2020) found that knowledge (p=0.034, P-OR=1.62) significantly affects the selection of long-acting contraceptive methods. Women with better knowledge are more likely to participate in the selection of LARCs.

Mahmudah (2018) also found a relationship between knowledge (p=0.001, P-OR=1.912) and the choice of long-acting contraceptive methods, emphasizing that knowledge influences decision-making. The better the knowledge about LARCs, the higher the likelihood of adopting them.

Manik (2019) reported a relationship between knowledge (p=0.017, P-OR=4.25) and the choice of long-acting contraceptive methods, with women who had better knowledge about LARCs being more likely to use them. Guzzo (2018), however, found no relationship (p=0.038, P-OR=1.07) between knowledge and the selection of long-acting contraceptive methods, as most of the respondents were adolescents who, despite knowing about LARCs, preferred condoms.

Anguzu (2018) found a relationship between knowledge (p=0.016, P-OR=1.51) and the selection of long-acting contraceptive methods, with information about LARCs being widely received among women in Lubaga. The availability of healthcare facilities in the area likely increased physical access to family planning services, including contraceptive counseling.

Wondie (2020) found that women with better knowledge were more likely to choose LARCs, especially because they understood that they had irregular ovulation cycles and were interested in using long-acting methods. The study was conducted in various cities with different healthcare access and cultural backgrounds, which might have influenced the results. The study's geographical diversity and population differences, such as those not wanting more children, could explain why age did not influence contraceptive choices.

b. Meta-analysis of the relationship between age and the selection of long-acting contraceptive methods

A total of 11 research articles were combined to analyze the relationship between age and the selection of long-acting contraceptive methods. Of these, 7 articles indicated a relationship, while 4 articles stated no relationship. Below are the results of the meta-analysis of the relationship between age and the selection of long-acting contraceptive methods using the RevMan 5.4.1 application.

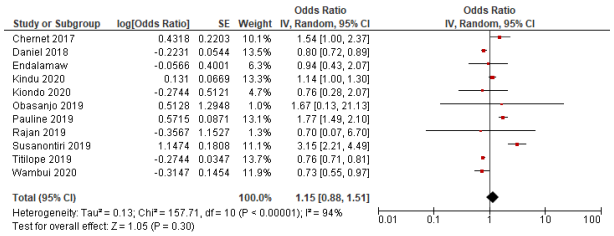

Fig. 3 *Forest Plot of the research study on the relationship between age and the selection of long-acting contraceptive methods*

Based on Figure 3, the results of the study show heterogeneity. This is evidenced by the heterogeneity test result with a *p*-value > 0.05 (p = 0.00001) and a variation between studies (I^2) < 50%, which is 94%, indicating a high level of heterogeneity. Therefore, a Random Effects Model was used in this analysis.

The data analysis from the forest plot shows that there is no significant relationship between age and the selection of long-acting contraceptive methods, with a p-value > 0.05 (p = 0.30) and a pooled Odds Ratio of 1.15 with a 95% confidence interval (0.88 – 1.51).

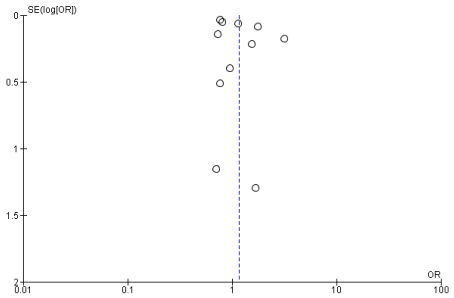

Fig. 4 *Funnel plot of the relationship between age and the selection of long-acting contraceptive methods*

Figure 4 shows that the funnel plot exhibits publication bias, which is evident from the asymmetry of the plot distribution on the right and left sides of the vertical line. On the right side, there are 7 plots, with 2 overlapping and one touching the vertical line, while on the left side, there are 4 plots.

The Effect Size for each study is indicated in the SE column of the Forest plot and is manually calculated for the combined Effect Size of the studies on the relationship between age and the selection of long-acting contraceptive methods in the table below.

Table II
Average combined effect size of the relationship between age and the selection of long-acting contraceptive method

No	Research	*N*	Effect Size (ES)	ES Max	ES Min
1.	Chemet	11	0.2203	1.2948	0,0347
2.	Daniel		0.0544		
3.	Endalamaw		0.4001		
4.	Kindu		0,0669		
5.	Kiondo		0.5121		
6.	Obasanjo		1.2948		
7.	Pauline		0.0871		
8.	Rajan		1.1527		
9.	Susanontiri		0.1808		
10.	Titilope		0.0347		
11	Wambui		0.1454		
	Mean of effect size		0,4056		

Based on Table above, it is known that the average effect size of the relationship between age and the selection of long-acting contraceptive methods is 0.4056. This indicates that age has a moderate effect (0.40 < effect size ≤ 0.75) on the selection of long-acting contraceptive methods.

The heterogeneity test results from 11 research articles related to the variable of age, with a total sample size of 24,209, indicated high heterogeneity. This was shown by a p-value of < 0.00001 (p > 0.05) and an I^2 value of 94%, meaning the data has a high level of

heterogeneity. As a result, the analysis used a Random Effect Model.

The total sample size in these 11 research articles is 24,191 samples. Based on the testing results using the Revman 5.4.1 application, the obtained pOR value is 1.15 with a 95% confidence interval of 0.088 to 1.51. The combined effect also resulted in a *Z* value of 1.05 and a p-value of 0.030. Statistically, the combined effect is significant if the *p*-value is < 0.05. Therefore, it can be concluded that there is no relationship between age and the selection of long-acting contraception methods.

The funnel plot results for the combined studies indicate the presence of publication bias, as evidenced by the asymmetrical distribution of plots on both sides of the vertical line. On the right side, there are 7 plots, with 2 overlapping plots and one touching the vertical line, while on the left side, there are 4 plots. In addition to the high heterogeneity and classification as homogeneous, the larger total sample size across all studies could also influence the presence or absence of bias in the meta-analysis results.

The results from the aggregation of all research articles indicate that there is no relationship between age and the selection of long-acting contraception methods, as shown by a p-value greater than 0.05 ($p = 0.030$). Seven articles (63.63%) with a total sample size of 20,775 found a relationship, while four articles (36.36%) with a total sample size of 3,416 did not find a relationship.

In the study by Wondie (2020), there was no relationship between age ($p = 0.05$, p-OR = 1.14) and the selection of long-acting contraception methods. It was observed that women with better knowledge were more likely to choose long-acting reversible contraception (LARC), as they were aware of their irregular ovulation cycles. The study was conducted in cities such as Gondar, Jinka, and Jijiga, where there were varying populations and access to healthcare services, which could explain the differences in findings.

The study by Getahun (2018) also found no relationship between age ($p = 0.412$, p-OR = 0.80) and the selection of long-acting contraception methods. The most significant factor influencing the choice of LARC in this study was knowledge. Younger women with productive ages were not necessarily better informed about contraception methods.

The study by Oduyebo (2019) reported no relationship between age ($p = 0.05$, p-OR = 0.76) and the selection of long-acting contraception methods. While Medicaid policies in the U.S. allow for separate billing for LARC devices and procedures, it is prioritized for Black women. Many women are unable to afford LARC due to high delivery costs, and the majority of respondents in this study were White.

On the other hand, the study by Bolarinwa (2020) showed that women over 25 years of age were more likely to choose LARC compared to women aged 15-24 ($p = 0.05$, p-OR = 1.67). Similarly, Tesfa (2018) also found a relationship between age ($p = 0.068$, p-OR = 0.945) and the selection of LARC. Women of reproductive age who have access to healthcare services and can absorb health education are more likely to be aware of contraceptive options.

Kiondo's (2020) study found that women aged 15-34 years were more likely to choose LARC implants as postpartum contraception ($p = 0.592$, p-OR = 0.76). The study by Bakibinga (2019) revealed that women aged 25-34 years, particularly those who had at least five children, were more likely to choose LARC ($p = 0.001$, p-OR = 0.771).

Zenebe (2017) found no relationship between age ($p = 0.05$, p-OR = 1.54) and the choice of long-acting contraception. The study noted that fear of side effects was the most common reason for not using LARC methods, especially among women aged 34-39, who had better access to health information and were more likely to overcome their fears.

Lastly, Bandhari (2019) and Ontiri (2019) found that age was a factor influencing the choice of LARC. In Nepal, women over 35 years were prioritized for LARC, while in Ontiri's study, women over 35 were three times more likely to choose LARC compared to those undecided about having more children.

This analysis highlights varying results from different regions and contexts, suggesting that factors such as access to healthcare, knowledge, and cultural differences may play a more significant role in the choice of long-acting contraception than age alone.

c. Meta-analysis of the Factors Most Associated with the Selection of Long-Acting Contraceptive Methods

Table III
Comparison of research results on the relationship between research variables and the selection of long-acting contraceptive methods

Research Variables	Heterogenity Test	Result of Overall Effect	Mean of Effect Size
Knowledge	p = <0,00001 I^2 = 91% (high heterogenity)	p = < 0,0002 pOR = 1.76 CI 95% = 1.31 – 2.37	0,4888
Age	p =<0,00001 I^2 = 94% (high heterogenity)	p = 0.30 pOR = 1.15 CI 95% = 0.88 – 1.51	0,4056

Table above shows the comparison of the average combined effect size for all variables, namely knowledge and age. The highest average effect size is found in the knowledge variable, with a value of 0.4888 (high effect), while the average effect size for the age variable is

smaller, at 0.4056 (moderate effect).

Based on the results of the meta-analysis in this study, it is stated that there is a relationship between knowledge and the choice of long-acting contraceptive methods, while age is not related to the choice of long-acting contraceptive methods. In light of this, the researcher has policy recommendations related to improving knowledge about the choice of long-acting contraceptives. Efforts that can be made, particularly concerning the knowledge variable, include advising family planning counselors, midwives, and health promotion program managers at health centers to increase their promotive efforts by motivating and providing more counseling to women of reproductive age to choose long-acting contraceptive methods, both directly and through social media.

REFERENCES

Anderson dkk. (1975). *Equity in health service: Empirical analysis in sosial policy*. Cambridge: Ballinger.

Anwar, R. 2010. *Meta-analisis*. Bandung. Fakultas Universitas Padjajaran.

Aryati S., Sukamdi, & Dyah W. (2019). Faktor-faktor yang Mempengaruhi Pemilihan Metode Kontrasepsi (Kasus di Kecamatan Seberang Ulu I Kota Palembang). *Jurnal Majalah Geografi Indonesia. 33*(1):79-85.

BKKBN. (2014). Pelayanan Kontrasepsi. Jakarta: BKKBN.

BKKBN. (2013). Pemantauan Pasangan Usia Subur Melalui Mini Survei Indonesia. Jakarta: BKKBN.

DeCoster, J. (2011). Meta-Analysis Notes. University of Alabama, USA. http://www.stat-help.com/meta.

Depkes RI. (2018). Data dan Informasi Profil Kesehatan Indonesia. Jakarta: Pusat Data dan Informasi Ke-menterian Kesehatan Republik Indonesia.

Fransisca D, Melia P, Rahmi NY, Tika S. Hubungan karakteristik ibu dengan pemakaian kontrasepsi jangka panjang. *Jurnal Kesehatan Medika Saintika 12*(1): 73-78.

Gerungan WA. (2011). Psikososial. Bandung: Refika Aditama.

Green, L., & Kreuter M.W. (2011). *Health Program Planning: An Educational and Ecological Approach*. New York, NY: McGraw Hill.

Kementerian Kesehatan RI. (2013). Buletin Jendela Data dan Informasi Kesehatan. 2(2). Jakarta

Kemenkes RI. (2017). Profil Kesehatan Indonesia 2017. Jakarta: Data dan Informasi Kementrian Kesehatan RI.

Kitchenham, L., & Charters M. (2017). Systematic Literature Reviews in Software Engineering A Tertiary Study. *International Journal Software Engineering Group School of Computer Science and Mathematics.52*:792- 805.

King, W. R., & Jun Hee. (2010). A Meta-Analysis of The Technology Acceptance Model. Science Direct. *Information & Management. 4*:740-755.

Manik, R.M. (2019). Analisis Faktor yang Berhubungan dengan Pemilihan Metode Kontrasepsi pada Ibu Nifas di Wilayah Kerja Puskesmas Simalingkar B Kota Medan Tahun 2018. *Excellent Midwifery Journal.2*(1):38-46.

Misrina, Fidiani. (2018). Faktor yang Berhubungan dengan Penggunaan Metode Kontrasepsi Jangka Panjang (MKJP) di Desa Teupin Raya Peusangan Siblah Krueng Kabupaten Bireuen Tahun 2018. *Journal of Healthcare Technology and Medicine 4*(2): 176-186.

Moher et al., 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Medicine, 6* (7): 1-6.

Muhamad, Z., Hadi A.J., & Yani A. (2019). Pengetahuan dan Sikap Remaja Putri dengan Pencegahan Keputihan di MTS Negeri Telaga Biru Kabupaten Gorontalo. *Promot Journal Kesehat anMasyarakat, 9*(1):9-19.

Mujiati I. (2013). Buletin Jendela Data dan Informasi Kesehatan. 2(2). Jakarta

Ningrum DAW, Dhiny EY, Sugihat. (2018). Faktor-faktor yang berhubungan dengan pemilihan metode kontrasepsi jangka panjang (MKJP) pada pasangan usia subur di wilayah kerja puskesmas batang hari kabupaten lampung timur. *Jurnal Dunia Kesmas 7*(4): 196-203.

Nursalam. (2014). Metodologi Penelitian Ilmu Keperawatan. Jakarta: Salemba Medika.

Notoatmodjo, S. (2014). Ilmu Perilaku Kesehatan. Jakarta: Rineka Cipta.

Retnawati, H., Apino, E., Kartianom, Djidu, H., & Anazifa, R. D. (2018). Pengantar Analisis Meta (Issue August 2019).

Rismawati, Asriwati, Jitasari T.S., & Anto J.H. (2020). Faktor yang Mempengaruhi Wanita PUS terhadap Pemilihan Metode Kontrasepsi Jangka Panjang (MKJP) di Puskesmas Mayor Umar Damanik Kecamatan Tanjungbalai Selatan Kota Tanjungbalai. T*he Indonesian Journal of Health Promotion. 3*(1):101-105.

Saifuddin, A.B. (2012). Buku Panduan Praktis Pelayanan Kontrasepsi. Jakarta: Bina Pustaka Sarwono Prawirohardjo.

Sarika, Raudhatul J. (2021). Hubungan pengetahuan dan sikap pasangan usia subur (PUS) dengan pemilihan metode kontrasepsi jangka panjang di Desa Cot Gapu Kecamatan Kota Juang Kabupaten Bireuen tahun 2021. *Journal of Healthcare Technology and Medicine 7*(2): 1639-1648.

Sugiyono. (2017). Metode Penelitian Bisnis. Bandung: Alfabeta.

Sutjipto, H. (2020). Aplikasi Metaanalisis dalam Pengujian Validitas Item. Yogyakarta: Fakultas Psikologi UGM.

World Health Organization (WHO). (2013). World Health Statistics 2013. 55-60 p.

Tesfa, E., Gedamu, H. (2018). Factors associated with utilization of long term family planning methods among women of reproductive age attending Bahir Dar health facilities, Northwest Ethiopia. BMC Res Notes 11, 926

World Health Organization (WHO). (2013). World Health Statistics 2013. 55-60 p.

Wondie KY, Badi MB, Tamiru AT. (2020). Rural–Urban Differentials of Long-Acting Contraceptive Method Utilization Among Reproductive-Age Women in Amhara Region, Ethiopia: Further Analysis of the 2016 EDHS. *Open Access J Contracept.11*:77-89

Zenebe, C.B., Adefris, M., Yenit, M.K. et al. (2017). Factors associated with utilization of long-acting and permanent contraceptive methods among women who have decided not to have more children in Gondar city. *BMC Women's Health 17*, 75

Nadeem, M. A., Liaqat, S., Hussain, M., & Sher, F. (2023). Association between Contraceptive Usage and Maternal Education towards Birth Spacing: Evidence from Pakistan Demographic Health Survey (PDHS) 2017–18. *Journal of Management Practices, Humanities and Social Sciences, 7*(1), 35-43.

Tin, T. T., Chuan, L. S., Lin, C. K., Yan, L. Z., & Salau, A. O. Impact of Bad Habits, Health Condition, Education, Birth Control, Religion, Career on Pregnancy Success Using Big Data Analysis. *Pakistan Journal of Life and Social Sciences, 22*(2), 19191-19204.