FACTOR INFLUENCING THE INTERPREGNANCY INTERVAL OF CHILDBEARING AGE COUPLE

by Sri Musrifah

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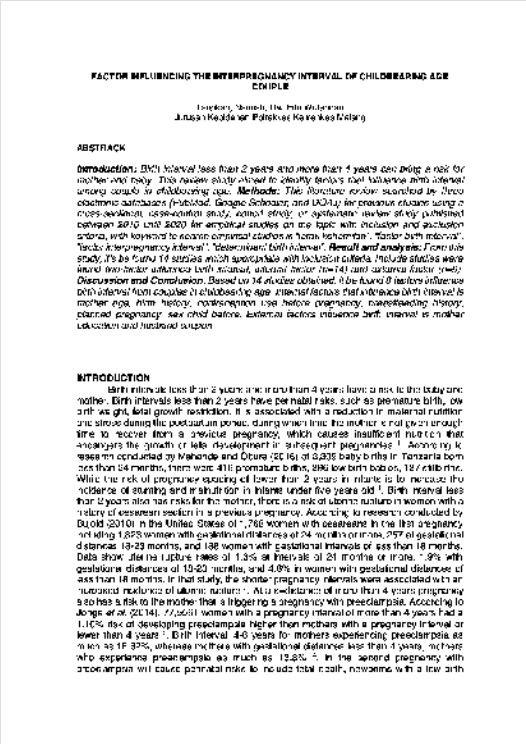

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ABSTRACK

INTRODUCTION

FACTOR INFLUENCING THE INTERPREGNANCY INTERVAL OF CHILDBEARING AGE COUPLE

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Jurusan Kebidanan Poltekkes Kemenkes Malang

ABSTRACK

Introduction: *Birth interval less than 2 years and more than 4 years can bring a risk for mother and baby. This review study aimed to identify factors that influence birth interval among couple in childbearing age.* ***Methods:*** *This literature review searched by three electronic databases (PubMed, Google Schoolar, and DOAJ) for previous studies using a cross-sectional, case-control study, cohort study, or systematic review study published between 2016 until 2020 for empirical studies on the topic with inclusion and exclusion criteria, with keyword to search empirical studies is "jarak kehamilan", "factor birth interval", "factor interpregnancy interval", "determinant birth interval".* ***Result and analysis:*** *From this study, it's be found 14 studies which appropriate with inclusion criteria. Include studies were found two-factor influence birth interval; internal factor (n=14) and external factor (n=9).* ***Discussion and Conclusion****: Based on 14 studies obtained, it be found 8 factors influence birth interval from couples in childbearing age. Internal factors that influence birth interval is mother age, birth history, contraception use before pregnancy, breastfeeding history, planned pregnancy, sex child before. External factors influence birth interval is mother education and husband support*

INTRODUCTION

Birth intervals less than 2 years and more than 4 years have a risk to the baby and mother. Birth intervals less than 2 years have perinatal risks, such as premature birth, low birth weight, fetal growth restriction. It is associated with a reduction in maternal nutrition and stress during the postpartum period, during which time the mother is not given enough time to recover from a previous pregnancy, which causes insufficient nutrition that endangers the growth of fetal development in subsequent pregnancies [1]. According to research conducted by Mahande and Obure (2016) of 3,309 baby births in Tanzania born less than 24 months, there were 416 premature births, 396 low birth babies, 137 stillbirths. While the risk of pregnancy spacing of fewer than 2 years in infants is to increase the incidence of stunting and malnutrition in infants under five years old [1]. Birth interval less than 2 years also has risks for the mother, there is a risk of uterine rupture in women with a history of cesarean section in a previous pregnancy. According to research conducted by Bujold (2010) in the United States of 1,768 women with cesareans in the first pregnancy including 1,323 women with gestational distances of 24 months or more, 257 at gestational distances 18-23 months, and 188 women with gestational intervals of less than 18 months. Data show uterine rupture rates of 1.3% at intervals of 24 months or more, 1.9% with gestational distances of 18-23 months, and 4.8% in women with gestational distances of less than 18 months. In that study, the shorter pregnancy intervals were associated with an increased incidence of uterine rupture [2]. At a s=distance of more than 4 years pregnancy also has a risk to the mother that is triggering a pregnancy with preeclampsia. According to Jonge *et al*. (2014), 77,5561 women with a pregnancy interval of more than 4 years had a 1.10% risk of developing preeclampsia higher than mothers with a pregnancy interval of fewer than 4 years [3]. Birth interval 4-6 years for mothers experiencing preeclampsia as much as 16.62%, whereas mothers with gestational distances less than 4 years, mothers who experience preeclampsia as much as 13.3% [4]. In the second pregnancy with preeclampsia will cause perinatal risks to include fetal death, newborns with a low birth

weight of fewer than 2500 grams, and preterm births with gestational age less than 37 months [4].

Determination short or long birth interval from a couple in childbearing age is the couple have not yet prepared to determine the number of children and the right pregnancy spacing. Regulation of the Minister of Health of the Republic of Indonesia No. 97 2014 recommends an ideal pregnancy distance of 2-4 years from previous labour [5]. Meanwhile, according to WHO (2005), the exact distance between pregnancies is between 24 months to 60 months [6]. According to Purwanto (1999) a person's behaviour is influenced by two factors there are internal and external factors [7]. Internal factors are factors that originate from within the individual to manage behaviour from outside, and external factors are factors outside the control of an individual including objects, people, groups and cultural outcomes that are targeted in realizing behaviour [8]. Based on the study of literature presented by Hailu, D and Teklemariam, G. (2016) internal and external factors that influence the determination of pregnancy spacing are sociodemographic factors (maternal age, maternal education, maternal occupation, husband's occupation, residence), economic status, history marriage, history of childbirth, history of breastfeeding, birth control use, previous child's sex [9]. Pregnancy distance is not appropriate because couples in childbearing age are still vulnerable to being influenced by knowledge in making every decision, for example making decisions in determining the distance of pregnancy [10]. The results of research conducted by Witten (2016) with female respondents aged 20-40 years with a prenatal period of 32-38 weeks, showed that knowledge, preparation, hospital policy, culture, relationships with family, and fear are factors in the process strong decision making to determine the distance of pregnancy [10]. Different research also shows that 9 out of 12 respondents decision making is still influenced by the experience of others and those closest to them. Eight out of twelve respondents reported that in-law's advice in decision making did not provide a solution [11].

The purpose of our research is to determine internal and external factors which influenced birth interval from couples in childbearing age. We can take advantage from this research is we can to know the factors which influence birth interval through literature review research and This research is expected to be used as a baseline for developing midwifery in identifying factors related to determining pregnancy spacing in couples of childbearing age.

METHOD

This literature review searched by three electronic databases (PubMed, Google Schoolar, and DOAJ) for previous studies using a cross-sectional, case-control study, cohort study, or systematic review study published between 2016 until 2020 for empirical studies on the topic with inclusion and exclusion criteria, with keyword to search empirical studies is "jarak kehamilan", "factor birth interval", "factor interpregnancy interval", "determinant birth interval". We report our literature review following the Flow Diagram of Trial Selection Process for Literature review.

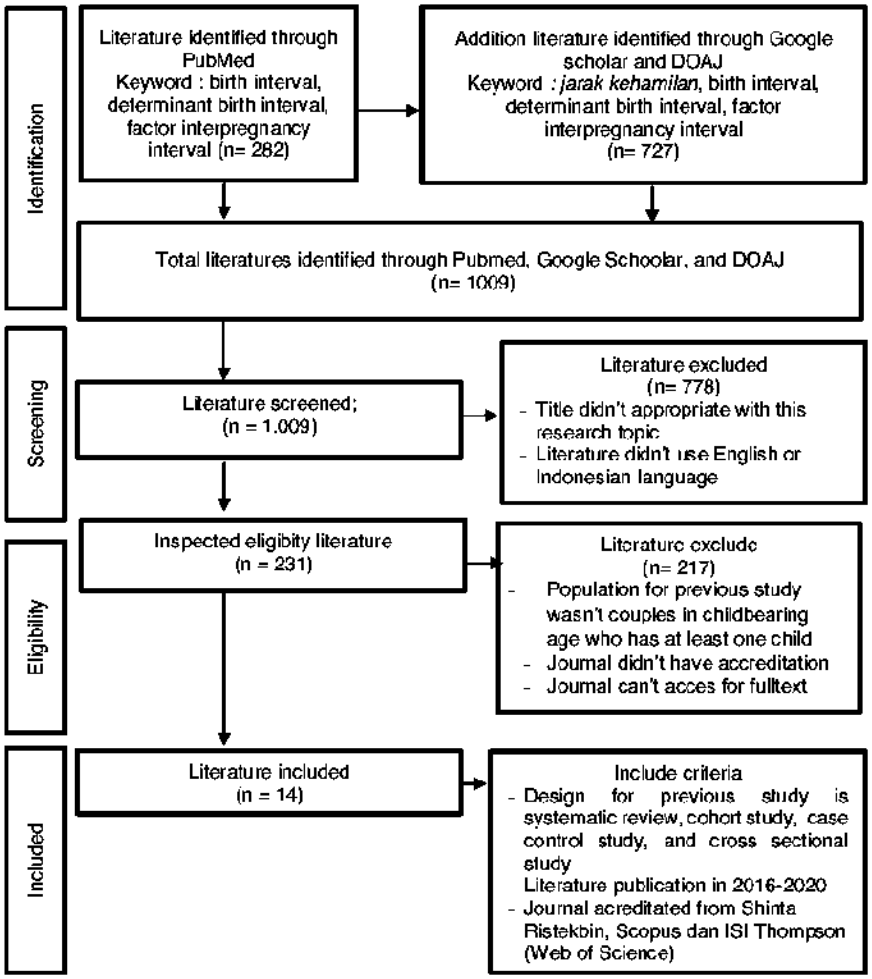

Figure 1. Flow Diagram of Trial Selection Process for Literature Review

From this review, it was found 701 journals in Google Schoolar, 26 journals in DOAJ, and 282 journals in Pubmed. A total of 1,009 journals from journals found according to the search keywords were then screened, 778 journals were excluded because the titles were not appropriate, could not be accessed for free and were not full text. There were 231 journals *full text* studied for eligibility, 217 journals were excluded because the study sample was not appropriate and the journal was not accredited, so that 14 journals were found that met the inclusion criteria.

RESULTS

This literature review we found 14 journals who according to the factor influence birth interval from the couple in childbearing age. This literature contains international journal and national journal

Table 1. The Results Analysis of The Homogeneity of Attitudes and Behavior

Authors and years	Method	The outcome of analysis factor	Conclusions
Pimentel et al. 2020	**Design:** *Systematic review* **Samples** : 43 research journals according to inclusion criteria, 21 journals from Africa, 18 journals from Asia and 4 journals from America, 14 journals published above 2010, 14 journals published 2001- 2010, 8 journals were published between 1990-2000, and 7 journals before 1990 **Variable:** Demographic factors, social factors, environmental factors, socio-cultural factors of education and maternal age, previous deliveries, breastfeeding history, use of family planning, family income, parity, previous child's sex **Instrument**: *Mixed Method Appraisal TOOL (MMAT)* **Analysis:** meta-analysis	1. Breastfeeding history 2. Gender of the previous child.	Two factors that consistently influenced the distance of pregnancy in the study were the history of breastfeeding and the sex of the previous child. It is important to promote breastfeeding children for at least the first 6 months, while the selection of the sex of the child with the promotion of gender equality is still a complex problem and a long-term challenge.
Ajayi dan Somefun.2020	**Design:** A quantitative correlational analytical *retrospective cohort study* **Sample:** 6,780 women. married and have at least 2 children (2013-2018) **Variables:** a. Dependent variable Birth interval b. Independent variable Age, the gender of a previous child, condition of a previous child, place of residence, marital status, mother's education level, family income	Age of the mother when giving birth to her first child	The distance between pregnancies in the pus of each region is different, the factors that cause also vary from one region to another. Maternal age is one of the factors that affect the distance of pregnancy too far and too short in all regions. The goal of preventing pregnancy spacing is too short aimed at mothers of too young age, while pregnancy spacing too far aimed at older, educated, and middle-income mothers

	Instrument: Demographic survey data of 8 regions in sub-Saharan Africa last 5 years **Analysis:**Multinomial logistic model		
Aleni, Mbalinda dan Muhindo. 2020	**Design:** A quantitative correlational analytic *cross-sectional* **Sample:** 296 EFA women who have at least 2 live children who have come to YCC at Uganda Yumbe Hospital **Variables:** Dependent variable; Pregnancy distance Variable independent; 1) demographic characteristics (age at first birth, current age, level of education, employment, religion, marital status, place of residence, number of children living), 2) socio-cultural factors (including; husband, in-law attitudes, or another family for the next pregnancy), 3) Behavioural factors (decisions with partners for the next child, use of contraception), 4) Mother's knowledge of regulating pregnancy spacing, 5) health facility factors (services and providing information that is given) **Instrument:** Structured interview guide **Analysis:** Chi Square	1. current maternal age 2. husband support 3. family planning history 4. do not want to plan for the next pregnancy The	incidence of pregnancy intervals is too high still in Uganda even though the majority of mothers with their pregnancy intervals optimal. Pregnancy distance is too short to be influenced by the age of the mother who is too young, does not use contraception, does not want to plan her pregnancy and lack of husband support. Highly recommended given knowledge of optimal pregnancy spacing, promotion of optimal pregnancy spacing, the targets of the program are young mothers and their husbands

Matijasevich *et al.* 2019	**Design:** A quantitative correlational analytic *retrospective cohort study* **Samples:** 6011, 5304, 4287, and 4329 women in childbearing age who gave birth in 1982,1993, 2004, 2015 **Variables:** Independent variable Economic level and ethnicity Dependent variables pregnancy spacing, child condition, parity, and multiple births **Instrument:** Brazilian cohort of childbirth years 1982,1993,2004,2015 **Analysis:** Chi-square	Economic level	During 1982-2015 observations were made and there were improvements in maternal and child health indicators, this is indicated by a reduction in parity, and an increase in pregnancy spacing, this is indicated by an increase in pregnancy spacing occurs when one's income or economic level increases.
Amare, Mitiku dan Alemayehu. 2018	**Design:** Descriptive Quantitative *Case Control Study* **Sample:** 330 multiparous women in childbearing age (110 cases and 220 controls) **Variables:** Demographic factors, social factors, environmental factorssocio-cultural factors educational, previous labor, history of breastfeeding, desire to plan for pregnancy, use of family planning, family use, family income, parity, type previous child sex **Instruments:** Questionnaires **Analysis:** Multinomial logistic	1. mother's education level 2. husbands work 3. sex of the child before, 4. breastfeeding history, 5. history of contraceptive use 6. desire to conceive	Distance pregnancy caused by different factors. It is important to improve access to contraceptive services and methods of contraception, as one of the important treatments in reducing pregnancy distance is too short
Ahren *et al.*2018	**Design:** Retrospective quantitative correlational analytics Study cohort **Sample:** 6382 second pregnant women aged 14-44 in 2006-2011 and 2011- 2015 **Variables:** Independent variable Desire to plan an pregnancy Dependent variable Birth interval **Instrument:** National Survey and Family growth in the United States **Analysis:** Logistic Regression Model	Desire to plan a pregnancy	Unwanted pregnancies are associated with shorter pregnancy spacing at reproductive age. so it is important to increase access to post-family planning services.

(Laili dan Masruroh.2018)	**Design:** Cross-sectional quantitative correlational analytic **Sample:** 44 women in childbearing age who have given birth to more than one **Variable:** Dependent variable; Birth interval Independent variable; age at birth of the last child, occupation, education, and selection of contraceptive methods **Instrument:** Questionnaire **Analysis** Chi-Square	1. Mother's age 2. Mother's education	From the research journals, there is a relationship between maternal age and education with pregnancy spacing. Health workers need to provide health promotion with the importance of regulating appropriate pregnancy spacing for mothers and families
Dereje, Muluneh dan Kebebe .2017	**Design:** descriptive *cross-sectional* **Sample:** 826 women in childbearing age who have at least 2 children **Variables:** 1) Place of residence 2) Tribes 3) Religion 4) Marital status 5) Mother's work 6) Husband's work 7) History of breastfeeding 8) Use of KB **Instrument:** Questionnaire **Analysis**: Logistic Regression Model	1. Mother's educational level 2. History of breastfeeding 3. History of contraception 4. Husband's occupation, 5. Family's economic level	Almost all respondents know the optimal pregnancy distance, although almost some respondents practice the pregnancy distance is too short. Place of residence, mother's education, husband's occupation, economic level, length of breastfeeding, contraceptive use are factors that cause mothers to set an optimal pregnancy spacing, contraceptive use and maternal education must be given more attention to prevent maternal and infant mortality
Masinter *et al.* 2017	**Design:** Descriptive quantitative *Prospective cohort study* **Sample:** 3,006 nulliparous mothers who were 18-35 years pregnant with a single UK pregnancy 38-42 weeks planning to deliver at Pennsylvania Hospital **Variables:** 1) Demographic factors (maternal age at first birth, family income, marital status, education level) 2) Birth history 3) Contraception use	1. Mother's age at the birth of the first child 2. Family history of planning use family3. Family income 4. Previous delivery cesarean delivery 5. Mothers with an unwanted pregnancy	A birth interval is too short does not occur in couples who are related less than 6 months compared to more than 12 months. But no pregnancy can occur when mothers use postpartum contraception, receive contraceptive counselling, access to contraception to prevent unwanted pregnancy

	4) History of PNC visit **Instrument:** A structured interview guide and data from the *National Survey of Family Growth in the United States* **Analysis:** *Logistic Regression Model*		
Zhang, Quist and Enquobahrie. 2017	**Design:** A descriptive quantitative retrospective cohort study **Sample:** 3,312 Women in childbearing age who have 2 African children living in Washington and recorded pregnancy data between 2003-2013 **Variables:** 1) Mother's age at birth of the first child 2) Mother's educational level 3) Marital status 4) History of first delivery 5) 5)parity **Instrument:** home medical record data **Analysis:** Logistic regression model	1. Age mother 2. Mother's education level 3. Previous cesarean delivery history 4. Multipara	African American women have a higher risk of having a shorter pregnancy spacing than white American women. Several risk factors (age, parity, education, and previous delivery history) contribute to the cause of short pregnancy spacing for women of African descent, need for family planning counselling among African women in the US
. 2016	**Design:** A descriptive quantitative *retrospective cohort study* **Sample:** 11,892 women age partners fertile married and have 2 children (2004-2011) **Variables:** 1) Age at birth of a first child 2) Parity 3) Mother's education level 4) Condition of child (life / death 5) Wealth level 6) sex of the first child **Instrument :** Data Demographic and Health Surveys (BDHS) *Bangladesh* in 2004, 2007, and 2011 **Analysis:** Exploratory Analysis	1. childbirth before age 2.education level 3. The labour history give birth to babies die 4. Family income 5. place of residence.	From the results of research, it is necessary to form public thinking to extend pregnancy distances, women's education is very important to protect from pregnancy distances too short, the priority is to promote optimal pregnancy distances and delay fertility.

Karkee dan Lee .2016	**Design:** Quantitative descriptive *methods of a cohort study* **Sample:** 701 who is 5 months pregnant and followed up to 6 months postpartum **Variables:** 1) Current maternal age 2) Current husband's age 3) Mother's education level 4) Husband's education level 5) Income level 6) Housing 7) Knowledge about contraception use 8) sex of the child before her **Instrument:** Questionnaire and *Nepal demographic and health survey* **Analysis:** Logistic regression	1. current maternal age 2. previous child's gender	The distance of the previous pregnancy tends to be too far in Nepal because of the mother's age, and the sex of the previous child. The program regulates optimal pregnancy spacing should be targeted at mothers with mothers who are too old and given a promotion for gender equality in the social sphere
Ronald et al.2016	**Design:** (*Unmatched case-control study)* **Sample:** 218 respondents (56 cases and 162 controls) who have given birth at Mbarara Hospital and have children at least 2 **Variables:** 1) Current age 2) Place of residence 3) Mother's occupation 4) Marital status 5) Educational level 6) Previous birthplace 7) History of live children 8) Birth history 9) Use of birth control 10) Knowledge KB 11) A desire for future pregnancies **Instrument:** Structured interview guide and hospital medical record data **Analysis:** *Multivariate logistic regression*	1. Maternal age 2. Maternal education level 3. Previous history of stillbirth use 4. History of contraceptive use	Provision of knowledge and use of contraception is aimed at in women under the age of 3 years must be strengthened except in the postnatal period, secondary education programs must be promoted an. From the above programs, it improves the degree of maternal and child health by adjusting pregnancy spacing appropriately

Kurniawati dan Prasetyo . 2016	**Design:** QuantitativeAnalytic *Cross-sectional* **Samples:** 9,945 WUS giving birth to live children <5 years **Variables:** Dependent variable; Pregnancy distance independent variable; 1) mother's education level, 2) economic status 3) place of residence 4) age at birth of the last child 5) the number of children, 6) contraceptive use, 7) a history of breastfeeding, 8) history of infant death 9) survival of the previous child **Instrument :** Indonesian Demographic Health Survey **Analysis:** Mann Whitney U test	1. maternal age 2. maternal education level 3. history of contraception 4. history of stillbirth	The age of childbirth is the most risk factor for the distance of the pregnancy too close, increased communication, information, and education about the maturity of married age, and increased use of contraception to increase the optimum pregnancy distance

studies that met the inclusion criteria were divided into 2 sub-topic of literature review, the topic is internal factors (14 studies) and external factors (10 studies) that influenced the determination of birth interval. Internal factors consist of; maternal age, history of previous labour, history of breastfeeding a child before, history of previous use of contraception, sex of the child before, the desire to plan a pregnancy. External factors consist of; mother's education level, husband's support, economic status, residence, and husband's occupation.

Maternal Age

In Indonesia age of a mother who gave birth to her first child less than 20 years of age would cause a shorter or fewer than two-year birth interval 1.11 times riskier than respondents who gave birth to their first child at the age of more than 2 years [23]. The other research in Indonesia conducted by Laili and Masruroh (2018) mothers with risky age of more than 35 years affected the determination of the distance of pregnancy with a p-value (0.026) <α [18]. Research in Nepal shows that maternal age is related to gestational distances less than 24 months (P-value <0.05), in multiparous mothers 23% with gestational distances less than 24 months is influenced by current age [22]. Research in African women in Washington factors that can reduce the risk of short birth intervals, namely the age of the mother at the birth of her first child aged 20-34 years (AOR 0.59; 95% CI: 0.35-0.98) [21]. Study in Pennsylvania, United States showed that mothers aged 18-20 years when giving birth to their first child as much as 78% of the total birth interval less than 18 months to get pregnant again [20]. In Africa age of the mother giving birth to her first younger child 15-20 years, had a risk of pregnancy spacing of fewer than 2 years, whereas women older than 35 had a pregnancy spacing of more than 4 years (P <0.05) [13]. Research results in Bangladesh in 2011-2014 average age of mother at the birth of her first child was 17.58 years, 17.83 years, and 18.08 years since 2004,2007 and 2011, thus extending the birth interval which was originally an average of fewer than 2 years become 3 years [24]. Research conducted by Ronald *et al.* (2016) in Uganda mothers with age below 20 years is at risk of having a birth interval of fewer than 24 months (p = 0.015 <0.05)[25]. In the same study in Uganda younger mothers (15-24 years) related short birth interval due to the desire to immediately complete family members (AOR = 0.33 95% CI = 1.53-6.28) [14].

Mother's Education Level

Research in Indonesia shows that there is an influence between the level of mother education with the determination of the distance of pregnancy with a p-value (0.002) <α [16]. In a study conducted by Ronald *et al.* (2016) in Uganda, mothers with low education have pregnancy intervals less than 24 months (p = 0.005 <0.05) [25]. Mothers in Bangladesh with low levels of education and not attending formal education will be prone to having shorter pregnancy distances (hazard ratio, HR: 1.597), mothers with primary education 44% have a pregnancy spacing of fewer than 2 years compared to mothers with secondary and higher education levels [24]. Research conducted by Zhang, Quist and Enquobahrie (2017) in Washington in African women with a high school equivalent education level or more can reduce birth intervals fewer than 2 years (aOR 0.52; 95% CI; 0.38 -0.71) [21]. Research in Northern Ethiopia by Amare, Mitiku and Alemayehu (2018) shows that mothers without formal education have a positive relationship with birth interval fewer than 24 months (aOR 2.5; 95% CI; 1.12-5.71)[16]. Another study in western Ethiopia showed that mothers without formal education 2.56 times had shorter gestational distances compared to mothers with higher levels of education (AOR = 2.56, 95% CI: 1,60,3,42) [19].

Husband Support

Aleni, Mbalinda and Muhindo (2020) conducted a study in Uganda, the results showed that mothers who were influenced by their husbands for subsequent children 53.9% had an optimal birth interval. This happens because the husband will support the KB that is needed to regulate the distance of the pregnancy, so that without the support of the husband to have a child then the pregnancy is related to the distance fewer than 24 months (AOR = 2.59, 95% CI = 1.44-4.64) [14].

Husband's Occupation

A study from Amare, Mitiku and Alemayehu (2018) in Northern Ethiopia mothers with husbands who work as day labourers have a birth interval of fewer than 24 months (AOR = 2.6: 95% CI; 1.16-6.03) [16]. The results of the same study in West Ethiopia showed that mothers with husbands who worked as farmers were more at risk of having shorter pregnancy intervals than mothers with husbands who worked as employees (AOR = 2.6: 95% CI; 1.16-6.03) [19].

Place of Residence

Research at Bangladesh shows mothers who live in rural areas will have a range of pregnancy shorter than women who live in urban areas (hazard ratio, HR: 1105), a mother who lives in the city Chittagon and Sylhet 49% and 42% had a short birth interval and in Khulna and Rajshahi villages 71% and 78% have short birth intervals [24]. Research with different results in Africa shows that there is no significant relationship between residence and birth interval in Malawi showing a residence variable p-*value* 0.159> p (0.05), in Zimbabwe p-*value* 0.11> p (0.05) [13]. This result is also supported by research in Indonesia that there is no relationship between residence and birth interval with a value of p = 0.133> p (0.05) [23]. Similar research is also supported by another study that there is no relationship between place of residence and the determination of birth interval[14,16,22,25].

Economic Status

Research in Pennsylvania, the United States, low-income mothers have a risk of having a pregnancy interval less than 18 months than others [20]. The other research in Brazil mothers with the lowest income had a birth interval of fewer than 24 months, although there was a decrease in the population with the lowest income from 1982, which was 59.9% until 2015 to 38.5% [15]. Based on the results of the study in Bangladesh, mothers with medium and high incomes will have shorter birth intervals than those with lower income [24]. Different results from West Ethiopia showed that mothers with the highest income levels were 3.18 times shorter birth intervals than mothers with the lowest income levels (AOR = 3.18 95% CI: 1.75.4.56) [19]. The results of research in Africa showed that mothers with the highest family opinion had a risk of 1.12 having shorter birth intervals compared to mothers with the lowest family income [13]. Research in Nepal with different results shows that the economic level of the family does not affect the determination of birth interval with a value of p = 0.738> p (0.05) [22].

Birth History

The study in Pennsylvania United States mothers with a history of previous cesarean delivery mothers will tend to have a birth interval of more than 4 years (OR 0.8; 95% CI: 0.6-1.0) [20]. Another history of childbirth that affects the distance of pregnancy is the history of giving birth to a previous dead baby in a study in Uganda showing mothers with a history of stillbirth will be at risk of having a birth interval of fewer than 2 years with a value (P-value <0.0001) (OR 0.2; 95 % CI; 0.09-0.53)[25]. Research on African women in Washington history of cesarean delivery can increase the risk of birth intervals of more than four years (aOR 0.61; 95% CI; 0.44-0.84) [21]. Another study conducted in Indonesia showed that mothers who had stillbirths had a risk of 1.68 times having a birth interval of fewer than 2 years compared to respondents who had never had a stillbirth [23].

History of Contraception

Research in Indonesia there was a relationship between contraception use and birth interval, respondents who used traditional contraception had a risk of 1.47 times experiencing a birth interval of fewer than 2 years compared to respondents who used modern contraception, and respondents who did not use contraception has a shorter birth interval 1.50 times compared to respondents who use modern contraception [23]. In the research of Ronald *et al.* (2016) in Uganda, the factors that cause birth intervals are less than 24 months, namely the history of the use of birth control mothers who do not use and simple birth control vulnerable to having short pregnancy intervals (AOR = 3.2; 95% CI; 1.71-6.08)[25]. In a study in Pennsylvania in the United States, mothers with simple birth control who did not use birth control had a pregnancy interval of lewer than 18 months, which was quite high, namely 29.7% of the total respondents[20]. Another study in Northern Ethiopia of mothers who did not use birth control before the last child pregnancy had a relationship with a birth interval of fewer than 24 months (AOR = 3.0; 95% CI; 1.42-6.67)[16]. In the study in Uganda mothers who did not routinely use birth control before the last pregnancy risked having a birth interval fewer than 18 months (AOR = 0.28; 95% CI = 0.12-0.64)[14]. Research in western Ethiopia mothers who did not use contraception 4.42 times had shorter birth intervals than mothers who used modern contraception (AOR = 4.42; 95% CI: 2.71,5.82) [19].

History of Breastfeeding

Research in Northern Ethiopia mothers with exclusive breastfeeding history of 2 years 0.14 is at risk of having a birth interval of fewer than 2 years[16]. In study *Systematic review*, Pimentel *et al*., 2020 in 43 research journals in Africa, Asia, and Latin America showing that mothers with birth interval fewer than 2 years are caused by a long history of breastfeeding that is less than 24 months[12]. Research in western Ethiopia shows mothers who breastfeed their children less than 12 months 5 times the risk of having shorter birth interval than mothers who breastfeed their children 24 months or more (AOR = 5.36, 95% CI: 3.43,6.34) [19].

Desire to Plan a Pregnancy

Research on African women in Washington to plan a pregnancy will reduce the risk of birth interval fewer than 2 years [21]. Research in the United States based on data from the *National Survey of Family Growth* (NSFG) in 2006-2010 and 2011-2015 as many as 40% of mothers experienced an unwanted second pregnancy and followed by 36% of birth intervals on average less than 18 months so that unwanted pregnancies related to a shorth birth interval (p-value <0.01)[17]. The other study in Northern Ethiopia mothers without a planned pregnancy had a positive relationship with gestational distances less than 24 months (AOR = 2.4; 95% CI; 1.15-5.01)[16]. In the study of Aleni, Mbalinda and Muhindo (2020) in Uganda mothers did not want to plan another pregnancy at risk of having a short pregnancy interval of fewer than 24 months (AOR = 0.33; 95% CI = 1.53-6.28)[14]. A study in Pennsylvania in the United States, mothers with unplanned pregnancies were associated with less than 2 years of pregnancy interval (OR 0.7; 95% CI; 0.5-0.9)[20].

Sex of the Child Before

Literature study conducted by Pimentel *et al.* (2020) in developed and developing countries from 43 research journals about factors that influence the determination of birth interval due to the desire to have a son [12]. According to the study of Karkee and Lee (2016) in Nepal, the sex of the child was previously related to pregnancy distance <24 months (P-value <0.05). Mothers with a history of having only girls had shorter pregnancy intervals than mothers with having boys[22]. A study in Northern Ethiopia the sex of the previously female child was positively related to birth interval fewer than 24 months (AOR = 2.3; 95% CI; 1.20-4.71) [16].

DISCUSSION

Determination of the birth interval is an effort or form of behaviour to set or provide a gap between pregnancies[26]. According to Purwanto (1999), a person's behaviour is influenced by two factors namely internal and external factors [7]. Internal factors are factors that originate from within the individual to manage behaviour from outside, and external factors are factors outside the control of an individual including objects, people, groups and cultural outcomes that are targeted in realizing behaviour [6]. Internal and external factors that influence the birth intervals are sociodemographic factors (mother's age, mother's education, husband's occupation, residence), economic status, marital history, history of childbirth, history of breastfeeding, use of family planning, previous child's sex [9].

In this literature review, it was found factors that influence the determination of the distance of pregnancy in couples of childbearing age. In 14 research journals, the factors that often appear include; maternal age (9 journals), mother's education level (7 journals), previous labour history (4 journals), history of contraception before pregnancy (6 journals), desire to plan a pregnancy (5 journals). There are also other factors namely; husband's support (1 journal), husband's work (2 journals), residence (1 journal), economic status (4 journals), history of breastfeeding in previous children (3 journals), sex of the previous child (3 journals).

9 journals in 14 journals stated that there was a relationship between maternal age and the determination of pregnancy spacing, while 5 other journals did not examine the maternal age variable in the study. In these 9 journals, 2 journals examine the current age, and 7 other journals examine the age of the mother when giving birth to her first child. Mothers younger than 20 years will tend to have shorter pregnancy intervals of less than 2 years, while mothers older than 35 years will tend to extend the birth interval by more than 4 years. In one of the journals, it was explained that mothers with less than 20 years of age could not decide on their reproductive goals, they did not plan or adjust their pregnancy distance by participating in the family planning program so that their birth interval was less than 2 years on average [14]. Another explanation may be that differences in contraceptive use among mothers older than 35 years tend to reject fertility, and extend the time to use contraception[13]. Other causes may occur at the age of 35 years the mother has reached the desired number of families, so when the current age reaches more than 35 years will tend to have the next pregnancy spacing of more than 4 years[25]. Age is one of the factors that play a role in determining the birth interval, it is very important to give advice to mothers to get pregnant at the time of maternal age between 21 years to 35 years, so that the distance of pregnancy owned by the mother following the recommended pregnancy distance by WHO.

In the mother's education level variable of 14 journals, 7 journals influence the determination of birth interval, while 6 other journals do not examine the education level variable, and 1 other journal examines but there is no relationship of education level with birth interval. Mothers not attending school and primary school graduates are very few interested in regulating birth interval compared to mothers with secondary education and highly educated, this is related to educated mothers who will tend to use contraception because they know the negative effects of birth interval fewer than 2 years [24]. Other studies with conflicting results show that mothers with an average level of education below the middle can answer the appropriate pregnancy spacing according to WHO recommendations and all respondents were able to at least mention one benefit of an

appropriate pregnancy spacing and a negative impact of an incorrect birth interval, but this knowledge not applied in the practice of setting an appropriate pregnancy spacing because more than a portion have a birth interval fewer than 2 years[14]. Based on the theory of education influences on increasing the ability to think, so someone with higher education will be able to make more rational decisions in general, those with higher education are open to accepting changes or new things compared to mothers with lower education[27]. So that mothers with higher levels of education can think higher and are more rational than mothers with lower levels of education to choose healthy pregnancies with the right pregnancy spacing. This is indicated by the technological advances of mothers with low education levels who can access information easily but mothers with low education still cannot apply this knowledge to choose the right pregnancy distance.

History of childbirth in a previous pregnancy also affects the determination of the birth interval. From 14 journals, there are 4 journals were stating there was a relationship between the history of childbirth with the determination of pregnancy spacing, and 10 other journals did not examine the variable of childbirth history with the determination of pregnancy spacing. The risk of short pregnancy will increase when the mother has a history of stillbirths in previous pregnancies especially with the last planned pregnancy [24]. That is because when a partner has lost a child, the couple will try to replace the position of the child who died immediately which is known as "the child replacement effect" [23]. Another birth history found is a history of cesarean delivery, which causes a history of cesarean delivery because mothers with a history of cesarean unplanned make mothers afraid to get pregnant and give birth again more likely to choose a longer time to get pregnant and give birth again [20]. Previous childbirth history is very influential for mothers for subsequent pregnancies, mothers with experience of giving birth, miscarriage, pregnancy with complications, or birth with complications will affect the mother's decision to determine the period of pregnancy again after giving birth to the first child [23]. A history of obstetric pregnancy with problems (such as preeclampsia, hypertension of pregnancy), history of complications with complications (long stage 1, long stage II) history of childbirth with the help of tools and a history of cesarean delivery make the mother still has a fear of getting pregnant and giving birth again in a period of 2 -4 years, so mothers will choose pregnancy more than 4 years. While mothers with a history of miscarriage, or giving birth to children die in previous pregnancies cause mothers to feel disappointed and sad because they have to lose the child they have desired so that mothers will be compelled to immediately have more children without regard to the distance to get pregnant again.

A history of contraception can affect the determination of the birth interval, in 14 journals found 6 journals that stated there was a relationship between determining the distance of pregnancy with a history of contraception, while 8 other journals did not examine the relationship of the history of contraception with the determination of the distance of pregnancy. Contraception gives time to delay fertility until the next conception [23]. Contraception delays conception until the birth of the next child and is one way to achieve an appropriate pregnancy distance and optimal maternal and infant health[14]. According to WHO Family Planning is an action that helps individuals or married couples to avoid unwanted births and adjust the interval between pregnancies[25]. Efforts that can be made to regulate the interval between pregnancies using contraception, to use contraception are divided into two methods namely modern contraception and natural contraception[5]. Natural contraceptive methods are used to prevent pregnancy by calculating the fertile period to avoid intercourse during the fertile period of the mother, but there is a drawback that is not effective if it is not done with the proper calculation of the fertile period [5]. Whereas modern contraceptive methods are more effective in preventing pregnancy by giving hormones or using tools [30]. So that it would be more effective to use modern contraception to prevent pregnancy compared to natural contraception because modern contraception has been done by administering hormones or using tools without going through a manual calculation of fertility.

The distance of pregnancy less than 24 months is related to the length of breastfeeding in previous children, a history of breastfeeding in children before in 14 journals found 3 journals. The contraceptive effect of breastfeeding can extend the distance of pregnancy, breastfeeding can cause lactational amenorrhoea because of the baby's nipple suction when breastfeeding makes the hypothalamus stimulate to stop the production of GnRH to inhibit the LH hormone to inhibit fertility[12]. Based on the theory, it is also explained that during breastfeeding receptors from the nipple will stimulate hypothalamic signals which will be transmitted to the pituitary gland to reduce the release of the GnRH hormone for ovulation so that amenorrhea occurs[31]. The lactation amenorrhoea method is very effective for preventing pregnancy (98% effective if done correctly in the first 6 months postpartum, with breastfeeding more than 8 times a day) and 93% effective if up to 12 months postpartum [5]. As a natural birth control method and this method becomes ineffective when menstruation has occurred. As a result of the mother not breastfeeding her baby for less than 2 years, the baby's suckling while breastfeeding will not stimulate the cessation of ovulation so that the reproductive cycle of the mother returns to normal quickly and there is a great risk of the mother becoming pregnant immediately less than 2 years after the birth of the first child.

The desire to plan for the next pregnancy in 14 journals found 5 journals that explained there was a relationship with the determination of the distance of the pregnancy while 9 other journals were not examined the variable desire to plan for pregnancy. Mothers who plan a pregnancy are at lower risk of having shorter pregnancy spans than do not want their pregnancy[17]. This happens because mothers who plan their pregnancies will tend to follow the recommendations to set the right pregnancy distance[14]. Based on the theory when someone assesses an object is useful, then it will cause high interest that leads individuals to do that causes behaviour, while low interest will cause rejection behaviour[32]. When a mother does not want and interest in planning her pregnancy the mother will not go to a health facility for family planning which causes unwanted or planned pregnancies so that the birth interval chosen is not right.

In 14 journals, 1 journal was found to have a relationship between the husband's support and determination of pregnancy spacing, while 13 other journals did not examine the husband's support for determining pregnancy spacing. Mothers who always have the support of their husbands will decide with their husbands for the next child plan so that the low risk of having a short birth interval[14]. This happens because proper communication between partners with reproductive goals so that it has a positive effect on regulating the birth interval, other things may occur with a husband who supports the mother's husband will also support the use of contraception and other efforts to regulate the birth interval [14]. In the theory of a husband's involvement in the preghancy plan by supporting his partner in choosing the birth control method and the birth interval chosen, the husband's support will be used by a mother in deciding the birth interval and the birth control method chosen [33]. As a result of without the support of the husband, the mother will be difficult to decide the distance of the pregnancy and the method of birth control that was chosen even the husband could not allow the mother to follow the family planning program to adjust the distance of pregnancy resulting in mothers at risk of preghancy not according to plan with an incorrect pregnancy distance.

In 14 journals, there was 1 journal found where the residence affected the birth interval, 6 journals did not examine the variable of the place of residence, and 7 journals stated that place of residence had no relationship with the birth interval. Mothers who live in urban areas will easily get access to education and employment opportunities which can help regulate the birth interval by the following contraception to avoid fertility[24]. Different research journals are mothers who live in urban areas with access to health facilities in family planning but their birth interval is less than 2 years, this is because even though there is already access to contraception methods [23]. At present, there has been a lot of construction of health facilities, educational facilities, and employment in rural areas so that there is no difference between mothers living in cities and rural areas in accessing health facilities to participate in family planning programs in managing birth interval.

On the economic level variable in 14 journals, 4 journals support the influence of the economic level with pregnancy spacing,3 other journals explain there is no relationship between economic level and pregnancy spacing. Mothers with low-income levels have shorter pregnancy intervals than mothers with the highest income levels [15]. this is related to mothers with low incomes choosing not to use contraception so that unwanted pregnancies occur[20]. However, different results show that there are areas with high incomes indicating short birth intervals [13]. This is because mothers with the lowest income levels will be busy in their activities to earn extra income to meet their daily needs as a result they will delay their pregnancy [19]. The economic level is not enough to change the mindset to regulate birth intervals, the appropriate birth intervals can be supported by the existence of high education to support rational thinking, and the desire to plan for future pregnancies using contraception. So that mothers with the highest economic level will not necessarily have the right pregnancy spacing because perhaps education is still low and does not have the desire to plan for the next pregnancy, conversely, mothers with the lowest economic level may not necessarily have an incorrect pregnancy spacing because it may be a secondary education level or high and have the desire to plan the next pregnancy so that the birth intervals owned will be right.

In 14 journals 2 journals are describing the husband's work affecting the determination of pregnancy spacing. Mothers who have husbands of day labourers tend to have a short birth interval. This is related to the work of the husband who only produces low income with low income from contraception which is not the basic needs of the family so that the mother does not use contraception [16]. The type of husband's work is related to the amount of salary or money the husband earns which affects the family's economic status [19]. When economic status influences the birth interval, work will influence the birth interval too. However, the economic status shows there is an influence with the birth interval, but there is no consistent effect between the highest and lowest economic level with the distance of the pregnancy of the mother. mothers with husbands with high-income occupations do not necessarily have the right pregnancy spacing because mothers still have a low level ot education and do not want to plan a pregnancy most likely also have the same short birth interval as mothers who have husbands with low-income jobs.

In 14 journals found 3 journals explained that the sex of the child previously influenced the birth interval, From some regions, it is explained that having sons is more valuable, they can revive family lineages and they are the inheritors of family assets [12]. In the patriarchal culture, the desire to have a son makes mothers who only have daughters tend to get pregnant again with a birth interval of fewer than 2 years[22]. In the *Norma Keluarga Kecil Bahagia Sejahtera* (NKKBS) it has been stated that girls and boys are the same, but customary issues in the region still play an important role, so that the sex of certain children becomes a family's desire[30]. Birth of a child with unwanted sex there will be a tendency to want to get pregnant again without considering the specified pregnancy distance.

In the *literature review* conducted based on 14 studies, found 8 factors that affect the distance of pregnancy in couples of childbearing age. Internal factors that influence the distance of pregnancy are maternal age, history of previous births, history of contraception, history of breastfeeding, desire to plan for pregnancy, sex of the child beforehand. External factors that affect pregnancy distance are the mother's education level and the husband's support. There are 3 other factors namely husband's occupation, place of residence, and economic status often affect the distance of pregnancy, but there are many journals that show different results with the appropriate theoretical basis to say that there is no influence with the determination of pregnancy distance.

CONCLUSION

Based on 14 studies obtained, it is found 8 factors influence birth interval from couples in childbearing age Internal factors influence birth interval is mother age, birth history, contraception use before pregnancy, breastfeeding history, planned pregnancy, sex

child before. External factors influence birth interval is mother education and husband support. For health workers (midwives) the results of this study can be a reading material / scientific basis, which can be used by midwives in providing counselling about setting birth spacing. Whereas for educational institutions can make the results of this study a source of reference in the teaching and learning process in the classroom and in the basic practice for communication and education to the patients, especially the topic of Family Planning and Birth Planning and the factors that influence it.

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