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PARENT COMMUNICATION PATTERNS AND RISK SEXUAL BEHAVIOR IN LATE ADOLESCENT

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Abstract

Background: Engaging in risky sexual behaviors during adolescence can negatively affect their development and health, leading to risks like contracting sexually transmitted infections such as HIV/AIDS, unintended pregnancies, and abortions. Many factors can cause risky sexual behavior, family factors, especially parental communication patterns are one of the most important influences, because parents are the environment that has the strongest preventive efforts in keeping adolescents involved in promiscuous activities. This research seeks to explore the connection between parental communication styles and risky sexual behavior among older adolescents. **Method:** Observational analytic with cross-sectional research design. The sample size was 300 respondents with consecutive sampling technique. The independent variable is communication pattern. The dependent variable was risky sexual behavior in late adolescents. The research data used instruments in the form of closed questionnaires and analyzed using the Spearman's rank test with a significance level of $p < 0.05$. **Result:** The majority of late adolescents experienced authoritative parental communication patterns, with 56% reporting this style. Additionally, 63% of respondents exhibited low-risk sexual behavior. The Spearman's rank correlation test revealed a significant result with a p-value less than α ($p = 0.000$) and a correlation coefficient of $r = -0.239$. **Conclusion :** Parental communication patterns have a relationship with risky sexual behavior in late adolescents. For future researchers can using qualitative research to explore more information about communication patterns from the point of view of adolescents and parents towards risky sexual behavior in adolescents.

Keyword : Communication patterns, late adolescent, parent, sexual behavior

INTRODUCTION

Adolescents are one of the groups that have a large population in the world population. The data from the Indonesian population census aged 15-24 years in 2021 totaled 44,777,600 people or 16.4% of the total population (Badan Pusat Statistik, 2022). The large number of adolescents has high risks that will be faced related to adolescent problems, one of which is risky sexual behavior in adolescents (Ungsianik and Yuliati, 2017). Risky sexual behavior refers to sexual activities that may negatively impact adolescents' health and development, leading to issues like sexually transmitted diseases (STDs) including HIV/AIDS, unintended

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pregnancies, and abortion (Rahma, 2018). Risky sexual behavior is divided into two, namely low-risk sexual behavior such as touching, kissing, masturbation, and high-risk sexual behavior, namely deep kissing, oral sex, petting, sexual intercourse (Muflih and Syafitri, 2018).

The 2017 Indonesian Demographic and Health Survey indicates that 59% of women and 74% of men had their first sexual experience between the ages of 15 and 19. Sexual experience was higher among women and men aged 20-24 compared to those aged 15-19 (BPS *et al.*, 2018). Research conducted in Surabaya with a sample of 74 adolescents aged 13-21 years showed that as many as 47.3% of adolescents committed unsafe sexual behavior where most of them occurred at the age of 17-21 years, where the age is included in the late adolescent category (Novi, 2021). Another study in Surabaya found that 72.9% of adolescents with a college student status had risky sexual behavior (Ohee and Purnomo, 2019).

A study shows that good parental communication patterns can prevent adolescents from risky sexual behavior (Santi and Fithria, 2017). Parents and family are the environments that have the strongest preventive efforts in keeping adolescents involved in risky sexual behaviour. However, young people, specifically students who are new to university life and mostly come from distant cities away from their families, can easily explore things they are curious about, especially related to sex because of the ease of availability of surrounding facilities that can fulfil this curiosity (Wiradimadja, 2020). This is in accordance with research conducted in the East Surabaya City area, where in the area found 72.9% of overseas students had risky sexual behavior (Ohee and Purnomo, 2019). Based on the background of the problem, This study aims to examine how parental communication patterns relate to risky sexual behavior in late adolescents in Surabaya.

METHOD

The study employed an observational analytic research design with a cross-sectional approach. The target population included all college students in Surabaya. Sampling was conducted using a non-probability technique known as consecutive sampling. The sample size, determined using the Lemeshow formula, comprised

300 respondents aged between 18 and 21 who met the inclusion criteria, unmarried and domiciled in Surabaya and the exclusion criteria, namely not willing to be a respondent and never dating. The tool employed was a structured Google Form questionnaire featuring closed-ended questions. This questionnaire was divided into three sections, including one focused on the characteristics of the respondents, parental communication patterns, and adolescent sexual behavior. The questionnaire on parent communication patterns was derived from a study conducted by (Cahyani *et al.*, 2021) The adolescent sexual behavior questionnaire was sourced from the study by Muflih and Syafitri (2018). The gathered data were processed and analyzed through univariate and bivariate analysis, utilizing the Spearman Rank correlation test and SPSS software. This research has been approved by the Health Research Ethics Committee of the Faculty of Medicine, Universitas Airlangga.

RESULT AND DISCUSSION

The univariate analysis revealed the following respondent characteristics.

Table 1 Respondent General Characteristics

Characteristics	Frequency	Percentage (%)
Gender		
Man	79	26,3
Women	221	73,7
Age		
18 years old	32	10,7
19 years old	83	27,7
20 years old	104	34,7
21 years old	81	27,0
Live with		
Parents	190	63,3
Guardian	22	7,3
Alone	79	26,3
Friend	9	3,0

Table 1 indicates that the majority of the 221 respondents, accounting for 73.7%, were female, 104 respondents (34.7%) were 20 years old, and 190 respondents (63.3%) lived with their parents.

Gender can influence adolescents' sexual behavior, with men being more at risk of sexual behaviour than women (Rahayu *et al.*, 2020). Puberty such as physical to emotional changes causes this, besides that male adolescents are easier to have sexual fantasies and are more courageous to behave sexually, while female



adolescents may still be restrained due to feelings of shame and moral considerations burden felt by women (Donevan and Mattebo, 2017).

Young adults aged 20-24 with limited knowledge, negative attitudes, and a history of alcohol consumption will tend to engage in risky sexual behavior (Sunardi *et al*, 2020). Individuals entering late adolescence are more at risk of sexual behavior because in this phase adolescents have high curiosity, their thoughts and fantasies are more developed and easily stimulated by external stimuli (Gayatri *et al.*, 2020).

According to Siregar and Apriadi (2020) in their research stated that there was no notable variation in risky sexual behavior between adolescents living with parents and adolescents living alone. Various negative activities outside the home shape the attitudes and behavior of a teenager, it is not only influenced by where he lives, but how a teenager interacts with the environment where he lives (Putri *et al.*, 2017).

Table 2 Data Distribution of Parental Communication Patterns

Parental Communication Patterns	Frequency	Percentage (%)
Permissive	113	37,7
Authoritative	168	56,0
Authoritarian	19	6,3

The table above indicates that the majority of respondents' parents exhibit authoritative communication patterns (56.0%). This communication pattern is the most ideal because it has an effective communication pattern between parents and children, the more openly mothers discuss sex with their teenage children, the less likely adolescents are to engage in risky sexual behaviors (Ungsianik and Yuliati, 2017). Parents can communicate what is deemed necessary to limit adolescent deviant behavior, negotiating to apply rules based on mutual agreement. This is considered to be able to minimize risky sexual behavior in adolescents. This means that adolescents indirectly include these rules as a foothold in doing anything so that the objectives of the rules can be achieved together between parents and adolescents (Maulida and Safrida, 2020).

Table 3 Data Distribution of Sexual Behaviour in Late Adolescents

Sexual Behaviour in Late Adolescents	Frequency	Percentage (%)
Not risk	28	9,3
Low risk	189	63,0
High risk	83	27,7

Table 3 indicates that the majority of adolescents' sexual behavior falls into the low-risk category, accounting for 63%. Sexual behaviours that fall into the low-risk category are masturbation, touching, and kissing. Masturbation or the activity of stimulating the sexual organs by touching or feeling them. This occurs due to factors of growth and development of reproductive organs, as well as the spread of information and sexual stimulation through mass media (Sarwono, 2019). Touching behaviour such as holding hands to hugging and kissing is an activity most often done by teenagers while dating to express love, passion, words and affection that can cause sexual stimulation (Blegur, 2017). Touching behaviour usually does not cause strong sexual stimulation, but can lead to the desire to try other more risky sexual activities such as deep kissing, oral sex, petting, and sexual intercourse (Muflih and Syafitri, 2018; Sarwono, 2019).

Table 4 The Relationship between Parental Communication Patterns and Risky Sexual Behaviour in Late Adolescents

Parental Communication Patterns	Sexual Behaviour in Late Adolescents						<i>p-value</i>	<i>r</i>
	Not risk		Low risk		High risk			
	f	%	f	%	f	%		
Permissive	8	7,1	57	50,4	48	42,5	0,000	-0,239
Authoritative	18	10,7	117	69,6	33	19,6		
Authoritarian	2	10,5	15	78,9	2	10,5		
Total	28	9,3	189	63,0	83	27,7		

Based on table 4 above, it shows that respondents who have high-risk sexual behaviour have parents with permissive communication patterns, 48 respondents (42.5%). The Spearman Rank test results indicate a negative correlation between parental communication patterns and risky sexual behavior among late adolescents, with a p-value of 0.000, which is less than α (0.05), and a correlation coefficient of -0.239. This suggests that as parental communication becomes more permissive, the likelihood of risky sexual behavior increases, the higher the risky sexual behaviour in late adolescents and vice versa.

The findings of this research align with the study conducted by Yuniza *et al.* (2022) on high school students that family communication patterns have a significant relationship with free sexual behaviour in adolescents. This can occur



because communication patterns in the family play an important role in educating, guiding, determining behaviour, and molding adolescents' views on societal values, enabling them to discern and reject harmful environmental influences while steering clear of risky sexual behavior (Thoyibah *et al.*, 2017). Communication between parents and adolescents is one form of parenting process that has an influence on adolescent sexual behaviour (Gustina, 2017). Healthy communication and openness in the process of conveying information are needed to maintain the harmony of the relationship between parents and children and through this parents can monitor the things that are being and will be done by their children (Dewi, 2017; Kusuma, 2017).

CONCLUSION AND SUGGESTION

The study concludes that a connection exists between parental communication patterns and risky sexual behavior in late adolescents in Surabaya, where the more permissive the communication patterns of parents, the higher the risky sexual behavior in late adolescents and vice versa. Future researchers are advised to use qualitative research to explore more information about communication patterns from the perspective of adolescents and parents towards risky sexual behavior in adolescents. In addition, it can investigate additional factors that may impact risky sexual behavior in adolescents to find a common solution in suppressing the high risky sexual behavior in adolescents.

DECLARATION

Conflict of Interest

This study has no conflicts of interest.

Authors' Contribution

All contributors were involved in every stage of the study, from the initial concept to the drafting of the article, so collaborative efforts were required in this study.

Ethical Approval

This research received approval from the ethics committee, confirming it adheres to required ethical guidelines, with ethics number 234/EC/KEPK/FKUA/2023.

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Data Availability

In this part, Data supporting the research findings are available upon request.

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REFERENCE

- Badan Pusat Statistik (2022) *Statistik Indonesia 2022*. Jakarta Pusat: Badan Pusat Statistik.
- Blegur, J. (2017) 'Preferensi Perilaku Seksual Remaja', *Proyeksi*, 11(2), pp. 9–20.
- BPS, BKKBN and Kemenkes RI (2018) *Survei Demografi dan Kesehatan Indonesia: Kesehatan Reproduksi Remaja 2017*. Jakarta: Badan Pusat Statistik.
- Cahyani, K.O.A., Agushybana, F. and Nugroho, R.D. (2021) 'Hubungan Pola Komunikasi Orang Tua Asuh dengan Pengetahuan dan Sikap Kesehatan Reproduksi Remaja Panti Asuhan Kabupaten Klaten', *Jurnal Kesehatan Reproduksi*, 12(1), pp. 15–25. Available at: <https://doi.org/10.22435/kespro.v12i1.4432>.
- Dewi, D.C. (2017) *Hubungan Antara Monitoring Parental dan Keterbukaan Anak pada Orang Tua dengan Perilaku Seksual Remaja*. Thesis. Universitas Muhammadiyah Surakarta.
- Donevan, M. and Mattebo, M. (2017) 'The relationship between frequent pornography consumption, behaviours, and sexual preoccupation among male adolescents in Sweden', *Sexual & Reproductive Healthcare: Official Journal of the Swedish Association of Midwives*, 12, pp. 82–87. Available at: <https://doi.org/10.1016/j.srhc.2017.03.002>.
- Gayatri, S., Shaluhiah, Z. and Indraswari, R. (2020) 'Faktor – Faktor yang Berhubungan dengan Frekuensi Akses Pornografi dan Dampaknya terhadap Perilaku Seksual pada Remaja di Kota Bogor (Studi di SMA "X" Kota Bogor)', *Jurnal Kesehatan Masyarakat*, 8(3), pp. 410–419. Available at: <https://doi.org/10.14710/jkm.v8i3.26456>.
- Gustina, E. (2017) 'Komunikasi Orangtua-Remaja dan Pendidikan Orangtua dengan Perilaku Seksual Berisiko pada Remaja', *Unnes Journal of Public Health*, 6(2), p. 131. Available at: <https://doi.org/10.15294/ujph.v6i2.13734>.



- Kusuma, R.S. (2017) 'Komunikasi Antar Pribadi Sebagai Solusi Konflik Pada Hubungan Remaja Dan Orang Tua Di SMK Batik 2 Surakarta', *Warta LPM*, 20(1), pp. 49–54.
- Maulida, D. and Safrida (2020) 'Komunikasi Orang Tua dan Anak dalam Pencegahan Seks Pranikah', *Jurnal Komunikasi Global*, 9(1), pp. 97–114. Available at: <https://doi.org/10.24815/jkg.v9i1.16055>.
- Muflih, M. and Syafitri, E.N. (2018) 'Perilaku Seksual Remaja dan Pengukurannya dengan Kuesioner', *Keperawatan Respati Yogyakarta*, 5(3), pp. 438–443.
- Novi, K.I. (2021) *Hubungan Tingkat Pengetahuan dengan Perilaku Seksual pada Remaja di Wilayah Tambak Wedi Surabaya*. Thesis. Stikes Hang Tuah Surabaya.
- Ohee, C. and Purnomo, W. (2019) 'Pengaruh Status Hubungan Berpacaran terhadap Perilaku Pacaran Berisiko pada Mahasiswa Perantau Asal Papua di Kota Surabaya', *The Indonesian Journal of Public Health*, 13(2), pp. 268–280. Available at: <https://doi.org/10.20473/ijph.v13i2.2018.269-287>.
- Putri, S., Shaluhiah, Z. and Prabamurti, P.N. (2017) 'Faktor – Faktor yang Berhubungan dengan Perilaku Seksual Remaja yang Tinggal di Lingkungan Resosialisasi Argorejo Kota Semarang.', *Jurnal Kesehatan Masyarakat*, 5(5), pp. 92–101.
- Rahayu, N.F., Indraswari, R. and Husodo, B.T. (2020) 'Hubungan Jenis Kelamin, Usia dan Media Pornografi dengan Perilaku Seksual Berisiko Siswa SMP di Kota Semarang', *Media Kesehatan Masyarakat Indonesia*, 19(1), pp. 62–67. Available at: <https://doi.org/10.14710/mkmi.19.1.62-67>.
- Rahma, M. (2018) 'Hubungan antara Pengetahuan Seksualitas dengan Perilaku Seksual Remaja di SMA Negeri 1 Subang', *Midwife Journal*, 5(01).
- Santi, F. and Fithria (2017) 'Pola Komunikasi Keluarga dengan Perilaku Kenakalan Remaja', *Jurnal Ilmiah Mahasiswa Fakultas Keperawatan*, 2(3).
- Sarwono, S.W. (2019) *Psikologi Remajs*. 20th edn. Depok: PT Raja Grafindo Persada.
- Siregar, R.E. and Apriadi, P. (2020) 'Analisis Faktor Perilaku Seksual Remaja di Kota Medan', *AN-Nur: Jurnal Kajian dan Pengembangan Kesehatan Masyarakat*, 1(1), pp. 99–108.
- Sunardi, K.S., Martha, E. and Guspaneza, E. (2020) 'Potret Self-system Remaja dengan Perilaku Tindakan Seksual Berisiko di Provinsi Jambi', *Jurnal Promosi Kesehatan Indonesia*, 15(2), pp. 59–64. Available at: <https://doi.org/10.14710/jpki.15.2.59-64>.
- Thoyibah, Z., Nurjannah, I. and Sumarni, D.W. (2017) 'Correlation between Family Communication Patterns and Juvenile Delinquency in Junior High School', *Belitung Nursing Journal*, 3(4), pp. 297–306. Available at: <https://doi.org/10.33546/bnj.114>.
- Ungsianik, T. and Yuliati, T. (2017) 'Pola Asuh Orang Tua Berhubungan dengan Perilaku Seksual Berisiko pada Remaja Binaan Rumah Singgah', *Jurnal Keperawatan Indonesia*, 20(3), pp. 185–194. Available at: <https://doi.org/10.7454/jki.v20i3.623>.
- Wiradimadja, A. (2020) 'Parenting Education: Building Characters and Holding in Millennial Mental Problems', in *Proceedings of the International Conference on Social Studies and Environmental Issues (ICOSSEI 2019)*. International Conference on Social Studies and Environmental Issues (ICOSSEI 2019),

Kota Malang, Indonesia: Atlantis Press, pp. 145–149. Available at:
<https://doi.org/10.2991/assehr.k.200214.025>.

Yuniza, Imardiani and Pratama, P. (2022) 'Hubungan Pola Komunikasi Keluarga dengan Perilaku Seksual Bebas pada Remaja', *Jurnal Ilmu Keperawatan dan Kebidanan*, 13(2), pp. 483–492.



THE EFFECT OF PNEUMOCOCCAL CONJUGATE VACCINE PENTABIO, AND MULTI-INJECTION IMMUNIZATION EDUCATION ON KNOWLEDGE AND ACCEPTANCE OF MULTI-INJECTION IMMUNIZATION

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Abstract

Background: Pneumonia is the main caused of morbidity and mortality in children under five years of worldwide. According to the Health Profile Data (2021), the province with the highest coverage of pneumonia among under-fives was in East Java (50%) and in Blitar Regency at 40%. Indonesia was tried to control pneumonia by increasing PCV immunization efforts. PCV immunization is first given at the age of two months along with pentabio immunization or known as multi injectable immunization. Based on the results of a preliminary study conducted at the Talun Primary Health Care in Blitar Regency on pregnant women in the 3rd trimester and mothers who have babies aged 0-2 months, it was found that 71% of mothers did not know about the existence of multiple immunization injections between pcv and pentabio. Knowledge about one's health can be done by providing health education. This study aims to analyze the effect of health education on knowledge of PCV immunization, pentabio and multi-injection immunization and acceptance of multi-injection immunization in respondents. **Methods:** This study used pre-experimental design with a one group pretest-posttest. The number of samples was 40 respondents with sampling techniques used purposive sampling. The independent variable was health education which was given once with lecture method. The dependent variable was knowledge and acceptance of multi-injection immunization. The instrument used was a questionnaire. Data analysis used Wilcoxon signed rank test and Mc Nemar test. **Results:** After providing education showed that the knowledge of respondents in the good category increased from 25% to 95%, in the sufficient category 5% and there were no respondents in the poor category. Acceptance of multiple immunization injections after providing education showed that respondents receiving multiple immunization injections increased from 30% to 97.5%. Wilcoxon signed rank test results $p = \leq 0.01$ and Mc nemar test results $p = \leq 0.01$, indicating significant effect of pneumococcal conjugated vaccine, pentabio, and multi-injection immunization education on knowledge and acceptance of multi-injection immunization. **Conclusion:** There is an effect of providing education on pneumococcal conjugated vaccine, pentabio, and multi-injection immunization on knowledge and acceptance of multi-injection immunization

keyword : Health education , Multi-injection acceptance, PCV immunization, Pentabio Immunization

INTRODUCTION

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Pneumonia remains a leading cause of morbidity and mortality among children under 5 years of age worldwide. Currently, respiratory viruses are recognized as the main causative agents. Hypoxemia (oxygen saturation $\leq 96\%$) and increased work of breathing are the signs most associated with pneumonia (Nascimento-Carvalho, 2020). The PIDS/IDSA guidelines state that infants and young children have the highest risk of exposure to pneumonia (Dean and Florin, 2018).

According to the United Nations International Children's Emergency Fund (UNICEF, 2019), pneumonia claimed the lives of more than 800,000 children under five worldwide in 2018. According to WHO (2022), there are an estimated 5.5 million cases of pneumonia in the world. According to Health Profile Data (2021), the provinces with the highest coverage of pneumonia among under-fives were East Java (50%), Banten (46.2%), and Lampung (40.6%). Pneumonia coverage in Blitar is 40% which is still below the national target of 65%.

Indonesia has committed in international forums to pneumonia control efforts by increasing immunization efforts, improving access to health services in controlling pneumonia, especially in children under five years of age. Comprehensive pneumonia coverage and interventions as well as expanding pneumonia treatment, namely Pneumonia Conjugated Vaccine (PCV) immunization in all provinces in Indonesia (Kemenkes RI, 2020).

PCV immunization is given for the first time at the age of two months which is also the same time as pentabio immunization. The World Health Organization (WHO) recommends that to balance the need to protect children from bacteria and viruses, injectable vaccines can be given simultaneously, especially pentabio vaccine and pneumococcal conjugate vaccine (PCV). South Africa showed that 5 years after the implementation of an immunization schedule with multiple injections at one immunization visit 97% of caregivers were satisfied (Dolan et al., 2017). The low achievement of multi-injection immunization coverage in Indonesia is influenced by several factors, one of which is knowledge (Pratiwi, Sariatmi and Agushybaha, 2022).

Based on the results of a preliminary study conducted at the Talun Community Health Center in Blitar Regency on pregnant women in the 3rd



trimester and mothers who have babies aged 0-2 months, it was found that 71% of mothers did not know about the existence of multiple immunization injections between pcv and pentabio. From the results of interviews with midwives at the Talun Puskesmas, it was found that some mothers did not agree to give multiple injections of PCV and pentabio immunization so that immunization was given at different times with a one-month gap. Based on this phenomenon, it is important to conduct research to determine the effect of providing PCV, pentabio, and multi-injection immunization education on knowledge and acceptance of multi-injection immunization at the Talun Puskesmas, Blitar Regency.

METHOD

The sample size was determined using the formula compare two proportions (paired before-after) to distinguish the effect before and after treatment resulting in a minimum of 30 respondents, in this case the researcher used 40 respondents. The inclusion criteria in this research were pregnant women in the 3rd trimester, mothers who had babies aged 0-2 months and were willing to become respondents while the exclusion criteria in this research were mothers in intensive care, mothers of babies in a state of chronic disease/congenital abnormalities and mothers of babies with contraindications to pentabio administration (critical babies, seizures, and early stage whooping cough). The sampling technique used is purposive sampling, which uses certain considerations in accordance with the desired criteria to determine the number of samples to be research. The independent variable was health education which was given once with lecture method. The dependent variable was knowledge and acceptance of multi-injection immunization. The instrument used was a questionnaire. The validity test on the questionnaire obtained a value of r count greater than r table so that the instrument is considered valid. The reliability test uses Cronbach's alpha with values ranging from 0.916, which indicates high reliability. The data analysis of this study was carried out using statistical analysis of paired data comparison test Wilcoxon Sign Rank Test to determine the difference between two groups of ordinal scale paired data and Mc Nemar to determine the difference between two groups of nominal scale paired data with the help of IBM

SPSS Statistics 25 application. In this research, an ethical review test was carried out at the Faculty of Medicine, Airlangga University.

RESULT AND DISCUSSION

The results of the research are presented in tables, frequency distribution of respondents' characteristics in Table 1, Analysis of the Effect of Providing Education on Respondents' Knowledge in Table 2, and Analysis of Providing Education on Acceptance of Multiple Injection Immunization Respondents in Table 3.

Table 1. Frequency Distribution of Respondent Characteristics

Respondent characteristics	Frequency	Percentage (%)
Age		
21-30	22	55
31-40	15	37,5
>40	3	7,5
Employment status		
Employed	7	82,5
Not Employed	33	17,5
Education level		
Elementary school	2	5
Junior high school	11	27,5
Senior high school	19	47,5
D3	2	5
S1	6	15
Experience Received Information		
Yes	11	27,5
No	29	72,5

Based on the characteristics of age, the majority of respondents were aged 21-30 years as many as 22 respondents or 55%. Age 21-30 years is a healthy reproductive age. This is in accordance with the theory which states that age has an influence on a person's mindset and capacity to catch. The increasing age of a person's maturity level is more mature in thinking and working. There is an adult age range of better knowledge and until the limit of old age someone will tend to have decreased knowledge (Dewi, 2020 in Wijayanti, 2023).

In terms of employment status, the majority of respondents did not work as many as 33 respondents (82.5%). This is in accordance with the theory which states that work is an activity that must be carried out to support his life and the life of his family (Dewi, 2020 in Wijayanti, 2023). The work environment can provide

information to a person either directly or indirectly (Budiman 2013, in Widyandini et al., 2022).

Based on the last educational level characteristic, the majority are high school as many as 19 respondents or 47.5%. The theory conveyed by (Wati 2013 in Pendit, Astika and Supriyatna, 2019) the higher a person's education, the easier it is to receive information and vice versa, lack of education will hinder the development of a person's attitude. Education can influence a person in making decisions and acting (Mulyana, 2006 in Pendit et al, 2019).

Regarding the characteristics of respondents based on the experience of received information about PCV immunization, pentabio, and multi-injection immunization, the majority were not as many as 29 respondents or 72.5%. According to the theory that states a person's experience of something he has experienced can affect a person's level of knowledge (Budiman, 2013 in Widyandini et al., 2022).

Table 2. Analysis of the Effect of Providing Education on Respondents' Knowledge

Knowledge	Pre Test		Post Test		p value
	Frequency	Percentage	Frequency	Percentage	
Less	18	45	0	0	≤0.01
Enough	12	30	2	5	
Good	10	25	38	95	
Sum	40	100	40	100	

Based on table 2, before being given health education, the majority of respondents had less knowledge, namely 18 respondents (45%), enough knowledge as many as 12 respondents (30%), and good knowledge as many as 10 respondents (25%). Then after being given health education the majority of respondents had good knowledge as many as 38 respondents (95%), enough knowledge as many as 2 respondents (5%) and no respondents who had less knowledge.

Based on the results of the Wilcoxon test analysis, it shows the effect of providing health education on knowledge with p value of ≤0.01. These results are in line with research conducted by Indriani, Natalia and Sari (2022) with the title Effect of Health Education on the Level of Knowledge about Polio and Pentabio Immunization in Mothers Who Have Children (Age 0-6 Months) at UPTD Puskesmas Kayon Palangka Raya. In this research, the results of statistical tests

using the Wilcoxon test obtained a p value of 0.003, which is less than the value of 0.05, this showing the effect of health education on knowledge.

Other research that supported was research conducted by Widyandini et al., (2022) with the title Analysis of the Effect of Health Education on the Importance of Immunization in Infants on the Level of Knowledge and Attitudes of Mothers. The results obtained p value is 0.002 which means less than the value of 0.05 so it can be concluded that there is an effect of health education on the importance of immunization in infants on the level of maternal knowledge.

Research that also supports the results of this study is research conducted by Dayani and Tafwidhah (2018) with the title Effectiveness of Health Education on Knowledge and Compliance of Mothers in Providing Basic Immunization to Infants 0-11 Months of Age in the South Pontianak Pratama. The results obtained the results of p value 0.01, meaning that there is an effect of education on maternal knowledge.

Table 3. Analysis of Providing Education on Acceptance of Multiple Injection Immunization Respondents

Acceptance	Pre Test		Post Test		p value
	Frequency	Percentage	Frequency	Percentage	
Refuse	28	70	1	97,5	≤ 0.01
Receive	12	30	39	2,5	
Sum	40	100	40	100	

Based on table 3 before being given health education, the majority of respondents refused multiple immunization injections, namely 28 respondents (70%) while respondents who received multiple immunization injections were 12 respondents (30%). After being given health education, the majority of respondents accepted multiple immunization injections as many as 39 respondents (97.5%) while 1 respondent (2.5%) refused multiple immunization injections. So that there is an increase in acceptance of multiple immunization injections after providing health education.

The results of the Mc Nemar test analysis show the effect of providing health education on the acceptance of multiple immunization injections with a p value ≤ 0.01 . This is in line with research conducted by Simanjuntak and Nurnisa (2019) with the title Improving Maternal Knowledge and Attitudes About Immunization with a Health Promotion Approach to Basic Immunization. In this



study obtained $p \leq 0.01$ value meaning that there is an effect of providing health education on maternal attitudes.

Another research that is in line is a research conducted by Hidayati, Ekasari and Zakiyyah (2023) entitled The Effect of DPT Immunization Health Education on Maternal Attitudes in Providing Immunization in Kalidilem Village, Randuagung District, Lumajang Regency. From the statistical test, the $p \leq 0.01$ value is obtained, which means that there is an effect of health education on maternal attitudes the effect of providing health education on maternal attitudes. Health education has a significant influence on maternal attitudes in immunization immunization in Kalidilem Village, Randuagung District, Lumajang Regency. Lumajang district.

Another study conducted by Defilza, Neherta and Deswita (2021) entitled The Effect of Health Education with Whatsapp on DPT (Diphtheria, Pertussis and Tetanus) Immunization and KIPI (Post-Immunization Adverse Events) on Mother's Knowledge and Attitudes found a significant effect on attitudes in the intervention group given health education with a p value of 0.000. Attitude here is a response that shows acceptance or rejection of a stimulus or object in this case the mother has an attitude that supports or receives to immunize her child.

CONCLUSION AND SUGGESTION

The data showed that there was an effect of health education on knowledge and acceptance of multiple immunization injections in respondents. Future researchers are expected to be able to conduct similar research by using a research design that compares two groups, namely with a treatment group and a control group. In addition, it can also consider the type of learning media used in research such as videos because they are more interactive. It is expected that health center officers need to improve services and counseling, especially regarding PCV immunization, pentabio and multi-injection immunization so that with increasing maternal knowledge. It is expected that community leaders will be more involved in supporting counseling activities regarding PCV immunization, pentabio and multi-injection immunization in mothers, starting with providing information and working together with health workers.

DECLARATION

Conflict of Interest

Author declare there is no conflict of interest in this research.

Authors' Contribution

All author contribute from concept until writing draff article.

Ethical Approval

Research Ethics Committee of Faculty o Medicine, Universitas Airlangga.

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Data Availability

The data supporting this research are available from the authors on reasonable request

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REFERENCE

Dayani, T.M. and Tafwidhah, Y. (2018) Efektivitas Pendidikan Kesehatan terhadap Pengetahuan dan Kepatuhan Ibu dalam Pemberian Imunisasi Dasar pada Bayi Usia 0-11 Bulan di Wilayah Kerja Puskesmas Purnama Pontianak Selatan.



- Dean, P. and Florin, T.A. (2018) ‘Factors Associated With Pneumonia Severity in Children: A Systematic Review’, *Journal of the Pediatric Infectious Diseases Society*, 7(4), <https://doi.org/10.1093/jpids/piy046>. pp
- Defilza, N.G., Neherta, M. and Deswita, D. (2021) ‘Pengaruh Pendidikan Kesehatan dengan Whatsapp Tentang Imunisasi DPT (Difteri, Pertusis dan Tetanus) dan Kipi (Kejadian Ikutan Pasca Imunisasi) Terhadap Pengetahuan dan Sikap Ibu’, *Jurnal Ilmiah Universitas Batanghari Jambi*, 21(3), p. 1116. Available at: <https://doi.org/10.33087/jiubj.v21i3.1714>.
- Dolan, S.B. et al. (2017) ‘Administering Multiple Injectable Vaccines During a Single Visit—Summary of Findings From the Accelerated Introduction of Inactivated Polio Vaccine Globally’, *The Journal of Infectious Diseases*, 216(suppl_1), pp. S152–S160. Available at: <https://doi.org/10.1093/infdis/jix054>.
- Hidayati, N., Ekasari, T. and Zakiyyah, M. (2023) ‘Pengaruh Pendidikan Kesehatan Imunisasi DPT terhadap Sikap Ibu dalam Pemberian Imunisasi di Desa Kalidilem Kecamatan Randuagung Kabupaten Lumajang’
- Indriani, Natalia, V. and Sari, W. (2022). ‘Pengaruh Pendidikan Kesehatan terhadap Tingkat Pengetahuan tentang Imunisasi Polio dan Pentabio pada Ibu yang Memiliki Anak (Usia 0-6 Bulan) di Wilayah UPTD Puskesmas Kayon Palangka Raya’, 8, pp. 242–250. Available at: <https://doi.org/10.33084/jsm.vxix.xxx>.
- Kemenkes RI. (2020). ‘Kemenkes Targetkan 4,6 Juta Anak Indonesia Terima Imunisasi PCV. Diperoleh dari : <https://www.kemkes.go.id/id/rilis-kesehatan/kemenkestargetkan-46-juta-anak-indonesia-terima-imunisasi-pcv> [5 Januari 2023]’
- Nascimento-Carvalho, C.M. (2020) ‘Community-acquired pneumonia among children: the latest evidence for an updated management’, *Jornal De Pediatria*, 96 Suppl 1(Suppl 1), pp. 29–38. Available at: <https://doi.org/10.1016/j.jpmed.2019.08.003>.
- Pendit, S.A., Astika, T. and Supriyatna, N. (2019) ‘Analisis Pengaruh Dukungan Keluarga, dan Faktor Lainnya terhadap Pemberian Imunisasi MR pada

- Balita', *Jurnal Keperawatan Silampari*, 3(1), pp. 322–331. Available at: <https://doi.org/10.31539/jks.v3i1.848>.
- Pratiwi, S.E., Sriatmi, A. and Agushyaha, F. (2022) _Faktor-Faktor yang Mempengaruhi Minat Ibu terhadap Imunisasi Injeksi Ganda: Literature 51 Review', *MPPKI (Media Publikasi Promosi Kesehatan Indonesia): The Indonesian Journal of Health Promotion*, 5(3).
- Simanjuntak, S.M. and Nurnisa, I.N. (2019) _Peningkatan Pengetahuan dan Sikap Ibu Tentang Imunisasi dengan Pendekatan Promosi Kesehatan Tentang Imuniasi Dasar', *Media Karya Kesehatan*, 2(1). Available at: <https://doi.org/10.24198/mkk.v2i1.21275>.
- UNICEF. (2019). Lembaga Kesehatan dan Anak Memeringatkan Satu Anak Meninggal Akibat Pneumonia Setiap 39 Detik. Diperoleh dari: <https://www.unicef.org/indonesia/id/siaran-pers/lembaga-kesehatan-dananak-memeringatkan-satu-anak-meninggal-akibat-pneumonia-setiap-39> [22 November 2022]
- Wijayanti, A. (2023) 'Pengaruh Pendidikan Kesehatan terhadap Pengetahuan Ibu tentang Imunisasi Dasar Lengkap Pada Bayi di Wilayah Kerja Puskesmas Jongaya'.
- Widyandini, M. et al. (2022) _Analisis Pengaruh Pendidikan Kesehatan tentang Pentingnya Imunisasi pada Bayi terhadap Tingkat Pengetahuan dan Sikap Ibu', *Jurnal Surya Medika*, 8(2), pp. 112–126. Available at: <https://doi.org/10.33084/jsm.v8i2.3861>



CORRELATION BETWEEN ANEMIA AND THE INCIDENCE OF DYSMENORRHEA IN ADOLESCENT GIRLS

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Abstract

Background: Anemia, characterized by a low number of red blood cells or hemoglobin levels, can be one of the factors that play a role in the occurrence of dysmenorrhea during menstruation. Hemoglobin is unable to fulfill its function of transporting adequate amounts of oxygen to peripheral tissues. This causes women who experience anemia to experience frequent dysmenorrhea. The purpose of this study was to determine the relationship between anemia and the incidence of dysmenorrhea. **Methods:** This research method was observational analytic with cross sectional research design. The sample in this study were 132 adolescent girls in grades 11 and 12 at Mambaus Sholihin Islamic Boarding School, Gresik District, East Java. Data analysis in this study was chi square test. **Results:** The results showed that 34.1% were anemic and 65.9% were not anemic. Adolescents who experienced dysmenorrhea were 91.7% and 8.3% did not experience dysmenorrhea. Statistical tests to analyze the relationship between anemia and the incidence of dysmenorrhea using chisquare obtained pvalue = 0.01. **Conclusion:** There is a relationship between anemia and the incidence of dysmenorrhea at Mambaus Sholihin Islamic Boarding School.

keyword : Dysmenorrhea; anemia; adolescent girls

INTRODUCTION

Anemia is a deficiency of hemoglobin (Hb) in the blood caused by a lack of nutrients necessary for the formation of hemoglobin. The normal Hb level in adolescent girls is 12 gr/dl. The prevalence of anemia in women of productive age (14-49 years) globally continues to increase. In 2019, the global prevalence of anemia was 29.9% in women of reproductive age, equivalent to more than half a billion women aged 15-49 years. Prevalence was 29.6% in non-pregnant women of reproductive age (WHO, 2021). The proportion of anemia in the age group of 15-24 years was 18.4% in 2013 (Balitbangkes RI, 2013 ; Simanungkalit, 2019) . Based on the 2018 Riskesdas data, the proportion of anemia in women (27.2%) was higher

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than in men (20.3%). The proportion of anemia in the age group of 15-24 years was 32% in 2018 (Balitbangkes RI, 2018 ; Simanungkalit, 2019) . The high prevalence of anemia in adolescents is caused by various factors such as menstruation, iron tablet consumption, physical activity, nutritional status, bleeding outside menstruation, low socioeconomic status, obesity, kidney failure disease, tuberculosis, and helminth infection. Anemia in adolescent girls can have many negative impacts, including stunting growth, lowering fitness levels, memory and the immune system making them more susceptible to infections and can cause dysmenorrhea. (Mustaghfiroh, 2019).

According to research conducted by Nana Aldriana and Afriliana at Pasir Pengaraian University students (2018), there was a significant relationship between hemoglobin levels and the incidence of dysmenorrhea. The results showed that female students with hemoglobin levels ≤ 12 g/dl had a greater chance of experiencing dysmenorrhea compared to female students whose hemoglobin levels were ≥ 12 g/dl.

According to data from the World Health Organization (WHO), the prevalence of menstrual pain worldwide is very high. It is estimated that the incidence of dysmenorrhea reaches 1,769,425 people (90%), where 10-15% of these cases fall into the category of severe dysmenorrhea (Deby, 2017 ; Aya 2019). In Indonesia, the incidence of dysmenorrhea is quite high, with an estimated number of sufferers reaching 60-70% of the female population in Indonesia. The prevalence of primary type dysmenorrhea in Indonesia is around 54.89%, while the remaining 45.11% are categorized as secondary type dysmenorrhea.(Pupitasari, 2018 ; Lail, 2019).

Dysmenorrhea in adolescent girls can have impacts such as impaired comfort, decreased activity, disturbed sleep patterns, decreased appetite, impaired interpersonal relationships, difficulty concentrating on work, and can trigger depression. (Juniar, 2015; N. R. Putri et al., 2023). Both health problems, anemia and dysmenorrhea, have adverse effects on adolescent health. Allegedly, these two health problems are interrelated so research is needed to find out more about The Relationship between Anemia and Dysmenorrhea in Adolescent Girls at Mambaus Sholihin Islamic Boarding School.

METHOD

This research design used an quantitative observational analytic with cross sectional. The population and samples used were adolescent girls at the Mambaus Sholihin Islamic Boarding School in grades 11 and 12 with a sample size of 132 respondents. The technique used total sampling technique with inclusion criteria, there were: 15-18 years old, already experiencing menstruation, not suffering from chronic or infectious diseases (AIDS, cancer, malaria, tuberculosis, liver and inflammation), signed an informed consent sheet. Each population was given the same opportunity to become respondents who meet the inclusion criteria, Research Instruments respondents fill out a WaLIDD score questionnaire sheet containing questions about dysmenorrhea and check hemoglobin levels using the Easy Touch GCHb hemoglobin test kit. Data analysis was carried out, univariate to determine the distribution and percentage results of each variable and bivariate to determine the relationship between dependent and independent variables. In this study using the chi-square statistical test.

RESULT AND DISCUSSION

The sample size in this study was 132 respondents. There were no dropout samples because each sample taken met the inclusion and exclusion criteria and the respondents filled out the questionnaire completely. The following is the age of the respondent. Complete data can be seen in the following table:.

Table 1 Age Characteristics of Respondents

Criteria	Frequency (f)	Percentage (%)
15 years old	9	6,8
16 years old	88	66,7
17 years old	33	25,0
18 years old	2	1,5
Total	132	100,0

Table 1 shows the characteristics of respondents in terms of the highest age, namely 16 years old as many as 88 respondents (66.7%).

Table 2 Frequency Distribution of Anemia Status

Anemia Status	Frequency (f)	Percentage (%)
---------------	------------------	-------------------

Non Anemia	87	65,9
Anemia	45	34,1
Total	132	100,0

Based on the results of the study as shown in Table 5.2, 45 (34.1%) adolescents who experienced anemia and 87 (65.9%) adolescent girls who did not experience anemia. In several other studies, the incidence of anemia in boarding schools tends to be high due to the lack of nutritional intake from the food provided in boarding schools. The food they receive tends to contain a lot of carbohydrates, but less protein and iron. This condition is exacerbated by the busy schedule at the boarding school.

This lack of nutrition and high physical activity causes the energy expended by adolescent girls to be disproportionate to the nutrition they get (Alyani, 2024). According to Mansjoer (2001), this occurs due to the lack of protein and iron content obtained. Iron is needed in the formation of hemoglobin, so anemia that occurs due to lack of iron nutrition will cause the formation of smaller red blood cells and low hemoglobin content. Anemia can cause oxygen transport in the body to be disrupted. This is due to reduced levels of hemoglobin and red blood cells (erythrocytes) in the body, causing inadequate oxygen to be carried to all tissues and developing hypoxia. The body will replace such a situation by increasing the number of red blood cells, redistributing blood from tissues that have low oxygen demand to tissues that have high oxygen demand, increasing cardiac output by increasing heart rhythm (Nurbadriyah, 2019).

Tabel 3 Frequency Distribution of Dysmenorrhea

Dysmenorrhea Incidence	Frequency (f)	Percentage (%)
Non Dysmenorrhea	11	8,3
Dysmenorrhea	121	91,7
Total	132	100,0

Tabel 4 Distribution of Dysmenorrhea Level

Tingkat Dismenore	Frequency (f)	Percentage (%)
Mild Dysmenorrhea	50	37,9
Moderate Dysmenorrhea	55	41,7
Severe Dysmenorrhea	18	13,6
Total	132	100,0

From table 3 of 132 respondents, the majority of respondents experienced dysmenorrhea, namely 121 respondents (91.7%). Table 4 shows that out of 121 respondents who experienced mild dysmenorrhea as many as 50 respondents

(37.9%), moderate dysmenorrhea as many as 55 respondents (41.9%), and severe dysmenorrhea as many as 18 respondents (13.6%).

Dysmenorrhea is a symptom associated with several diagnoses of pelvic pain; it appears before the menstrual period and sometimes extends up to 72 hours after the completion of menstruation. Dysmenorrhea appears up to 6-12 months after menarche, mainly affecting young women, often those in university or work activities. At this stage of life it is known as primary dysmenorrhea and is usually caused by physiological causes, which are associated with nutritional disorders, menstrual cycle irregularities, menarche before the age of 12, excessive menstruation, and other factors that characterize the university population between 20 and 25 years old, such as nulliparity, stress, depression, smoking, and lack of social support. Adolescents commonly experience primary dysmenorrhea.(Teherán,2018)

The peak incidence of dysmenorrhea is in the late adolescent age group, namely 17-25 years of age (Safira, 2021). Adolescent girls at Pondok Pesantren Mambaus Sholihin have a busy schedule that can cause stress, diet and lack of rest so that it can affect Hb levels which are risk factors for dysmenorrhea.

On the WaLIDD questionnaire there are scale types (workability, location, intensity, pain days, dysmenorrhea score [WaLIDD]) is designed, which integrates dysmenorrhea features such as the number of anatomical pain locations (no body parts, lower abdomen, lumbar region, lower limbs, inguinal region), Wong-Baker pain range (no pain, little pain, a little more pain, more pain, more pain, more pain), the number of days of pain during menstruation (0, 1-2, 3-4, 5) and the frequency of disabling pain to perform their activities (never, almost never, almost always, always) (Rianita, 2019).

Pathophysiologically, the condition of dysmenorrhea occurs due to increased secretion of prostaglandin F2 alpha in the luteal phase of the menstrual cycle. The increased secretion of prostaglandin F2 alpha causes an increase in the frequency of uterine contractions, causing vasospasm and ischemia in the uterine arteries. The ischemic response that occurs in dysmenorrhea conditions causes pain in the lumbar region, pain in the lower back, weakness, edema, diaphoresis,

anorexia, nausea sometimes to vomiting, diarrhea, headache, decreased concentration, emotional lability, and other symptoms. (Fajrin, 2023)

Tabel 5 Frequency Distribution of Anemia Relationship with Dysmenorrhea

Anemia Status	Dysmenorrhea Incidence				Total	p. vaule	CC
	Non Dysmenorrhea		Dysmenorrhea				
	f	%	f	%			
Non Anemia	11	12,6	76	87,4	87	100,0	0,01 0,212
Anemia	0	0,0	45	100,0	45	100,0	
Total	11	8,3	121	91,7	132	100,0	

Table 5.1 shows that out of 87 respondents who were not anemic, 76 respondents (87.4%) experienced dysmenorrhea and 11 respondents (12.6%) did not experience dysmenorrhea, while 45 respondents (100%) experienced dysmenorrhea and 0 respondents (15.2%) did not experience dysmenorrhea.

The results of statistical tests using chi square obtained a value of $p = 0.01$ ($p < 0.05$). The results of this test indicate a significant relationship between anemia and the incidence of dysmenorrhea in adolescent girls at Pesantren Mambaus Sholihin. The Contingency Coefficient value of 0.212 means that the closeness of the relationship between anemia and dysmenorrhea is in the weak category.

Based on the results of the study, there is a relationship between anemia and the incidence of dysmenorrhea which obtained a p value of $0.01 < \alpha$ (0.05). This phenomenon is in accordance with the theory that the condition of anemia is one of the factors that affect the level of dysmenorrhea during menstruation, due to the occurrence of ischemia which is a temporary and reversible state of oxygen deficiency in tissues. The molecule that functions to bind and carry oxygen throughout the body is hemoglobin. The more hemoglobin that binds and carries oxygen in red blood cells, the more oxygen needs in the tissues will be met.

A study from Aldriana (2018) found a significant relationship between hemoglobin levels and the incidence of dysmenorrhea in female students at Pasir Pengaraian University ($p=0.001$), with an OR value = 2.900, which means that female students with hb levels $<12\text{gr/dl}$ have a 2.900 times chance of experiencing dysmenorrhea compared to female students with hb levels $\geq 12\text{ gr/dl}$.

The research that is in line with this research is research conducted by Nana Aldrianaetal (2019), the results show that there is a significant relationship between hemoglobin levels and the incidence of dysmenorrhea with a value of $p=0.001$.

Another study conducted by Ana Wigunantiningih, the results of the study also found that there was a significant relationship between anemia and the incidence of dysmenorrhea.

One of the factors influencing the occurrence of dysmenorrhea is hemoglobin deficiency. Hemoglobin deficiency causes red blood cells to be pale in color and the ability of these cells to carry oxygen is low, resulting in other organs receiving less oxygen supply. This can lead to anoxia in these organs, and over time, individuals will easily feel tired even if they are not doing any activity. The effects of hemoglobin deficiency vary depending on the sensitive organ. If the brain is affected, symptoms may include dizziness and lack of concentration. In the heart, symptoms may include palpitations, which can even lead to heart failure. Similarly, if the uterus is affected, lack of oxygen supply to the uterus may cause pain in the organ (Nana, 2018).

Based on the discussion above, several solutions are needed to reduce the number of respondents suffering from anemia and dysmenorrhea. Islamic boarding schools can partner with local health centers to provide education about anemia and dysmenorrhea. Puskesmas can also offer a work program to provide iron tablets to pesantren. This is to increase the knowledge of female students about the importance of blood-filling tablets to prevent blood deficiency. The pesantren may also offer activities to relieve stress.

CONCLUSION AND SUGGESTION

The frequency of adolescent girls at Mambaus Sholihin Islamic Boarding School who did not experience anemia was 87 people (65.9%) and those who experienced anemia were 45 people (34.1%). The frequency of adolescent girls at the Mambaus Sholihin Islamic Boarding School who experienced dysmenorrhea was 121 respondents (91.7%) while 11 respondents (8.3%) did not experience dysmenorrhea. There is a relationship between anemia and the incidence of dysmenorrhea in adolescent girls at the Mambaus Sholihin Islamic Boarding School.

DECLARATION

Conflict of Interest

Author declare there is no conflict of interest in this research

Authors' Contribution

All author contribute from concept until writing draft article.

Ethical Approval

Research Ethics Committee of Faculty o Medicine, Universitas Airlangga.

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Data Availability

The data supporting this research are available from the authors on reasonable request.

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REFERENCE

- Alyani, D. L. (2024). Hubungan Asupan Energi, Aktivitas Fisik, dan Tingkat Stres dengan Status Gizi Santri di Asrama Sunan Ampel Putri Pondok Pesantren Mamba'ul Ma'arif Denanyar Jombang. *Jurnal Ilmu Kesehatan dan Gizi*, 2(3), 20-31.
- AYA, A. H. R. L. (2019). *Faktor yang mempengaruhi kejadian dismenorea primer pada remaja putri kelas X Di SMK Raksana 2 Medan Tahun 2019* (Doctoral dissertation, INSTITUT KESEHATAN HELVETIA).
- Balitbangkes RI. Laporan Hasil Riset Kesehatan Dasar Tahun 2013. Jakarta: Balitbangkes, 2013.
- Balitbangkes RI. Laporan Hasil Riset Kesehatan Dasar Tahun 2018. Jakarta: Balitbangkes, 2018.
- Deby Shinta O. Sirait1, Hiswani2 J 1mahasiswi. Faktor – Faktor Yang Berhubungan Dengan Kejadian Dismenore Pada Siswi Sma Negeri 2 Medan Tahun 2014. *Estud Psicol.* 2017;38(1):269–74.
- Fajrin, D. H., Dianna, D., Fitriani, H., & Rachmaida, A. (2023). PENGARUH KOMPRES AIR HANGAT TERHADAP INTENSITAS NYERI

- DISMENOREA PADA REMAJA PUTRI DI KABUPATEN KUBU RAYA KALIMANTAN BARAT. *JURNAL ILMIAH OBSGIN: Jurnal Ilmiah Ilmu Kebidanan & Kandungan P-ISSN: 1979-3340 e-ISSN: 2685-7987*, 15(2), 216-222.
- Juniar, D. (2015). Epidemiology of Dysmenorrhea among Female Adolescents in Central Jakarta. *Makara Journal of Health Research*, 19(1). <https://doi.org/10.7454/msk.v19i1.4596>
- Lail, N. H. (2019). Hubungan Status Gizi, Usia Menarche dengan Dismenorea pada Remaja Putri Di SMK K Tahun 2017. *Jurnal Ilmiah Kebidanan Indonesia*, 9(02), 88–95. <https://doi.org/10.33221/jiki.v9i02.225>
- Mustaghfiroh, L., & Asiyah, N. (2019). Dampak anemia terhadap prestasi akademik mahasiswa. *Jurnal SMART Kebidanan*, 5(2), 28-36.
- Nana Aldriana, A. (2019). Hubungan Kadar Hemoglobin Dengan Kejadian Dismenorea Pada Mahasiswi Universitas Pasir Pengaraian 2018. *Jurnal Martenity and Neonatal*, 2(7), 445-450.
- Nurbadriyah, W D. 2019. Anemia Defisiensi Besi. Sleman: CV Budi Utama.
- Puspitasari dan Novia. Angka kejadian Dismenorea di Indonesia. 4 juni 2018
- Putri, N. R., Dewi, K. T., Christiana, M. Y., Ramadhani, N., & Kusmawati, I. I. (2023). Edukasi dismenorea pada remaja sebagai upaya mengurangi ketidaknyamanan selama menstruasi. 7(1), 1–2.
- Simanungkalit, S. F., & Simarmata, O. S. (2019). Pengetahuan dan perilaku konsumsi remaja putri yang berhubungan dengan status anemia. *Buletin Penelitian Kesehatan*, 47(3), 175-182.
- Teherán AA, Piñeros LG, Pulido F, Mejía Guatibonza MC. WaLIDD score, a new tool to diagnose dysmenorrhea and predict medical leave in university students. *Int J Womens Health*. 2018 Jan 17;10:35-45. doi: 10.2147/IJWH.S143510. PMID: 29398923; PMCID: PMC5775738.
- The World Health Observatory. *Prevalence of Anaemia in Women and Children* (2021).
- Wigunantiningsih, A., & Fakhidah, L. N. (2020). ANALISIS KORELASI ANEMIA DENGAN KEJADIAN DISMENOREA PADA REMAJA PUTERI DI SMU I MUHAMMADIYAH KARANGANYAR. *Jurnal Ilmiah Maternal*, 4(2).



SOSIODEMOGRAPHIC FACTORS ON CONTRACEPTIVE USE AMONG MARRIED WOMAN: EVIDENCE FROM THREE INDONESIA DEMOGRAPHIC AND HEALTH SURVEY (IDHS)

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Abstract

Background: Data on contraceptive use are needed to evaluate contraceptive use and plan for future needs. Changes in contraceptive method use and the factors that influence contraceptive method use are serious matters that need to be considered. **Methods:** This study used secondary data from the Indonesian Demographic and Health Survey (IDHS) in 2007, 2012, and 2017. The research design used was cross-sectional. Researchers used descriptive analysis to determine the characteristics of married women who use contraception. Inferential analysis was used to see the relationship between sociodemographic factors and the use of contraceptive method types. **Results:** The results of the analysis showed that the most widely used type of contraception from 2007-2017 was injectable contraception. Most married women who used contraceptives were in the age group of 30-39 years, had only 1-2 children, had a high school education and below, and worked as housewives. Women living in rural and urban areas have equal opportunities to obtain contraceptive services. Even women with the lowest wealth index still have access to contraceptives. The chi-square test results of age, education, occupation, residence, and wealth index variables with $p = 0.000$ ($p < 0.005$) from 2007-2017, as well as the variable number of children with $p = 0.000$ ($p < 0.005$) in 2007, $p = 0.002$ ($p < 0.005$) in 2012 and $p = 0.000$ ($p < 0.005$) in 2017. **Conclusion:** This study found a positive association between contraceptive method use and the variables of age, education, occupation, number of children, place of residence, and wealth index.

Keywords : contraceptive methods, married woman, IDHS

INTRODUCTION

The problem of rapid population growth which is not accompanied by an increase in the quality of human resources both in terms of education and health

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can be a disaster for Indonesia, such as poverty, crime, environmental damage, increasing food needs and global warming can occur as a result of this problem. Therefore, the government created the Family Planning (KB) program to overcome the problem of uncontrolled population growth (Rahmi and Hadi, 2020).

According to WHO (World Health Organization), family planning is an action that helps married couples to avoid unwanted births, regulate birth spacing, and determine the number of children in the family. The aim of the family planning program is to form small families according to socio-economic strengths. The use of contraceptives is one of the important variables that play a role in reducing the birth rate. (Agustin et al, 2023).

Indonesia is the fourth most populous country in the world with 264 million people. Indonesia's total fertility rate (TFR) in 2017 was 2.4, which means it was still higher than the target (2.1). Several provinces with the highest fertility rates in 2017 were Maluku (3.3), Papua (3.3), and West Papua (3.2). The rate of contraceptive use in Indonesia in 2017 among married women aged 15-49 years is also still low at 61%. Based on this, intervention from the Population and Family Planning Agency or Badan Kependudukan dan Keluarga Berencana (BKKBN) is needed to reduce the birth rate and increase contraceptive use through the implementation of the family planning program (Filmirah & Fatah, 2020).

Bertand (1980) stated that sociodemographic factors are one of the main factors that influence women in choosing contraceptive methods. The purpose of this study was to determine the proportion of contraceptive use among married women in Indonesia in 2007-2017 according to socio-demographic characteristics by looking at variables of age group, education level, occupation, number of children, place of residence, and wealth index. The goal of this study is to provide an overview to the government regarding the need for contraceptives needed by women in Indonesia.

METHOD

The data source used in this study is secondary data sourced from the Indonesian Demographic and Health Survey (IDHS) in 2007, 2012 and 2017. The design of this study was cross sectional with a study population of married women

aged 15-49 years who obtained family planning services. This study used a purposive sampling technique with the inclusion criteria of married women aged 15-49 years who obtained family planning services and completely filled in the data on the questionnaire needed to analyze each variable. The sample size in this study was 16,611 women in 2007, 18,008 women in 2012, and 20,765 women in 2017. Variables based on objectives include age, education, occupation, number of children, place of residence, and wealth index on the use of contraceptive method types. The following is the operational definition of the research.

Table 1 Operational definition of research

Research Variable	Operational Definition	Measuring Instrument	Measuring Scale	Result
Type of contraception used	Type of contraceptive method used by respondents when the survey was conducted	IDHS women's questionnaire: - No.311 (2007) - No.304 (2012) - No.304 (2017)	Nominal	1= Traditional method 2= Modern methods
Age group	Length of life from birth until research is carried out according to date, month and year of birth	IDHS women's questionnaire: - No.106 (2007) - No.103 (2012) - No.106 (2017)	Ordinal	1= <20 2= 20 – 29 3= 30 – 39 4= 40 – 49
Education level	The last formal education that the respondent has completed	IDHS women's questionnaire - No. 108 (2007) - No.105 (2012) - No.108 (2017)	Nominal	0= Not attending school 1= Elementary-Junior school 2= High school 3= College
Occupation	Respondent's occupation at the time of the survey	IDHS women's questionnaire: - No.710 (2007) - No. 811 (2012) - No.913 (2017)	Nominal	0= Not working 1= Professional, technical 2= Administration 3= Services 4= Operational field 5= Other
Number of living children	Number of living children the respondent had at the time of the survey	IDHS women's questionnaire: No.201–208	Ordinal	1= 0 children 2= 1-2 children 3= 3-4 children 4= >4 children
Place of residence	The area where the respondent lives at the time of the survey	IDHS data set V102 (2007-2017)	Nominal	1= Urban 2= Rural



Wealth index	Index of ownership of goods and quality of household housing owned	IDHS data set V190 (2007-2017)	Nominal	1= Bottom 2= Lower middle 3= Intermediate 4= Upper intermediate 5= Top
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Descriptive or univariate analysis was used to determine the characteristics and proportion of contraceptive use from 2007 - 2017. Inferential analysis using the Chi Square test was conducted to observe the association between sociodemographic factors and the type of contraceptive method used by respondents.

RESULT AND DISCUSSION

The percentage of women in each category of the selected variables at each survey point is shown in Table 2. With respect to the current age of the respondents, more than half of the women in all three survey years were over 30 years old. Respondents were evenly distributed in both rural and urban areas in all three survey years. Considering the educational status in the first survey, about 44.9% of the respondents in 2007 had less than a high school education. In the next two surveys, this figure decreased to 37.7% and 33.4%. This indicates that the number of women with upper secondary education in Indonesia has increased from 2007 to 2017. The proportion of women who used contraception was dominated by women who did not work, followed by those who worked in services and the field. Regarding the number of children the respondents had, the percentage of contraceptive use increased every year for those who had 1-2 children. This indicates that they are more open to contraceptive use and tend to delay their desire to have more children. In terms of household wealth quintiles, the proportion of middle-income women has increased gradually from 2007 to 2017.

Table 2 Percentage distribution of the respondents 2007, 2012 and 2017 Indonesia Demographic Health Surveys (IDHS)

Characteristics	IDHS 2007		IDHS 2012		IDHS 2017	
	No. of Women	(100%)	No. of Women	(100%)	No. of Women	(100%)
Age Group						
<20	309	1,9%	357	2,0%	281	1,4%
20-29	5.921	35,6%	5.695	31,6%	4.865	23,4%
30-39	7.022	42,3%	7.648	42,5%	8.874	42,7%
40-49	3.359	20,2%	4.308	23,9%	6.745	32,5%
Education level						
No education	631	3,8%	409	2,3%	271	1,3%
Elementary-middle school	6.819	41,1%	6.379	35,4%	6.656	32,1%
High school	7.870	47,4%	9.273	51,5%	11.092	53,4%
Bachelor	1.291	7,8%	1.947	10,8%	2.746	13,2%
Occupation						
Doesn't work	6.867	41,3%	6.841	38,0%	7.861	37,9%
Professional, technical	798	4,8%	1.167	6,5%	1.369	6,6%
Administration	428	2,6%	636	3,5%	837	4,0%
Service	3.678	22,1%	3.823	21,2%	5.817	28,0%
Field/operational	4.836	29,1%	5.235	29,1%	4.865	23,4%
Other	4	0,0%	306	1,7%	16	0,1%
Number of living children						
0 children	4.432	26,7%	4.759	26,4%	89	0,4%
1-2 children	6.283	37,8%	7.110	39,5%	12.593	60,6%
3-4 children	3.955	23,8%	4.294	23,8%	6.910	33,3%
>4 children	1.941	11,7%	1.845	10,2%	1.173	5,6%
Place of residence						
Rural	6.942	41,8%	8.538	47,4%	10.469	50,4%
Urban	9.696	58,2%	9.470	52,6%	10.296	49,6%
Wealth index						
Bottom	3.546	21,3%	3.960	22,0%	4.438	21,4%
Low middle	3.371	20,2%	3.807	21,1%	4.192	20,2%
Intermediate	3.131	18,8%	3.573	19,8%	4.165	20,1%
Upper middle	3.212	19,3%	3.418	19,0%	4.057	19,5%
Top	3.361	20,3%	3.250	18,0%	3.913	18,8%

The prevalence of contraceptive use in each category was analyzed and the results are shown in Table 3. Over the three years of the survey, all variables namely age, education, occupation, number of children, place of residence, and wealth index had a significant association ($p < 0.05$) with the type of contraceptive method use among married women in Indonesia.

Table 3 Percentage distribution of use contraception type among married woman, by selected background characteristic, IDHS 2007, 2012 and 2017

Characteristics	IDHS 2007		IDHS 2012		IDHS 2017	
	Traditional (%)	Modern (%)	Traditional (%)	Modern (%)	Traditional (%)	Modern (%)
Age Group						
<20	0,7	2,0	0,2	2,1	0,3	1,5
20-29	23,7	36,6	18,8	32,6	19,0	24,0
30-39	44,9	42,1	45,5	42,2	39,2	43,2
40-49	30,7	19,4	35,5	23,0	4,7	31,3
	<i>p</i> = 0,000		<i>p</i> = 0,000		<i>p</i> = 0,000	
Education level						
No education	5,9	3,6	1,7	2,3	1,1	1,3
Elementary-middle school	29,6	41,9	20,3	36,6	20,1	33,6
High school	49,6	47,2	54,6	51,2	54,9	53,2
Bachelor	14,9	7,2	23,4	9,8	23,9	11,9
	<i>p</i> = 0,000		<i>p</i> = 0,000		<i>p</i> = 0,000	
Occupation						
Doesn't work	34,0	41,9	30,4	38,6	33,0	38,5
Professional, technical	8,9	4,5	14,0	5,9	11,9	5,9
Administration	0,5	2,4	6,8	3,3	6,1	3,8
Service	26,0	21,8	25,1	20,9	31,1	27,6
Field/operational	26,1	29,3	21,7	29,7	17,7	24,2
Other	0,0	0,0	2,0	1,7	0,1	0,1
	<i>p</i> = 0,000		<i>p</i> = 0,000		<i>p</i> = 0,000	
Number of living children						
0 children	21,8	27,1	22,2	26,8	0,4	0,4
1-2 children	34,8	38,1	40,2	39,4	57,7	61,0
3-4 children	28,2	23,5	26,3	23,7	33,5	33,2
>4 children	15,2	11,4	11,4	10,2	8,4	5,3
	<i>p</i> = 0,000		<i>p</i> = 0,002		<i>p</i> = 0,000	
Place of residence						
Rural	50,8	41,1	63,6	46,1	62,9	48,8
Urban	49,2	58,9	36,4	53,9	37,1	51,2
	<i>p</i> = 0,000		<i>p</i> = 0,000		<i>p</i> = 0,000	
Wealth index						
Bottom	20,0	21,5	14,4	22,6	15,5	22,1
Low middle	15,0	20,6	15,4	21,6	15,4	20,8
Intermediate	16,8	19,0	18,0	20,0	18,5	20,3
Upper middle	20,6	19,2	23,8	18,6	22,3	19,2
Top	27,6	19,7	28,4	17,2	28,3	17,6
	<i>p</i> = 0,000		<i>p</i> = 0,000		<i>p</i> = 0,000	

The findings of this study provide evidence that contraceptive use increases with age, indicating that older women, especially at the age of 30-39 years, are more likely to use contraception than younger women. This study is in line with Rizaldi, et al (2021) which states that there is a significant relationship between the age of family planning acceptors in the Madura tribe and the selection of contraceptives at the Omben Health Center, Sampang Regency with a p value of 0.043 (<0.05). Age has an influence in regulating the number of children born, meaning that as the maturity of the reproductive system or the age of the woman increases, it will also be followed by an increase in the use of long-term contraceptive methods. In line with Suryanti's research (2019), there is a significant relationship between age and the use of long-term contraceptive methods (MKJP) in women of childbearing age at the Paal V Health Center, Jambi City in 2018 with a p value of 0.000 $<\alpha$ (0.05).

The results of this study confirm that women who have a high school education are less likely to use contraceptives than those who have an education above high school. Each individual has a different mindset. Rahmatiqah and Patricia (2019) stated that a person's level of knowledge is not necessarily measured through the academic results they achieve. Sometimes individuals with a low level of academic education can be more open to something than those with a high level of education, and vice versa. This was proven in his research that the number of contraceptive method users was greater than those with low levels of education with a percentage of 54.4%. The results of this study are in line with Wijayanti (2021) that there is a relationship between education and the use of traditional contraceptives with a 0.349 times greater likelihood of using traditional contraceptives in highly educated women than those with low education.

Employment was found to play an important role in contraceptive use. Regarding employment in all three survey years, women who were not working had a higher chance of using both traditional and modern contraceptives compared to those who were employed. Meanwhile, those who worked as professional/technical personnel tended to prefer traditional contraceptives compared to modern contraceptives. Formal work that mothers have is sometimes a reason for not using contraception because there is no time to come to the contraceptive service facility. In contrast to non-working mothers/ housewives who have more time to come to



contraceptive service providers. The results of this study are in line with Januarsih's research (2020) which states that maternal employment is related to the selection of the type of contraception used with a p value of $0.004 < \alpha (0.05)$.

Regarding the size of the number of children owned, women with 1-2 children have a greater chance of using contraception, especially in the type of modern contraceptive method. In line with Dewiyanti's research (2020) which states that there is a significant relationship between the number of children and the use of long-term contraception with a p value of $0.048 < \alpha (0.05)$. Parity is one of the factors that can influence respondents in determining the choice of using contraception in line with the theory that states the tendency of high-parity mothers' knowledge is better than low-parity mothers' knowledge, because they have gained experience and information. The number of children a woman has affects the choice of contraceptive methods, especially modern methods. Women who have one child are more likely to use modern contraceptives than women who do not have children (Pardosi, 2021).

Based on previous research, it is expected that contraceptive use rates would be higher in urban areas compared to rural areas (Haq et al, 2017). However, our analysis shows that the use of traditional or modern contraceptives in both urban and rural areas has almost the same proportion. This may be due to the widespread dissemination of information, especially on social media, about the importance of contraceptive use for married women to create a happy and prosperous family, as well as the equal distribution of development every year that allows the availability of contraceptive service facilities in certain areas.

In terms of household wealth quintiles, it was found that a high wealth index may increase agreement between women and their husbands on family planning. Families with a high wealth index also have easy access to using MHCP because the cost of services is higher than the cost of non-MKJP contraceptive services. Ekoariano, et al (2020) also stated that wealth quintiles have a significant influence on contraceptive use in women with a p value of $0.000 < \alpha (0.05)$ where PUS with high wealth quintiles have a 1.134 times higher chance of using contraception than PUS with low wealth quintile status. The results of this study indicate that the use of modern contraception among married women in Indonesia is dominated by those

with the lowest wealth index in each survey year with an average percentage of 22.2%. This indicates that people with the lowest wealth index still have access to contraceptive services in their neighborhood. There are limitations in the data collection process in secondary data research because researchers cannot meet directly with respondents to clarify existing data and add questions that should be needed in research so that the data used is only the data listed in the datasheet.

CONCLUSION AND SUGGESTION

Family planning acceptance among married women in Indonesia has increased in each survey year and is dominated by modern short-acting injectable methods. This contraceptive method was also the main choice for those who wanted to switch to another contraceptive method in all three survey years. The use of modern contraceptives among married women showed an increase with age, where most married women who used contraceptives were in the age group of 30-39 years and had only 1-2 children, had a high school education and below, and served as housewives. Women living in rural and urban areas have the same opportunity to obtain contraceptive services. Even women with the lowest wealth index also still have access to contraceptives. The results showed that there was a relationship between the variables of age, education, occupation, number of children, place of residence, and wealth index to the use of contraceptive methods.

It is expected that the government can maintain and even increase the promotion of the use of appropriate, effective, and quality contraceptive methods for married women in Indonesia and can ensure the availability of contraceptive methods needed by them. Future researchers are expected to examine other factors that may be associated with the use of contraceptive method types that were not examined in this study.

DECLARATION

Conflict of Interest

This study has no conflicts of interest.



Authors' Contribution

All contributors were involved in every stage of the study, from the initial concept to the drafting of the article, so collaborative efforts were required in this study.

Ethical Approval

This research received approval from the ethics committee, confirming it adheres to required ethical guidelines, with ethics number 308/EC/KEPK/FKUA/2023.

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Data Availability

In this part, data supporting the research findings are available upon request.

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REFERENCE

- Agustin, A. D., Rohmatin, H., & Farianingsih, F. (2023). Hubungan Usia dan Aktivitas dengan Kenaikan Berat Badan Akseptor KB Suntik 3 Bulan Di TPMB Andrini Desa Selok Awar-Awar Kecamatan Pasirian. *JURNAL ILMIAH OBSGIN: Jurnal Ilmiah Ilmu Kebidanan & Kandungan P-ISSN: 1979-3340 e-ISSN: 2685-7987*, 15(2), 127-133.
- Badan Pusat Statistik. (2007). Survei Demografi dan Kesehatan Indonesia 2007.
- Badan Pusat Statistik. (2012). Survei Demografi dan Kesehatan Indonesia 2012.
- Badan Pusat Statistik. (2017). Survei Demografi dan Kesehatan Indonesia 2017.
- Bertand, J., (1980). Audience Reasearch for Improving Family Planning Communication Program. *The Community and Family Study Centre: Chicago*.
- Dewiyanti, N. (2020). Hubungan umur dan jumlah anak terhadap penggunaan metode kontrasepsi di puskesmas Bulak Banteng Surabaya. *Medical Technology and Public Health Journal*, 4(1), 70-78.
- Ekoriano, M., Rahmadhony, A., Prihyugiaro, T. Y., & Samosir, O. B. (2020). Hubungan Pembangunan Keluarga dan Pemakaian Kontrasepsi di Indonesia (Analisis Data SRPJMN 2017). *Jurnal Keluarga Berencana*, 5(1), 1-15.
- Filmira, R. L., & Fatah, M. Z. (2020). Determinan Keinginan Penerapan Program Keluarga Berencana (KB) pada Remaja Pria Indonesia di Masa Mendatang. *Journal of Health Science and Prevention*, 4(2), 58-67.

- Haq, I., Sakib, S., & Talukder, A. (2017). Sociodemographic Factors on Contraceptive Use among Ever-Married Women of Reproductive Age: Evidence from Three Demographic and Health Surveys in Bangladesh. *Medical sciences (Basel, Switzerland)*, 5(4), 31. <https://doi.org/10.3390/medsci5040031>
- Januarsih, J. (2020). Analisis Umur dan Pekerjaan Pasangan Usia Subur pada Pemanfaatan Pelayanan Kontrasepsi di Puskesmas Karang Intan 2 Kabupaten Banjar. *Jurnal Midwifery Update (MU)*, 2(1), 31-34.
- Pardosi, M., Nababan, D., Brahmana, N. E., Ginting, D., & Sitorus, M. E. (2022). Faktor-Faktor yang Berhubungan dengan Minat Ibu Bersalin dalam Pemilihan Alat Kontrasepsi KB Pascasalin dengan Metode Kontrasepsi Jangka Panjang di Kecamatan Rantau Utara Tahun 2021. *Journal of Healthcare Technology and Medicine*, 7(2), 1470-1484.
- Rahmatiqah, C., & Patricia, H. (2019). Faktor Internal Pemilihan Kontrasepsi pada Akseptor KB Baru di Kota Padang. Prosiding Seminar Nasional Kesehatan Masyarakat Universitas Muhammadiyah Surakarta 2019.
- Rahmi, A. A., & Hadi, E. N. (2020). Determinan Pemilihan Implant Pada Pasangan Usia Subur Di Kecamatan Medan Petisah. *Perilaku Dan Promosi Kesehatan: Indonesian Journal of Health Promotion and Behavior*, 2(2), 7.
- Rizaldi, N. (2021). Hubungan Karakteristik Akseptor KK Suku Madura dengan Pemilihan Jenis Kontrasepsi di Puskesmas Omben Kabupaten Sampang. *Jurnal Sehat Mandiri*, 16(1), 58-71.
- Suryanti, Y. (2019). Fakto-faktor yang berhubungan dengan penggunaan metode kontrasepsi jangka panjang wanita usia subur. *Jambura Journal of Health Sciences and Research*, 1(1), 20-29.
- Wijayanti, U. T. (2021). Faktor-Faktor yang Berhubungan dengan Penggunaan Metode Kontrasepsi Tradisional. *Jurnal Promosi Kesehatan Indonesia*, 16(1), 14-22.



KNOWLEDGE AND ATTITUDE WITH ADHERENCE TO FE TABLET CONSUMPTION IN ANEMIC ADOLESCENT GIRLS

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Abstract

Background: Iron anemia could be prevented through the administration of Fe tablets (TTD). Several studies had shown that one of the obstacles often encountered in the Fe tablet administration program was the problem of compliance. The low compliance of Fe tablets consumption in adolescent girls was influenced by several factors, one of which was the knowledge of female students regarding the benefits of consuming Fe tablets. Knowledge affected the attitudes and behavior of adolescents in choosing food, consuming Fe tablets supplementation, and further affected the overall nutritional condition of individuals including the condition of anemia status. **Objective:** This study aimed to demonstrate the connection between attitudes and knowledge about adherence to Fe tablets use in anemic adolescents at Pondok Pesantren Mambaus Sholihin, Gresik District, East Java. **Methods:** This type of research was quantitative research with a cross-sectional design, sampling using the total sampling method. Method in this research was an analytical observational study with a cohort retrospective design. The samples in this study were 81 adolescent girls aged 15-17 years who experienced anemia. The variables used in this study were knowledge, attitude and compliance. The instruments used were questionnaires and checklist forms. Compliance with Fe tablet consumption was carried out for the last 3 months. **Results:** Most respondents had sufficient knowledge related to anemia and Fe tablets around (31.1%) and most responders had a positive attitude of (56.8%) most respondents were not compliant with the consumption of Fe tablets by (58.0%). After the chi square test, the significance value ($p=0.002$) was obtained, which means that statistically there is a significant relationship between knowledge and Fe tablet consumption, and ($p=0.000$) there is a significant relationship between attitude and Fe tablet consumption. **Conclusion:** The study concluded that among teenage girls attending the Mambaus Sholihin Islamic Boarding School, there was a relationship between knowledge and attitude regarding the intake of Fe tablets.

Keywords: knowledge, attitude, practice, anemia, Fe tablets, adolescent

INTRODUCTION

According to the World Health Organization (WHO), the prevalence of anemia in the world is around 40-88%, while in developing countries 30% of the population experiences anemia, one of which is Indonesia (Andriani et al., 2021). In Indonesia, anemia is a serious health issue in adolescent girls, which is 47.9%.

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In Indonesia, adolescent girls' anemia prevalence aged 15-24 years is 27.2%, while in adolescent boys it is 20.3%. Based on Basic Health Research (RISKESDAS) in 2018, the incidence of anemia in the age range of 15-24 years in Indonesia was 32% (Ramlah et al., 2022).

Anemia is a condition where the hemoglobin (Hb) level is less than usual in the blood, which in adolescent women is normal hemoglobin 12-15 g/dl. Anemia in adolescent girls is brought on by a deficiency of nutrients that are necessary for the synthesis of hemoglobin, one of which is iron (Junita and Wulansari, 2021). This is because adolescent girls lose iron (Fe) during menstruation so they need to consume more iron (Fe) (Budiarti et al., 2021). Another thing that can cause anemia is the behavior of adolescent girls who eat more plant-based foods, resulting in insufficient daily iron intake (Budiarti et al., 2021) and consume foods that interfere with the iron absorption process simultaneously such as coffee and tea (Junita and Wulansari, 2021).

In anemia, there are different causative factors experienced by adolescent girls. Several studies also mention the factors that cause anemia in adolescent girls, according to (Anggoro, 2020) there is an influence between knowledge and the prevalent of anemia in class X adolescent girls. Other nutrients, like protein, also have a substantial impact on the body's ability to transfer iron. A low protein diet will cause the transit of iron to be delayed, leading to an iron shortage and anemia.

Iron anemia can be prevented through the administration of Fe tablets, education, and efforts related to increasing iron intake, controlling infections, and fortification of iron and protein in food (Putra et al., 2020). To overcome the problem of anemia, the Indonesian government through the Ministry of Health provides an iron supplement program targeting adolescent girls. Several studies show that one of the obstacles that is often encountered from the Fe tablet administration program is the problem of compliance (Setyaningtyas et al., 2020).

Compliance in consuming Fe tablets is one of the factors that is confirmed to be most significant for the success of the Fe tablet supplementation program, as well as the provision of Fe tablets and their distribution system. The understanding of female students about the advantages of taking Fe tablets is one of the variables influencing the low compliance of adolescent girls with Fe tablet use. Knowledge



will affect the attitudes and behavior of adolescents in choosing food, consuming Fe tablets, and will further affect the overall nutritional condition of individuals including the condition of anemia status. The aim of the research was to ascertain whether there is a relation between knowledge and attitudes and compliance with Fe tablet consumption in anemic adolescent girls.

METHOD

An observational analytical research design was employed in this study with the population being adolescent girls of MA Pondok Pesantren Mambaus Sholihin Gresik District, East Java. The analysis used in this research is quantitative analysis. This research was conducted in September 2023 and the sampling method used non probability sampling, the number of samples was 81 people with purposive sampling method. The variables used in this study were knowledge, attitude and compliance. Filling out questionnaires and gathering check list forms were the methods used to obtain data. The Fe tablet consumption checklist form was observed for 3 months. The criteria taken were anemic adolescent girls at the Senior High School (MA) level in Gresik District, East Java, who were willing to fill out a questionnaire sheet in September 2023. The ethical clearance number for this study was 301/EC/KEPK/FKUA/2023. The collected data were recorded for entry and processed using Microsoft Excel and SPSS2.5. Data were analyzed univariately and bivariately in SPSS 2.5 using the chi square test with a 95% confidence level.

RESULT AND DISCUSSION

Result

Adolescent girls of Pondok Pesantren Mambaus Sholihin Gresik District, East Java in this study were taken in grade 11. In general, the majority of anemic adolescent girls are at the age of 17 years. Most people who are anemic in adolescent girls have a hemoglobin level of 11.9 g/dl.

Table 1 Sample distribution based on hemoglobin level

Hemoglobin Level	Frequency (f)	Percentage (%)
8-<9	1	1.20
9-<10	4	5.00
10-<11	18	22.20
11-<12	58	71.60
Total	81	100.00

Univariate Analysis

Table 2 Frequency Distribution Based on Adolescents' Knowledge About Anemia and Fe Tablets at Mambaus Sholihin Islamic Boarding School, Gresik Regency, East Java

Level of Knowledge	Frequency (f)	Percentage (%)
Good	22	27.20
Sufficient	26	32.10
Less	33	40.70
Total	81	100.00

According to the above table 2, it is known that the knowledge of adolescent girls in the good category is 22 respondents (27.2%), the knowledge of adolescent girls in the sufficient category is 26 respondents (32.1%), while the knowledge of adolescent girls in the poor category is 33 respondents (40.7%).

Table 3 Frequency Distribution Based on Adolescents' Attitudes About Anemia and Fe Tablets at Mambaus Sholihin Islamic Boarding School, Gresik Regency, East Java

Attitude	Frequency (f)	Percentage (%)
Positive	46	56.80
Negative	35	43.20
Total	81	100.00

According to the above table 3, it is known that 15 respondents (18.5%) represent the attitudes of teenage girls in the negative group, whereas 66 respondents (81.5%) represent the attitudes of adolescents in the positive category.

Table 4 Frequency Distribution Based on Adolescent Compliance Consuming Fe Tablets at Mambaus Sholihin Islamic Boarding School, Gresik Regency, East Java

Pratice	Frequency (f)	Percentage (%)
Compliant	34	42.00
Not Compliant	47	58.00
Total	81	100.00

According to the above table 4, it is known that 34 respondents (42.0%), or teenage girls, complied, while 47 respondents (58.0%) did not.

Bivariate Analysis

Table 5 Relationship between Knowledge and Attitudes Related to Anemia and Fe Tablets in Anemic Adolescent Girls at Mambaus Sholihin Islamic Boarding School

Knowledge	Attitudes				Total		P value
	Positive		Negative		f	%	
	f	%	f	%			
Good	17	77.3	5	22.7	22	100	0,038
Sufficient	15	57.7	11	42.3	26	100	
Less	14	42.4	19	57.6	33	100	
Total	66	81.5	15	18.5	81	100	

According to the above table 5, it is known that 22 respondents (100%) with good knowledge, obtained 17 respondents (77.3%) have a positive attitude and 5 respondents (22.7%) have a negative attitude, there are 26 respondents (100%) with sufficient knowledge, obtained 15 respondents (57.7%) have a positive attitude and 11 respondents (42.3%) have a negative attitude, while 33 respondents (100%) have poor knowledge, obtained 14 respondents (42.4%) have a positive attitude and 19 respondents (57.6%) have a negative attitude.

After bivariate analysis using the chi-square test, a p value of 0.038 was acquired which is less than α 0.05. Consequently, it may be stated that knowledge has a significant relation with the attitude of anemic adolescent girls regarding anemia and Fe tablets at Pondok Pesantres Mambaus Sholihin Gresik Regency.

Table 6 Relationship between Knowledge of Anemic Adolescent Girls and Compliance with Taking Fe Tablets at Mambaus Sholihin Islamic Boarding School

Level of Knowledge	Compliant		Not Compliant		Total		p value
	f	%	f	%	f	%	
Good	16	72.7	6	27.3	22	100	0,002
Sufficient	6	23.1	20	76.9	26	100	
Less	12	36.4	21	63.6	33	100	
Total	34	42.5	47	58.0	81	100	

According to the above table 6, it is known that 22 respondents (100%) with good knowledge, obtained as many as 16 respondents (72.7%) in the compliant category and 6 respondents (27.3%) in the non-compliant category, there were 26 respondents (100%) with sufficient knowledge, obtained as many as 6 respondents (23.1%) in the compliant category and 20 respondents (76.9%) in the non-compliant category, while 33 respondents (100%) with poor knowledge, obtained

as many as 12 respondents (36.4%) in the compliant category and 21 respondents (63.6%) in the non-compliant category.

After conducting a bivariate analysis using the chi-square test, a p value of 0.002 was acquired, which is less than α 0.05. Consequently, it may be stated that knowledge has a significant relationship with the compliance of anemic adolescent girls consuming Fe tablets at Pondok Pesantres Mambaus Sholihin Gresik District.

Table 7 Relationship between Attitudes of Anemic Adolescent Girls and Compliance with Taking Fe Tablets at Mambaus Sholihin Islamic Boarding School

Attitude	Compliant		Not Compliant		Total		p value
	f	%	f	%	f	%	
Positive	32	69.6	14	30.4	46	100	0,000
Negative	2	5.7	33	94.3	35	100	
Total	34	42.0	47	58.0	81	100	

Based on the table above, it is known that 46 respondents (100%) with a positive attitude, obtained as many as 32 respondents (69.6%) in the compliant category and 14 respondents (30.4%) in the non-compliant category, although there are 35 respondents (100%) with a negative attitude, obtained as many as 2 respondents (5.7%) in the compliant category and 33 respondents (94.3%) in the non-compliant category.

After conducting a using the chi-square test in bivariate analysis, a p value of 0.000 was obtained which was less than α 0.05. Consequently, it may be stated that attitude has a significant relationship with the compliance of anemic adolescent girls consuming Fe tablets at Pondok Pesantres Mambaus Sholihin, Gresik Regency.

Discussion

Relationship between Knowledge and Attitude related to Anemia and Fe Tablets

The results showed that most of the santri who had good and sufficient knowledge had a positive attitude towards anemia and Fe tablets. Based on the statistical test results, there is a significant relationship between knowledge and attitude towards anemia. Knowledge is one of the predisposing factors, which is a characteristic of an individual or population that affects behavior before and during



the behavior (Murti, 2018). This study is consistent with other studies (Nasution, IPA & Manik, BSIG 2020), that a good level of knowledge can influence the way respondents behave. Characterized by the results of respondents with a good level of knowledge of adolescents followed by a good attitude as well.

A causal factor in engaging in or refraining from specific acts is one's attitude. Attitudes can be influenced by the impact of other significant individuals, one's personal experience, culture, mass communication, various institutions such as religious and educational institutions, and the impact of affective factors (Murnariswari et al., 2021). Research conducted by (Risva and Rahfiludin, 2016) revealed that respondents with positive attitudes were 2.2 times more likely to take blood supplement tablets than respondents with unfavorable attitudes. In addition, the results of research (Murnariswari et al., 2021) demonstrate the existence of a substantial link between attitude and one's compliance with taking blood tablets (p -value = 0.000), with most of those surveyed possessing a positive attitude (good) obedient in taking blood tablets. The attitude of adolescent girls is a very important domain in increasing compliance in taking Fe tablets.

Relationship between Knowledge and Adherence to Fe Tablet Consumption

Based on the results of the study, most of the respondents' lack of anemia knowledge had a low level of compliance. Statistical test results showed a significant relationship between knowledge and the use of Fe tablets. Perception of an object leads to knowledge acquisition, which is the outcome of knowing. Sight, hearing, smell, taste, and touch are the five senses by which humans perceive their environment (Notoatmodjo, 2012). The greater the degree of education, the more easily information can be absorbed so that anemia and health knowledge will be better. Respondents in this study belong to the group of women of childbearing age, have the same level of education, but information about anemia is different, this can be influenced by other factors such as the formation obtained and the existing media. The intended media are radio television, newspapers, magazines, while the information encountered in everyday life is obtained from observing the outside world around us and passed on through communication.

The findings of this investigation align with previous research Runiari and Hartati's (2020) research which produced data on the most respondents who had

good knowledge, namely (34.2%). Formal education is the main factor that influences a person's knowledge including knowledge about anemia and health. This research is supported by (Runiari and Hartati, 2020) that at the level of poor knowledge, it was found that the level of compliance with taking pills indicated as blood supplements were mostly in the low compliance category, on the other hand, at the level of good knowledge, it was found that most respondents had a moderate compliance category.

Relationship between Attitude and Adherence of Fe Tablet Consumption

Based on the results of the study, the majority of respondents in this study who had a positive attitude also had a high level of compliance in consuming Fe tablets. Statistical test results showed a significant relationship between attitude and adherence to Fe tablet consumption. Notoatmodjo (2012) states that attitude is the willingness or willingness to act rather than the application of certain motives. Even now, attitude is a closed response or response to a stimulant or thing. It can be said that the form of attitude cannot be seen directly, but can be interpreted from behavior that is initially closed. Attitudes clearly show the importance of appropriate responses to certain stimuli, which are sentimental reactions in daily living to stimulation from society. Attitude is a person's closed response or response to a stimulant or thing. Attitude is not yet a deed or action, but a tendency to behave. Even now, attitude is a closed response, not yet an open response or open behavior (Notoatmodjo, 2012).

The findings of this investigation align with previous research (Sari, 2020) which produced data on most respondents who had a positive attitude, namely (85.5%). This research is also supported by (Sari, 2020) which found that there is a relationship between attitude and compliance with Fe tablets consumption. In this study, the average positive attitude of female students (81.5%) behaved well in consuming TTD as much as (48.5%). The tendency to act, attitude is a state of being prepared or eager to act, someone who has a positive attitude has a tendency to do positive behavior as well.

This research is also supported by Azzahra quoted in (Sari, 2020) that most respondents have a good attitude 12 respondents (30%). So there is a relationship with compliance with taking Fe tablets. Knowledge is a major factor in determining



attitude, therefore an individual's attitude regarding the significance of taking Fe pills has been shaped by his knowledge. So someone's good attitude is due to that person who does not want to experience anemia, namely by obediently taking the iron tablets given.

CONCLUSION AND SUGGESTION

Drawing conclusions from the data analysis of the results of this study, it can be said that most of the total hemoglobin levels of adolescent girls at the Mambaus Sholihin Islamic Boarding School in Gresik Regency are <10 gr/dl. There is relationship between knowledge and attitude with the consumption of blood supplement

DECLARATION

Conflict of Interest

Author declare there is no conflict of interest in this research

Authors' Contribution

All author contribute from concept in writing draf article.

Ethical Approval

Research Ethics Committee of Faculty of Medicine, Universitas Airlangga.
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Data Availability

The data supporting this research are available from the authors on reasonable request.

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REFERENCE

- Andriani, L., Nugrahmi, M.A., Amalia, M. dan Yunura, I., 2021. Pendidikan Kesehatan Tentang Gizi Dan Pengaruh Anemia Pada Remaja Di Smk Muhammadiyah Kota Bukittinggi. *Jurnal Salingka Abdimas*, 1(1), hal.18–21.
- Anggoro, S., 2020. Faktor-faktor yang mempengaruhi kejadian anemia pada siswi sma. *Jurnal Ilmiah Permas*, 10(3), hal.341–350.

- Budiarti, A., Anik, S. dan Wirani, N.P.G., 2021. Studi Fenomenologi Penyebab Anemia Pada Remaja Di Surabaya. *Jurnal Kesehatan Mesencephalon*, 6(2).
- Junita, D. dan Wulansari, A., 2021. Pendidikan Kesehatan tentang Anemia pada Remaja Putri di SMA N 12 Kabupaten Merangin. *Jurnal Abdimas Kesehatan (JAK)*, 3(1), hal.41.
- Murnariswari, K., Nuzrina, R., Dewanti, L.P. dan Nadiyah, N., 2021. Hubungan Sikap Dan Pengetahuan Siswi Terhadap Kepatuhan Konsumsi Tablet Tambah Darah. *Jurnal Riset Gizi*, 9(1), hal.22–27.
- Murti, B. 2018. Teori Promosi dan Perilaku Kesehatan. Colomadu: Program Studi Ilmu Kesehatan Masyarakat.
- Nasution, IPA & Manik, BSIG. 2020. Tingkat Pengetahuan, Sikap, dan Perilaku Remaja tentang Kesehatan Reproduksi di SMK Negeri 8 Medan. *SCRIPTA SCORE Scientific Media Journal*, Vol. 2 (1):38-43.
- Notoatmodjo, S. 2012. Metode Penelitian Kesehatan. Jakarta: PT Rineka Cipta.
- Putra, K.A., Munir, Z. dan Siam, W.N., 2020. Hubungan Kepatuhan Minum Tablet Fe dengan Kejadian Anemia (Hb) pada Remaja Putri Di SMP Negeri 1 Tapan Kabupaten Bondowoso. *Jurnal Keperawatan Profesional*, 8(1), hal.49–61.
- Ramlah, Ida, A.S., Saadong, D. dan Sabur, F., 2022. Hubungan Pengetahuan dan Sikap dengan Kepatuhan Mengonsumsi Tablet Fe pada Remaja Putri Di Wilayah Kerja Puskesmas Minasa UPA Makassar. *Journal of the Japan Welding Society*, 3(7), hal.7195–7200.
- Risva, T.C. dan Rahfiludin, M.Z., 2016. Faktor-Faktor Yang Berhubungan Dengan Kebiasaan Konsumsi Tablet Tambah Darah Sebagai Upaya Pencegahan Anemia Pada Remaja Puteri (Studi Pada Mahasiswa Tahun Pertama Di Fakultas Kesehatan Masyarakat Universitas Diponegoro). *Jurnal Kesehatan Masyarakat*, 4(3), hal.2356–3346.
- Runiari, N. dan Hartati, N.N., 2020. Pengetahuan Dengan Kepatuhan Minum Tablet Tambah darah Pada Remaja Putri. *Jurnal Gema Keperawatan*, 13(2), hal.103–110.
- Sari, D.P., 2020. Hubungan Pengetahuan dan Sikap dengan Kepatuhan Minum Tablet Fe pada Remaja Putri. *Jurnal Keperawatan*, (4), hal.328–336.
- Setyaningtyas, S.W. et al., 2020. Gambaran Pengetahuan, Sikap, dan Perilaku Kader Palang Merah Remaja (PMR) di SMAN 2 Lamongan Terhadap Program Suplementasi Tablet Tambah Darah. *Amerta Nutrition*, 4(3), hal.213.



HUSBANDS' PERCEPTIONS AND EXPERIENCES IN CARING FOR WIFE WITH CERVICAL CANCER: A QUALITATIVE PHENOMENOLOGICAL STUDY

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Abstract

Background: Cervical cancer ranks fourth for cancer that is often experienced by women worldwide and all ages with an estimated 604,127 new cases (6.5%), 342,000 deaths and about 90% of these cases occurred in low- and middle-income countries in 2020. In terms of psychoneuroimmunology, physical and emotional stress can have an impact on the immune system. Husband support with anxiety levels in cervical cancer patients undergoing chemotherapy, data was obtained that 7 out of 12 cervical cancer patients experience lower levels of anxiety when getting support from their husbands because patients feel more comfortable, calm and happy. This study aims to explore the perceptions and experiences of husbands while caring for their wives suffering from cervical cancer. **Method:** This research was conducted using qualitative methods with a phenomenological approach. The research subjects or informants in this study are husbands who treat wives with cervical cancer at Dr. Soetomo Surabaya Hospital who meet the inclusion and exclusion criteria. From the results of semi-structured interviews, the researcher took the following steps, organizing and preparing the data to be analyzed, reading and viewing all the data, coding all the data, using the coding as material for creating descriptions, connecting between themes, and providing interpretation and meaning about the theme. **Result:** In this study, researchers found four dominant perceptions of husbands caring for their wives who had cervical cancer. These perceptions are most participants did not know about cervical cancer, all participants felt negative emotions when they learned about the complaints experienced by wives, various forms of support were given by participants to wives, all participants hoped for the recovery of wives. In the section on husbands' experiences in caring for wives with cervical cancer, researchers found five experiences experienced by husbands. These experiences include: all participants' wives experienced bleeding complaints, all participants experienced changes in terms of conjugal sexual relations, most participants had bad concerns about wife disease, the majority of participants never used poly palliative or pain-free services, most participants hoped that administrative services at Dr. Soetomo Surabaya Hospital would be faster. **Conclusion:** Cervical cancer affects and changes all aspects of women's lives and their families including for husbands of patients, therefore the care given to cervical cancer patients should be carried out holistically

Keyword : *Perception, Experience, Husband , Cervical Cancer*

INTRODUCTION

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Cervical cancer ranks fourth for cancer that is often experienced by women worldwide and all ages with an estimated 604,127 new cases (6.5%), 342,000 deaths and about 90% of these cases occurred in low- and middle-income countries in 2020 (WHO, 2022). Data from the Global Burden of Cancer Study (Globocan) states that in 2020, the incidence of cervical cancer in the world is 24.4 million per 100,000 population with a mortality rate of 14.4 million per 100,000 population (WHO, 2020b).

According to Riskesdas 2013 data, the number of cervical cancer patients in Indonesia is quite high, 98,692 people (Kemenkes RI, 2017). In Indonesia, there were 36.633 million (9.2%) new cases, with a death rate of 21.003 million (9.0%). The figures show that there are 50 cases detected every day with more than two deaths every hour (WHO, 2020c). Cancer prevalence increased from 1.4% to 1.8% (Kemenkes RI, 2021). Cervical cancer ranks second in Indonesia after breast cancer with an incidence rate of 9.3% and a mortality rate of 8.8% (WHO, 2020a).

Based on data released by the East Java Provincial Health Office, in 2019, the number of cervical cancer patients reached 13,078 cases as the first rank and followed by breast cancer with 12,186 cases (Kominfo Jatim, 2020). Meanwhile, based on preliminary studies conducted by looking at medical record data at Dr. Soetomo Surabaya Hospital in the last five years, the number of cervical cancer cases ranked first compared to other gynecological oncology cases at the Obstetric Gynecology Inpatient Installation (Irna Obgin). In 2018 there were 1,892 cases, an increase in 2019 to 2,483 cases. In 2020 where the COVID-19 pandemic occurred, cervical cancer cases decreased quite drastically to 1,493 cases, then further dropped to 1,062 cases in 2021. The decrease in cases was due to a decrease in the number of patient visits to Dr. Soetomo Surabaya Hospital. However, there was another increase in 2022 to 1.251 cases.

Most cervical cancer patients come at an advanced stage, III B stadium and are dominated by the age of 20-59 years where at that age is still in the period of active sexual intercourse. The delay in cervical cancer patients coming for treatment is often caused by the patient's ignorance about the abnormalities of the reproductive organs experienced. This will have an impact on treatment that can no longer provide maximum results resulting in a higher risk of death (WHO, 2017).



In terms of psychoneuroimmunology, physical and emotional stress can have an impact on the immune system. Therefore, in the process of cervical cancer treatment, patients should not experience physical or emotional stress by means of good coping mechanisms. In addition to the coping mechanism that makes cervical cancer patients survive, family support. The existence of family support will have an impact on increasing self-confidence in patients in facing the treatment process of their disease (Sobar and Suhartini, 2022). There are three biggest fears when someone is diagnosed with cervical cancer are 1) worrying about what will happen to their family, 2) fear of getting sick 3) fear of disease progression (Hanprasertpong *et al.*, 2017). Therefore, social support in the form of emotional support and practical support can be used as a capital for resistance to anxiety against illness (Bernad *et al.*, 2010). Furthermore, a patriarchal culture dominates Indonesian society, causing women to rely on their husbands for health and welfare. promoting women's autonomy and spouses' involvement in women's health services are viable ways for promoting health-care consumption (Thapa and Niehof. 2013). Decisions about reproductive health in the family are influenced by socio-cultural, economic, and power dynamics inside the family (Kuponiya and Alade, 2007).

Based on research by Suyanti *et al.* (2018) on husband support with anxiety levels in cervical cancer patients undergoing chemotherapy, data was obtained that 7 out of 12 cervical cancer patients experience lower levels of anxiety when getting support from their husbands because patients feel more comfortable, calm and happy. To optimize services, it is necessary to involve the husband of the sufferer because the husband is the closest person and gets influence in his life due to the illness suffered by his wife. This study aims to explore the perceptions and experiences of husbands while caring for their wives suffering from cervical cancer. Knowledge of husbands' perceptions and experiences in caring for wives can help relevant stakeholders to increase the husband's participation as a support system for his wife suffering from cervical cancer.

METHOD

This research was conducted using qualitative methods with a phenomenological approach. The phenomenological approach is an approach in research that explores a social phenomenon about human perception and experience, in this case regarding the experience of husbands caring for women with cervical cancer (Indryani *et al.*, 2022). The research subjects or informants in this study are husbands who treat wives with cervical cancer at Dr. Soetomo Surabaya Hospital who meet the inclusion and exclusion criteria, as for the inclusion as follows: The husband of a cervical cancer patient who is undergoing treatment at Dr. Soetomo Hospital Surabaya, Willing to be a research participant, The husband accompanies the wife fully during the hospital treatment. And for the Exclusion Criteria is Husband of cervical cancer patient who does not speak Indonesian, Javanese and Madurese actively

The sampling technique used in this study was purposive sampling. Based on the criteria of inclusion and exclusion that have been determined, 7 respondents were selected who became participants/subjects in the study. Data collection in this study was conducted by semi structured interviews about husbands' perceptions and life experiences in caring for wives suffering from cervical cancer with recording instruments, notebooks, and interview guides. After the interview, the data obtained were then analyzed including organizing the data obtained, coding data, categorizing data, compiling thick descriptions, connecting between themes, and interpreting data.

RESULT AND DISCUSSION

1) Characteristics of Research Participants

The age of participants ranged from 28 to 55 years. The education level of most high schools is 4 people, then junior high school 2 people and elementary school 1 person. The participants' jobs are all private, manual labor, workshops, meatball sellers, breeders, rice sellers, selling car spare parts and building porters. All participants were Javanese with Indonesian and Javanese skills that could be understood by researchers. Almost all participants with first marital status, only one participant with second marriage status with wife. Of the 7 participants, 3 people were couples with stage IIB cervical cancer, 3 couples



with stage IIIB cervical cancer and 1 person were couples with stage IVB cervical cancer.

The length of time diagnosed with cervical cancer in the participant partner varies from a matter of days and some even have been diagnosed with cervical cancer for a year. The visit of participants and wives to Dr. Soetomo Surabaya Hospital was the second time and some even more than ten times. In the current treatment, the length of days of treatment for the participants' wives at Dr. Soetomo Surabaya Hospital during data collection varies from the first day of care to the fifteenth day of care. The length of time the wife was treated also indicates the length of time participants in accompanying the wife. Almost all participants used health insurance, BPJS, but there was one participant who still used health insurance from the local district government, JPK (Jember Pasti Keren).

2) Husband's perception of wives with cervical cancer

After interviews with research participants, it can be concluded that some of the dominant perceptions of a husband caring for a wife who has cervical cancer. These perceptions are as follows.

a) Participants did not know about cervical cancer

Participants' knowledge was limited about cervical cancer. Participants did not know about the definition, causes, location, treatment and prevention of cervical cancer. As for some participants who could answer questions about cervical cancer, but were not sure of the answers. Knowledge about cervical cancer includes causes of cervical cancer, symptoms and diagnosis, methods of diagnosis, prevention and treatment, public awareness and education.

Ignorance of the importance of early detection of cervical cancer can lead to an increase in the number of women of childbearing age suffering from the disease. This is also influenced by the lack of activity in accessing information available through print and electronic media in the form of articles, news, discussions, expressing opinions, and so on (Sholikah, 2023). Knowledge is an important domain for the development of open behavior, and behavior-based behavior is often long-term (Sunaryo, 2017).

The husband's knowledge about cervical cancer has an impact on behavior in conducting cervical cancer screening examinations such as IVA examinations or pap smear tests. The study found that none of the participants' wives underwent cervical cancer screening. This is in accordance with the findings of research conducted by Rumaisha *et al.* (2023) which found that there is an influence of knowledge and support of husbands on IVA examination behavior.

- b) Participants felt negative emotions when they learned of the complaints experienced by their wives

Participants felt devastated, pity, shocked, sad, confused, worried, silent when they learned of the complaints experienced by their wives. According to the study of de Groot *et al.* (2005), women with cervical cancer and their partners express similar levels of concern regarding the disease and its treatment, assessment of sexuality, prognosis, and communication with the treatment team in terms of current concerns. Couples with advanced cancer show greater concern than couples with early-stage cancer. Although women with cervical cancer report more fatigue and disease disorders than men, both experience impairments in relationships, intimacy, and instrumental life.

In line with the negative emotions of participants, Oldertroen Solli *et al.*, (2019) found that men's experiences as caregivers and partners of women treated for cervical cancer have many aspects, including emotional and practical components. Loneliness, changes in sexual interactions, and the same feeling of vulnerability are the three main consequences that are especially important for men who have cervical cancer.

Concerns differ slightly between affected women and their male partners as time passes post-treatment. Cervical cancer patients, as well as their male partners, should receive effective psychosocial support. As major clinical discoveries advance, support and information must address the most pressing issues facing patients and their partners. This is because family strength refers to family resilience to stress and adaptive resources, as well



as how family internal strength and resilience can help them face life's challenges (Oldertrøen Solli *et al.*, 2019).

c) Various forms of support were provided by participants to wives

Participants provided support in different forms while caring for their wives as cervical cancer patients. Participants provided support by reporting to the doctor if the wife experienced pain, compromising and discussing with the wife, accompanying the wife, asking friends and looking at the internet, taking care of the wife's food, reminding worship to God.

When a person responds psychologically to his illness, he will go through five phases of self-acceptance, denial, anger, bargaining, depression, acceptance. The process of adaptation to changes that occur to maintain a healthy and balanced condition (Alligood, 2017). Positive coping management in participants was related to age, length of diagnosis, length of treatment, emotional and financial maturity.

Kim and Ahn (2022) discovered how breast cancer patients feel social support, family effort, and family functioning. Not only are families a major source of physical, mental, and social support for gynecologic cancer patients, but they can also be active participants in their treatment and recovery. From the results of research conducted by researchers, all participants gave full support to wives as cervical cancer patients, even not only from husbands, support came from closest family, friends and even health workers. Husband support is a form of care and affection. The husband has a considerable share in determining the health status of the mother. Good husband support can provide good motivation for mothers to check their reproductive health.

Meanwhile, one of the participants deliberately kept his wife's health secret, only his partner and closest family knew about cervical cancer suffered by the participant's wife. Support from family, friends or outside parties will affect a person's health behavior both in overcoming the disease and adapting to the conditions faced according to the self-acceptance phase which will further affect the duration of therapy. Because certain conditions such as cancer, can add to the burden, making patients and their partners

more vulnerable, the influence of intimate partners and close friends has great potential to affect quality of life (Morgan *et al.*, 2011).

d) Participants hoped for the recovery of their wives

Shally and Prasetyaningrum (2017) explained that cervical cancer suffered by his wife caused participants to be unable to carry out daily activities as usual, participants' daily activities became reduced in frequency. Participants were more resigned to God Almighty for their health condition due to the illness suffered by their wives. Despite their resignation, participants had great confidence and optimism that their wife's illness would be cured. Participants tried to seek treatment to cure diseases such as chemotherapy, radiation, and traditional medicine.

Healing has something to do with a person's resilience or defense, where there are two influencing factors, internal factors and external factors. Internal factors that influenced participants included self-confidence and optimism about their ability to help with healing. In addition, participants' sense of obligation to take care of their children, as well as participants' desire to see their children succeed and prosper, became the impetus for participants to strive for healing. Other external factors that influence are family support and social environment (Shally and Prasetyaningrum, 2017).

3) Husband's experience in caring for wives with cervical cancer

After interviews with research participants, it can be concluded that some of the experienced by husbands while caring for their wives who have cervical cancer.

a) Participants' wives had bleeding complaints

All of the participants' wives experienced bleeding complaints but the bleeding complaints felt were different, there was bleeding between menstrual cycles, bleeding after intercourse and bleeding spotting. In addition to bleeding complaints, most of the participants' wives experienced complaints of vaginal discharge. Vaginal discharge for a long time, a lot, some are clear and grainy. Complaints of pain were also felt by the participants' wives. Almost all of the participants' wives felt pain, only one participant's wife did not feel pain in her body. Then there were other complaints experienced by the participants' wives such as lumps in the lower



right abdomen, difficulty farting or bloating, slugging from the front (fistula), difficulty eating, difficulty defecating, complaints during urination and defecation, swollen legs, then from the results of the examination found white spots in the lungs and in the glands as well.

In general, precancerous lesions have not given symptoms. When it has become invasive cancer, the most common symptoms are bleeding (contact bleeding) and vaginal discharge. In advanced stages, symptoms can develop into low back or lower abdominal pain due to the pressure of the tumor in the pelvic area laterally until ureteral obstruction, even to oligo or anuria. Further symptoms can occur according to tumor infiltration into the affected organs such as vesicovaginal fistula, rectovaginal fistula, leg edema (Kemenkes RI, 2016b). However, many women ignore the initial complaints of cervical cancer such as bleeding after intercourse, pain when defecating, anemia and vaginal discharge that do not heal and do not feel the need to screen for cervical cancer because of their ignorance so that often the arrival of patients to health services is already in an advanced stage (WHO, 2017).

- b) Participants experienced changes in the sexual relationship of husband and wife

Changes in the aspect of conjugal sexual relations were experienced by all participants in connection with the condition of the wife's disease such as complaints of bleeding, pain during sexual intercourse, and vaginal discharge. Five categories of cancer-related couples' claims have been identified, such as concerns about: the function of the couple themselves; the well-being of the wife and the response to treatment; sexual activity of the partner; family and children's welfare; and the role of spouses in supporting their wives, Fletcher et al. (2010). Couples worry about changes in their sexual relationship with his wife. This covers many aspects of their sexual relationship, including quality, frequency, and lack of time to be intimate with their wives. Research conducted by Fletcher et al. (2010) is a study on breast cancer patients and their partners and found there was a change in the frequency of sexual activity.

Research by Setyowati *et al.* (2013) also discussed research that found seven themes of husbands' experiences with wives who have cervical cancer in meeting their sexual needs. The themes raised include: patterns of sexual relations after the wife is diagnosed with cervical cancer, reasons for not having sexual intercourse after the wife is diagnosed with cervical cancer. Overall, the phenomena found in this study provide an overview of the experiences and perceptions of husbands with cervical cancer regarding their sexual needs since their wives had cancer. Information support provided through counseling related to sexuality issues and emotional support from husbands is one form of health service that greatly affects the quality of life of husbands so as to encourage husband adaptation after wife is diagnosed with cervical cancer. Moreover, if there is a special study format on sexuality, it will help midwives in providing holistic care.

This is relevant to research conducted by researchers, changes in aspects of conjugal sexual relations experienced by all participants in connection with the condition of the wife's disease such as complaints of bleeding, pain during sexual intercourse, and vaginal discharge. Participants felt pity and worried that it would cause the severity of the wife's illness when having sexual intercourse. However, with smooth communication there are even participants who make jokes to their wives as cervical cancer patients can make wives entertained and feel that they still have value or meaning for participants. Changes experienced in terms of sexual relations do not make the couple reproach each other.

c) Participants worried about wife's illness

The participants' concerns were mostly that the wife died, something fatal happened, an emergency and did not recover. However, a small percentage of participants accepted the condition of the wife's illness as fate. In line with the results of research by Fletcher *et al.* (2010), married couples are concerned about their wife's response to medical care. They wanted more facts about the treatment and were very worried about the spread of cancer and it went undetected by the medical team, even when their wives were on active treatment. Couples' concerns about treatment and outcomes also



extend to the future of whether the cancer can be controlled if it recurs and where it will recur. Couples give psychological cues, evaluate themselves with self-deprecation, and worry about everything from the outcome of treatment to their ability to be supportive husbands.

d) Participants had never used polypalliative or pain-free services.

Participants never used the palliative or pain-free poly services available at RSUD Dr. Soetomo Surabaya. They never go to the service because there is no direction, get treatment from doctors and nurses in the room and the patient does not know there is a palliative or pain-free poly service. WHO categorizes palliative care as specialized medical care aimed at optimizing quality of life and alleviating the suffering of patients with serious illnesses according to Teoli *et al.* (2023). However, in this case there is a gap in the results of the study which states that almost all wives of patients as cervical cancer patients do not receive palliative services at Dr. Soetomo Surabaya Hospital.

Palliative care is usually carried out by a multidisciplinary team, which aims to alleviate all forms of suffering both physical, psychological and spiritual. Palliative care also pays attention to the patient's condition in the community, interpersonal relationships, financial resources and cultural dynamics. Palliative care providers use pharmacological and nonpharmacological therapies to relieve symptoms such as pain, dyspnea, nausea, anxiety, depression and fatigue based on Teoli *et al.* (2023).

Hospital programs can also vary, a patient must meet the criteria to be able to get palliative care. At Dr. Soetomo Hospital Surabaya, there are palliative service criteria, one of which is a pain scale worth 7-10 based on the Wong Baker FACES Pain Rating Scale, which is a calculation of pain scales created by Donna Wong and Connie Baker by looking at facial expressions that have been grouped into several levels of pain (Verizarie, 2020). There is a false belief circulating that palliative care is intended only for dying patients, patients who give up and the notion that palliative care hastens death by medicalizing the dying process. Research shows early use of palliative care can improve quality of life and prolong survival for patients

with advanced cancer. Teoli et al. (2023) mentioned that palliative care can align patient values and preferences for treatment and pay attention to the concerns and desires of family members which can be done in conjunction with curative care.

- e) Participants hoped that administrative services at Dr. Soetomo Surabaya Hospital would be faster

Participants hoped for improved services in the administration. Participants' expectations include faster queues, less long administration, and clearer, less long-winded. The participants' expectations for Dr. Soetomo Surabaya Hospital are closely related to the quality dimension of the hospital under KMKP (Quality and Patient Safety Committee). Participants as the patient's family not only assess the patient's recovery in the end, but participants also assess when the service process is provided. Based on Permenkes RI No. 80 (2020), it is explained that hospitals are obliged to improve the quality and maintain hospital service standards through the implementation of good hospital quality governance, for the implementation of certain functions in hospitals, committees can be formed according to the needs and developments of science and technology in order to improve the quality of service and patient safety.

The dimensions of health service quality for health service recipients are more related to the responsiveness of officers in meeting patient needs, smooth communication between officers and patients and families, the concerns and hospitality of officers in serving patients for recovery. For health service providers, the quality dimension of health services is more related to the development of the latest science and technology and professional autonomy in providing services according to patient needs (Mamik, 2017). As in this study, most participants hope that the administrative process runs faster so that it is necessary to apply the latest science and technology in order to achieve patient and family satisfaction so that administrative services that are in accordance with the expectations of patients and families will be achieved.



CONCLUSION AND SUGGESTION

In this study, researchers found four dominant perceptions of husbands caring for their wives who had cervical cancer. These perceptions are most participants did not know about cervical cancer, all participants felt negative emotions when they learned about the complaints experienced by wives, various forms of support were given by participants to wives, all participants hoped for the recovery of wives.

In the section on husbands' experiences in caring for wives with cervical cancer, researchers found five experiences experienced by husbands. These experiences include: all participants' wives experienced bleeding complaints, all participants experienced changes in terms of conjugal sexual relations, most participants had bad concerns about wife disease, the majority of participants never used poly palliative or pain-free services, most participants hoped that administrative services at Dr. Soetomo Surabaya Hospital would be faster.

Midwives are expected to improve effective communication skills to patients and families so that the information provided can be well understood so that the family, especially the husband, can be a support system for patients. Dr. Soetomo Surabaya Hospital should pay attention to the flow of patient services in order to achieve optimal service effectively and efficiency of service time. Improvement and addition of facilities and infrastructure should also be considered by Dr. Soetomo Surabaya Hospital as a form of healing environment that also helps cure cervical cancer patients.

DECLARATION

Conflict of Interest

Author declare there is no conflict of interest in this research.

Authors' Contribution

All author contribute from concept until writing draff article.

Ethical Approval

Health Research Ethics Committee at Dr. Soetomo Hospital, Surabaya with number 2243/104/3/VI/2023.

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The data supporting this research are available from the authors on

reasonable request.

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REFERENCE

- Alligood, M.R. (2017) *Nursing Theorists and Their Work - E-Book: Nursing Theorists and Their Work - E-Book*. Elsevier Health Sciences. pp. 2-9.
- Bernad, D., Zysnarska, M. and Adamek, R. (2010) 'Social support for cancer— Selected problems', *Reports of Practical Oncology & Radiotherapy*, 15(2), pp. 47–50.
- Hanprasertpong, J. et al. (2017) 'Fear of cancer recurrence and its predictors among cervical cancer survivors', *Journal of Gynecologic Oncology*, 28(6), pp. 1– 11.
- Indryani, I. et al. (2022) *Metodologi Riset Ilmu Kebidanan*. Yayasan Kita Menulis. pp. 1-2.
- Kemendes RI (2017) *Deteksi Dini “ Wujudkan Wanita Indonesia Bebas Kanker Serviks dan Payudara “*, Direktorat P2PTM.
- Kemendes RI (2021) *Laporan Kinerja Direktorat Jenderal Pencegahan dan Pengendalian Penyakit Tahun 2021*. Jakarta: Kemendes RI.
- Kominfo Jatim (2020) *Profil Kesehatan Kota Surabaya 2020 (1)*.
- Kuponiya, F.A. dan Alade, O.A. (2007) 'Gender Dynamics dan Reproduction Decision Making among Rural Families in Orire Local Government Area of Oyo State, Nigeria', *Journal of Social Sciences*, 15(2), pp. 101–104.
- Mamik (2017) *Manajemen Mutu Pelayanan Kesehatan dan Kebidanan*. 1st edn. Sidoarjo: Zifatama Jawara. pp. 159.
- Sholikah, S.M. (2023) *Deteksi Dini Kanker Serviks*. Pekalongan: NEM. pp. 3.



- Sobar, S. and Suhartini, L. (2022) 'Pengaruh Coping, Dukungan Keluarga dan Motivasi terhadap Kualitas Hidup Pasien Kanker Serviks', *Journal of Public Health Education*, 1(4), pp. 242–254.
- Sunaryo (2017) *Psikologi Untuk Keperawatan*. Jakarta: EGC. pp.6-25.
- Suyanti, L.P., Sriasih, N.G.K. and Armini, N.W. (2018) 'Hubungan Antara Dukungan Suami Dengan Tingkat Kecemasan Pada Pasien Kanker Serviks Yang Menjalani Kemoterapi Di Rumah Sanglah Tahun 2013', pp. 6.
- Thapa, D.K. and Niehof, A. (2013) 'Women's Autonomy and Husbands' Involvement in Maternal Health Care in Nepal'. *Social Science and Medicine* 93, 1–10.
- Verizarie, R. (2020) *Skala Nyeri: Jenis Dan Cara Menghitung (Lengkap)*
- WHO (2017) *Human papillomavirus vaccines: WHO position paper, May 2017*. pp. 241-268.
- WHO (2020a) *Cancer Indonesia 2020 country profile*.
- WHO (2020b) *GLOBOCAN 2020: New Global Cancer Data | UICC*
- WHO (2020c) *International Agency for Research on Cancer: Indonesia*. WHO: GCO.
- WHO (2022) *Cervical cancer*. Fact Sheets.



INDONESIA'S EFFORT TO MEET WHO RECOMMENDATION ON EXCLUSIVE BREASTFEEDING 2012-2023

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Abstract

Background: The World Health Organization (WHO) provides policy recommendations related to exclusive breastfeeding that can be adopted by UN member states. In Indonesia, the government has issued a policy to support exclusive breastfeeding based on WHO recommendations. **Objectives:** To describe effort in exclusive breastfeeding governance in Indonesia from 2012 to 2023 according to WHO recommendations. **Method:** This research uses a descriptive qualitative methodology and relies on a literature review from a variety of sources, including books, journals, articles, websites, and more, to gather information about Indonesia's efforts to meet the WHO recommendations about exclusive breastfeeding from 2012 to 2023. **Results:** It showed that there were efforts in the community due to applied policies, such as the provision of lactation rooms in public facilities, the formation of Breastfeeding Support Groups, the training of breastfeeding counselors, and the establishment of the PelanggaranKode website to continue to support the exclusive breastfeeding program. **Conclusion:** There are efforts indicating that government policies are not yet optimal. Recommendations for future research should be more specific by exploring strategies for effective advocacy and policy change to support breastfeeding, as well as evaluating the impact of global health initiatives and programs that promote breastfeeding

Keywords: *Exclusive breastfeeding, WHO, governance, effort, Indonesia*





INTRODUCTION

Exclusive breastfeeding is giving breast milk to newborn babies without any mixture of food or drink for six months to fulfill their nutritional needs (Direktorat Jenderal Pelayanan Kesehatan Republik Indonesia, 2022). Since 1980, breastfeeding has become a global issue because it is considered as the first human food security that has long-term effects. The issue of breastfeeding also supports the realization of the 17 Sustainable Development Goals because breastfeeding as the first food of newborns is the best food fulfillment to promote zero hunger and breast milk is an environmentally friendly food because it does not produce waste (European Lactation Consultants Alliance, 2020).

Globally, exclusive breastfeeding rates have increased over the past decade and reached 48%, which is close to the WHO target of 50% by 2025 (United Nations Children's Fund, 2023). In exclusive breastfeeding, Indonesia is ranked 66th out of 100 countries (World Breastfeeding Trends Initiative, 2023). The exclusive breastfeeding rate in Indonesia is increasing quite well, but the implementation of WHO recommendations related to breastfeeding is still not optimal, along with many sociocultural problems that occur such as unrestricted marketing of formula milk in Indonesia, cultural values and beliefs that affect breastfeeding, lack of knowledge and information related to breastfeeding, and myths and hoaxes that are often swallowed raw (Pratiwi, Adi, Udijono, & Martini, 2021).

WHO made several recommendations to encourage the promotion and exclusive breastfeeding at the global level, which tended to be low at the time. The long-term benefits of exclusive breastfeeding led countries to start adopting WHO recommendations for the wellbeing of their citizens. Based on this, the adoption of WHO recommendations to the national level is not only to fulfill Indonesia's commitment to global conventions, but also as a responsibility to improve the wellbeing of citizens and fulfill their health rights. Multisectoral collaboration and an integrative approach are important to create an enabling environment for breastfeeding. This multisectoral integration includes actors at the global to subnational level. Global actors include international organizations such as WHO,

as well as national and sub-national actors including governments, nongovernmental organizations, health workers, and communities, which strengthen the global partnership for sustainable development. The integration between these actors then results in policies that are implemented at the national level to the local level. It is then necessary to conduct research related to efforts that occur due to governance and policies that have been established.

METHOD

This research used a descriptive method by explaining efforts to meet WHO recommendations of exclusive breastfeeding in Indonesia from 2012 to 2023. This research analyzed Indonesia's effort to meet WHO recommendations through the lens of global governance, which consisted of substantial and behavioral efforts. This research focused on behavioral efforts on exclusive breastfeeding in Indonesia in 2012-2023. The data collection technique in this research was secondary data in the form of library research obtained through a number of existing literature and sources, such as articles, websites, journals, and various other sources that contained information on efforts in exclusive breastfeeding in Indonesia from 2012 to 2023 according to WHO recommendations. Then the data that had been collected was analyzed using qualitative techniques to find out how efforts to meet WHO recommendations of exclusive breastfeeding in Indonesia from 2012 to 2023 were made. .

RESULT

The link between the substantive and action components of governance is inseparable (Cadman, 2011). The substantive component is in the form of policies that have been established, causing action changes that occur in the community. This action occurs due to the interaction between the central government and various relevant stakeholders to issue policies that aim to encourage the promotion and exclusive breastfeeding in Indonesia based on recommendations from WHO.



Conformity between Policies and Actions in Indonesia with WHO Recommendations

WHO Recommendations	Policies	Actions
International Code of Marketing of Breast-milk Substitutes (ICMBS)	Regulation of the Minister of Health of the Republic of Indonesia No. 39 Year 2013 on Infant Formula and Other Baby Products	Establishment of Pelanggarankode.org Site
Ten Steps to Successful Breastfeeding	Regulation of the Minister of State for Women's Empowerment and Child Protection No. 3 of 2010 on the Implementation of Ten Steps to Successful Breastfeeding	Establishment of Breastfeeding Support Groups in the Community
	Government Regulation No. 33 of 2012 on Exclusive Breastfeeding	Breastfeeding Counselors Training
	Regulation of the Minister of Health of the Republic of Indonesia No. 15 of 2013 Concerning the Procedures for Providing Special Facilities for Breastfeeding and/or Expressing Breast Milk	Provision of Lactation Rooms in Public Places, Public Service Facilities, and Offices where Mothers Work
The Baby-friendly Hospital Initiative (BFHI)	Decree of the Minister of Health of the Republic of Indonesia No. 603/Menkes/SK/VII/2008 on the Implementation of the Baby-Friendly Hospital Program	Implementation of Mother and Baby Friendly Hospital
Global Strategy for Infant and Young Child Feeding	Regulation of the Minister of Health of the Republic of Indonesia No. 41 of 2014 on Balanced Nutrition Guidelines	Establishing Balanced Nutrition Guidelines for Pregnant Women and Breastfeeding Mothers
World Breastfeeding Week	Presidential Instruction No. 1 of 2017 on Healthy Living Community Movement	Dissemination of Breastfeeding Every Year Through World Breastfeeding Week

Source : Author's Summary

1. Implementation of Mother and Baby Friendly Hospital (RSSIB)

The RSSIB program is in line with WHO recommendations, The Baby-Friendly Hospital Initiative (BFHI) which provides support to health facilities with maternity services to provide universal and sustainable services (World Health Organization, 2018). BFHI is one of the efforts to reduce maternal mortality and infant mortality rates by improving the quality of services in health facilities, especially in hospitals. The implementation of RSSIB must be followed by the implementation of ten steps to protect mothers and babies in a complete and integrated manner to reduce maternal mortality and infant mortality rates. One of the efforts to implement the Mother and Baby Friendly Hospital is that hospitals are required to provide 24-hour integrated emergency maternity services that include emergency room stabilization & preparation for treatment, handling emergency cases in the action room, fast and precise operative treatment, and intensive care for mothers and babies, and high-risk pregnancy care services. (Direktorat Jenderal Bina Upaya Kesehatan RI, 2012).

RSUD Bali Mandara Won 1st Place in the 2020 RSSIB Competition



Source : (RSUD Bali Mandara, 2021)

One of the hospitals that has implemented the Mother and Baby Friendly Hospital is Bali Mandara Regional General Hospital. Winning first place in the Mother and Baby Friendly Hospital Competition in a row, Bali Mandara Hospital always strives to improve services by prioritizing patient safety (RSUD Bali

Mandara, 2021). RSUD Bali Mandara always applies the principle that healthy mothers and babies will create a bright and excellent future.

2. Provision of Lactation Rooms in Public Places, Public Service Facilities, and Offices where Mothers Work

Exclusive breastfeeding for babies is often limited because the mother has to work. Although breast milk can be expressed in the workplace, unsafe and inadequate places make mothers often lazy to do it. In order to ensure the success of the exclusive breastfeeding program and that the mother's work is no longer an obstacle, the government issued a regulation by referring to Government Regulation No. 33 Year 2012 on exclusive breastfeeding, the Regulation of the Minister of Health of the Republic of Indonesia No. 15 Year 2013 on the Procedure for Providing Special Facilities for Breastfeeding and/or Expressing Breast Milk. (Kementerian Kesehatan, 2013).

In this era of many working mothers, support in the form of regulations related to the provision of lactation rooms in workplaces and public places such as airports, terminals, train stations, shopping centers, lodging places, health care facilities, and other public facilities will be very helpful. This regulation ensures that mothers can breastfeed and express milk comfortably, with the aim of fulfilling the mother's right to breastfeed and the child's right to receive breast milk. It is hoped that employees or visitors who breastfeed will still be able to provide exclusive breastfeeding to their babies without worrying about places that are not in accordance with health standards. Female employees can also increase their productivity at work while on an exclusive breastfeeding program.

Lactation Room in Unilever Company Jakarta



Source: (Mommies Daily, 2015)

The provision of lactation room in Unilever Company fulfills the criteria or requirements of lactation room in the workplace. It is provided with a crib, a large-sized sterilizer and refrigerator for pumping breast milk, a table with drawers for changing baby diapers, carpet and pillows that are comfortable for mothers to breastfeed, and clean mineral water to ensure mothers are not dehydrated.



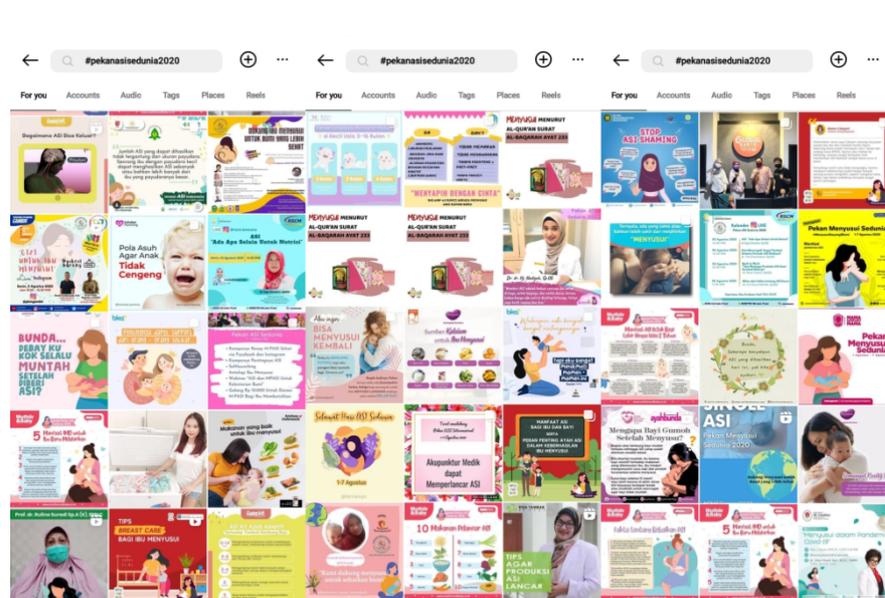
Lactation Room in Soekarno Hatta Airport

Source: X Account Angkasa Pura II

(https://twitter.com/AngkasaPura_2/status/1290951250524004358)

In public spaces, the provision of lactation rooms that meet the standards is at Soekarno Hatta Airport. Reporting from the official X account of PT Angkasa Pura II, this lactation room is a mother and child friendly facility provided by the airport to make mothers comfortable when breastfeeding or changing baby diapers. For visitors who bring babies, baby chairs and tables are provided to change baby diapers. To support the cleanliness of the lactation room, a sink with soap is provided, as well as large trash cans to dispose of baby diapers and other baby waste. The availability of sterilizers and mineral water meets the needs of airport visitors who are still actively expressing breast milk.

3. Dissemination of Breastfeeding Every Year Through World Breastfeeding Week



Instagram Uploads on World Breastfeeding World 2020

Source: <https://www.instagram.com/explore/tags/pekanasisedunia2020>

World Breastfeeding Week, which is celebrated every first week of August, is a great opportunity for many parties to campaign for information and awareness about the importance of breastfeeding, from WHO, UNICEF, the Ministry of Health, to civil society to participate in commemorating World Breastfeeding Week. Every year, social media has become a platform for many people to campaign, and World Breastfeeding Week is no exception. During this week, many organizations and individuals uploaded photos or videos with the hashtag #WorldBreastfeedingWeek with words and brief information about breastfeeding that helped educate the public. Not only online, World Breastfeeding Week is also celebrated with activities such as seminars by local health offices to raise awareness about the importance of breastfeeding babies. (Dinas Kesehatan Provinsi NTB, 2019).

4. Breastfeeding Counselors Training

To follow the WHO recommendation on the Ten Steps to Successful Breastfeeding, Breastfeeding Counselors training is conducted to fulfill the right of every mother who has just given birth to be physically and mentally assisted in providing breast milk to her baby. The Breastfeeding Counselors training can be attended by health workers, Kader Posyandu, and community

members who have a concern to support breastfeeding for babies (Pramono, 2024). Following the modules established by WHO and UNICEF, the Breastfeeding Counselors training is standardized at 40 hours. The course includes counseling techniques, breastfeeding management, nutrition information, the benefits of breastfeeding, the various help and support mothers need to breastfeed, recognizing the promotion of breast milk substitutes that may hinder breastfeeding, and learning about the rules related to breastfeeding support (Sentra Laktasi Indonesia, 2020).

5. Establishment of Breastfeeding Support Groups in the Community

Breastfeeding Support Group or KP-ASI is one of the programs that aim to improve the nutritional status of children under five. The formation of the ASI Support Group is one of the steps and efforts towards successful breastfeeding, because breastfeeding is the main thing for the health of children and mothers (Peraturan Menteri PPPA RI, 2010). Exclusive breastfeeding for the first six months of an infant's life followed by appropriate complementary feeding until the infant is two years old will reduce child mortality and morbidity and improve the child's nutritional status (Direktorat Jenderal Pelayanan Kesehatan Republik Indonesia, 2022). A child's nutritional status is affected by two things: infectious diseases and insufficient food consumption.

In addition to food consumption, sociocultural aspects such as myths and beliefs circulating in the community are also a problem in increasing nutritional problems. The existence of the ASI Support Group is being a companion for new mothers to get information and education process about proper breastfeeding, and KP-ASI is present to provide motivation and psychological support to mothers and families so as to foster the mother's confidence when breastfeeding (Dinas Kesehatan Kota Tegal, 2018). The establishment of the Breastfeeding Support Group is in line with WHO recommendations related to the Ten Steps to Successful Breastfeeding where health workers and the community must support mothers' efforts to provide exclusive breastfeeding, through moral support and emotional support.

6. Establishing Balanced Nutrition Guidelines for Pregnant Women and Breastfeeding Mothers



The nutritional needs of pregnant women and breastfeeding mothers are more as they have to meet the needs for themselves and for the development of their babies, where food consumption must be diverse but must remain balanced in proportion and quantity (Peraturan Menteri Kesehatan RI, 2014). In Indonesia, there are still many mothers whose lack of nutritional status because their food intake does not meet the nutritional needs of themselves and their babies, thus disrupting the development and growth of the fetus or baby (Dinas Kesehatan Kabupaten Kulon Progo, 2019). Not all of the nutrients that the baby needs to develop can be fulfilled by the mother's nutrient supply, hence the intake of these nutrients must be obtained from the mother's daily food consumption.

The Balanced Nutrition guidelines for pregnant women and breastfeeding mothers are in line with WHO recommendations regarding the Global Strategy for Infant and Young Child Feeding. In carrying out its duties, the Ministry of Health at the central level provides information and education to the public through posters or infographics uploaded on the Ministry of Health's official website. These infographics are then adopted by actors at the regional level to conduct direct counseling to the community, through socialization, counseling, and supported by demonstrations and practices of Balanced Nutrition.

7. Establishment of Pelanggarankode.org Site

Policies related to the promotion and marketing of infant formula and other baby products have been regulated in the Regulation of the Minister of Health of the Republic of Indonesia No. 39 Year 2013 on Infant Formula Milk and Other Baby Products. This regulation covers the use of infant formula in urgent or disaster conditions, procedures for the use of infant formula, rules for the promotion and advertising of infant formula, labeling rules for infant formula, rules for sponsorship of activities, community empowerment, recording and reporting, also guidance and supervision. (Permenkes RI No. 39 Tahun 2013, 2013). Although the policy related to formula milk have been regulated for a long time, its implementation in the field is not optimal (Pramono, 2024). This is evidenced by the large number of formula milk advertisements, offers with discounted prices to attract buyers, and direct marketing to breastfeeding

mothers through telemarketing (Pramono, 2024). Based on this, the Association of Indonesian Breastfeeding Mothers (AIMI) and Ayah ASI, established PelanggaranKode as a platform to report violations of marketing and promotion of baby products.

Supported by UNICEF Indonesia and Gerakan Kesehatan Ibu dan Anak (GKIA), PelanggaranKode effectively operates in May 2021 and was formed on the initiative of collectives who have a concern for child nutrition and health, as well as a sense of sadness about unethical promotion and marketing by the baby and child product industry. This website is a form of civil society participation to participate in overseeing the implementation of the Code and related national policies (PelanggaranKode, 2021). PelanggaranKode has received more than 1300 reports, and 1286 of them have been verified. All information provided by the reporter will be kept confidential and will be labeled anonymous. The types of violations reported to PelanggaranKode are varied, ranging from violations of advertising on social media, sponsorship or endorsement of webinar events, direct promotion through telemarketing, providing free product samples to baby mothers, promotion of baby products in public places, and others (PelanggaranKode, 2024). PelanggaranKode is a good start for the public to report violations related to baby products. The more people who are educated about this site, the more people will be aware and willing to report. All of this is a form of support so that the exclusive breastfeeding program continues to run and babies can receive the best nutritional intake without intervention from anyone (Pramono, 2024).



CONCLUSIONS

The establishment of regulations that support exclusive breastfeeding, leading to action changes in the community in the form of Establishment of Breastfeeding Support Groups in the Community, Breastfeeding Counselors Training, Provision of Lactation Rooms in Public Places, Public Service Facilities, and Offices where Mothers Work, Implementation of Mother and Baby Friendly Hospital, Establishing Balanced Nutrition Guidelines for Pregnant Women and Breastfeeding Mothers, and Dissemination of Breastfeeding Every Year Through World Breastfeeding Week indicate good policy implementation. However, the existence of the PelanggaranKode website means that the policies implemented by the government have not been optimally implemented. This actions supports the exclusive breastfeeding program well.

DECLARATION

Conflict of Interest

Author declare there is no conflict of interest in this research

Authors' Contribution

All author contribute from concept until writing draft article.

Ethical Approval

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This research was conducted independently. All costs associated with the project were covered by the researcher

Data Availability

The data supporting this research are available from the authors on reasonable request.

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REFERENCES

- Cadman, T. (2011). *Quality and Legitimacy of Global Governance*. Palgrave Macmillan UK.
- Dinas Kesehatan Kabupaten Kulon Progo. (2019). *Gizi Seimbang Bagi Ibu Hamil dan Ibu Menyusui*. Retrieved May 11, 2024, from <https://dinkes.kulonprogokab.go.id/detil/611/gizi-seimbang-bagi-ibu-hamil-dan-menyusui#>
- Dinas Kesehatan Kota Tegal. (2018, March 14). *KP-ASI dengan Simbah Peduli ASI*. Retrieved May 9, 2024, from <https://dinkes.tegalkota.go.id/berita/detail/kpasi-dengan-simbah-peduli-asi>
- Dinas Kesehatan Provinsi NTB. (2019, August 5). *Livestreaming Seminar Pekan ASI Sedunia 2019*. Retrieved May 6, 2024, from <https://dinkes.ntbprov.go.id/berita/livestreaming-seminar-pekan-asi-sedunia-2019/>
- Direktorat Jenderal Bina Upaya Kesehatan RI. (2012). *Buku Pedoman Penyelenggaraan PONEK 24 Jam di Rumah Sakit*.
- Direktorat Jenderal Pelayanan Kesehatan Republik Indonesia. (2022, August 4). *ASI Eksklusif*. Retrieved February 27, 2024, from https://yankes.kemkes.go.id/view_artikel/1046/asi-eksklusif
- European Lactation Consultants Alliance. (2020, July 2). *Breastfeeding and the Environment*. Retrieved March 26, 2024, from <https://www.elacta.eu/news/breastfeeding-and-the-environment/#:~:text=Breastfeeding%20is%20the%20most%20economical,%2C%20and%20negligible%20water%20footprint.>
- Instruksi Presiden No. 1 Tahun 2017. (2017). Tentang Gerakan Masyarakat Hidup Sehat (GERMAS).
- Mommies Daily. (2015, September 7). *Ruang Laktasi Keren di Perkantoran*. Retrieved May 6, 2024 from <https://mommiesdaily.com/2015/09/07/ruang-laktasi-keren-di-perkantoran?page=1>
- Kementerian Kesehatan. (2013, March 15). *Peraturan Menteri Kesehatan Nomor 15 Tahun 2013 Tentang Tata Cara Penyediaan Fasilitas Khusus Menyusui dan/atau Memerah Air Susu Ibu*. Retrieved March 1, 2024, from <https://peraturan.go.id/id/permenkes-no-15-tahun-2013>
- Kementerian Kesehatan Republik Indonesia. (2020). *Pedoman Pekan Menyusui Sedunia Tahun 2020*. Jakarta.
- Kementerian Kesehatan RI. (2016, August 6). *Pekan ASI Sedunia: Ayo Dukung Ibu Menyusui*. Retrieved May 5, 2024, from <https://www.kemkes.go.id/id/rilis-kesehatan/pekan-asi-sedunia-ayo-dukung-ibu-menyusui>
- Kementerian Pemberdayaan Perempuan dan Perlindungan Anak. (2021). *Tugas, Fungsi, dan Wewenang*. Retrieved May 12, 2024, from PPID KemenPPPA: <https://ppid.kemenpppa.go.id/profil/tugas>
- Kepmenkes RI No. 603/MENKES/SK/VII/2008. (2008, July 10). *Tentang Pemberlakuan Pedoman Pelaksanaan Program Rumah Sakit Sayang Ibu dan Bayi*. Retrieved May 12, 2024, from <https://www.persi.or.id/images/regulasi/kepmenkes/kmk6032008.pdf>
- PelanggaranKode. (2021). *Tentang Kami*. Retrieved May 10, 2024, from <https://pelanggarankode.org/about-us>



- PelanggaranKode. (2024). *Statistik Laporan Pelanggaran*. Retrieved May 11, 2024, from <https://pelanggarankode.org/statistik>
- Peraturan Menteri Kesehatan RI. (2014). *Pedoman Gizi Seimbang*.
- Peraturan Pemerintah No. 13 Tahun 2012. (2012). *Tentang Asi Eksklusif*.
- PermenegPPPA RI No. 3 Tahun 2010. (2010). *Tentang Penerapan Sepuluh Langkah Menuju Keberhasilan Menyusui*.
- Permenkes RI No. 15 Tahun 2013. (2013). *Tentang Tata Cara Penyediaan Fasilitas Khusus Menyusui dan/atau Memerah Air Susu Ibu*.
- Permenkes RI No. 39 Tahun 2013. (2013). *Tentang Susu Formula Bayi dan Produk Lainnya*.
- Permenkes RI No. 41 Tahun 2014. (2014). *Tentang Pedoman Gizi Seimbang*.
- Pramono, A. (2024, May 10). Interview AIMI. (F. Amalia, Interviewer)
- Pratiwi, A., Adi, M. S., Udijono, A., & Martini. (2021, Juli). HUBUNGAN ANTARA SOSIAL BUDAYA PADA MASYARAKAT DENGAN PERILAKU. *JURNAL KESEHATAN MASYARAKAT*, 9(4), 510-517.
- RSUD Bali Mandara. (2021, January 5). *RSUD Bali Mandara Kembali Meraih Juara 1 Lomba Rumah Sakit Sayang Ibu dan Bayi Tahun 2020*. Retrieved May 13, 2024 from <https://rsbm.baliprov.go.id/rsud-bali-mandara-kembali-meraih-juara-1-lomba-rumah-sakit-sayang-ibu-dan-bayi-tahun-2020/>
- Sentra Laktasi Indonesia. (2020). *Pelatihan Konseling Menyusui*. Retrieved May 9, 2024, from <https://selasi.or.id/pelatihan/>
- United Nations Children's Fund. (2023). *RATES OF BREASTFEEDING INCREASE AROUND THE WORLD THROUGH IMPROVED PROTECTION AND SUPPORT*. Retrieved February 27, 2024, from UNICEF: <https://www.unicef.org/media/150586/file/Global%20breastfeeding%20scorecard%202023.pdf>
- World Breastfeeding Trends Initiative. (2023). *WBTi Countries*. Retrieved April 25, 2024, from <https://www.worldbreastfeedingtrends.org/wbti-countries.php>
- World Health Organization. (1981). *International Code of Marketing of Breast-milk Substitutes*. World Health Organization.
- World Health Organization. (2018). *Implementation guidance: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services - the revised Baby-Friendly Hospital Initiative*. Geneva: WHO Document Production Service.
- World Health Organization. (2018). *Ten Steps to Successful Breastfeeding*. Retrieved March 17, 2024, from <https://www.who.int/teams/nutrition-and-food-safety/food-and-nutrition-actions-in-health-systems/ten-steps-to-successful-breastfeeding>
- World Health Organization. (2023, August). *World Breastfeeding Week*. Retrieved May 2024, 1, from <https://www.who.int/indonesia/news/events/world-breastfeeding-week/2023#:~:text=Pekan%20ASI%20Sedunia%20diadakan%20pada,Kes ehatan%2C%20serta%20mitra%20masyarakat%20sipil.>
- World Health Organization & UNICEF. (2003). *Global Strategy for Infant and Young Child Feeding*. World Health Organization.



STRESS, PHYSICAL ACTIVITY, AND DIETARY INTAKE ARE ASSOCIATED WITH DYSMENORRHEA AMONG FEMALE STUDENTS

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Abstract

Background: The estimated prevalence of dysmenorrhea ranges from 45% to 93% of women of reproductive age. Approximately 10–15% of women complain about severe pain, resulting in a negative impact on their daily activities. Factors that cause dysmenorrhea are physical activity, nutritional status, dietary intake, stress, and body mass index. This study explores the prevalence of dysmenorrhea and investigates its correlation with physical activity, stress, and Dietary Intake among female students studying nutrition in Universitas Negeri Surabaya, Indonesia. **Method:** This research was cross sectional analytic descriptive study with minimum sample size of 114 female students. Primary data was collected using a set of questionnaires. Dysmenorrhea pain was assessed using the Numeric Rating Scale (NRS). Stress levels were measured by employing the Depression Anxiety Stress Scales 42 (DASS 42). Physical activity using The International Physical Activity Questionnaire (IPAQ). Dietary data including intakes of energy, iron, folate, and B12 was assessed using non-consecutive 3x24 hours food records, representing 2 weekdays and a weekend. The data were analyzed using chi-square for category data and one-way anova for continuous data. **Result:** Dietary intake especially vitamin B12 ($p=0.02$) were associated to the level of dysmenorrhea, whereas stress ($p=0.36$) and physical activity ($p=0.82$) was not associated of dysmenorrhea. **Conclusion:** This study emphasized the high prevalence of dysmenorrhea among female college students studying Nutrition, revealing important connections between stress, physical activity and dietary intake. Additionally, the research revealed a significant relationship between dietary intake (vitamin B12) and dysmenorrhea.

keyword: stress, physical activity, dietary intake, dysmenorrhea

INTRODUCTION

The overall prevalence of dysmenorrhea ranges between 50% and 90% in various population and it is considered to be one of the major problems in women's health (Matsas *et al.*, 2023). The estimated prevalence of dysmenorrhea ranges from 45% to 93% of women of reproductive age (Petraglia *et al.*, 2017). According to the World Health Organization (WHO), the global prevalence of dysmenorrhea

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ranges from 1.7% to 97%, with a higher prevalence in adolescents. Because it is accepted as a normal aspect of the menstrual cycle and therefore is tolerated, women do not report it and do not seek medical care. The prevalence of dysmenorrhea among adolescents in Indonesia is around 64.25%, consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea (P Hernanto and Polim, 2023). WHO has identified the disease as the primary cause of persistent pelvic pain, which is significant (Matsas *et al.*, 2023). The severity of dysmenorrhea varies among women and usually improves after childbirth. Approximately 10–15% of women complain about severe pain, resulting in a negative impact on their daily activities and requiring absence from school or work (Matsas *et al.*, 2023). The high incidence of dysmenorrhea can have an impact on daily life resulting in a restriction of daily activities, a lower academic performance in adolescents, and poor quality of sleep, and has negative effects on mood, causing anxiety, depression and also interfere with one's activities .

Dysmenorrhea is defined as pain that starts just before menstruation and lasts during this period. The pain is most severe on the first and second days. Menstrual pain is caused by an excessive secretion of prostaglandins, vasopressin and leukotrienes due to uterine contractions (Naraoka *et al.*, 2023). It is caused due to an imbalance in the progesterone, the hormone which causes uterine contractions stimulate the pain response of each individual (Udayar, Jeergiyal and Kruthika, 2022). The pain is induced by menstruation which occurs at the site of the lower abdomen. Its incidence is usually within the first 6-12 months after menarche. It is also observed to occur within the first 2 years of menstruation (Monday *et al.*, 2019). Its aetiology the increase of myometrial production of prostaglandins, leukotrienes and vasopressin (Naraoka *et al.*, 2023). The end of ovulation triggers is the synthesis and accumulation of fatty acids in the cell membrane. Progesterone levels decrease to signal the beginning of menstruation, allowing the release of these fatty acids. One of the synthesised fatty acids is arachidonic acid which is a precursor to the production of prostaglandins like E₂, F₂α, and leukotrienes (Monday *et al.*, 2019). Prostaglandins derive from arachidonic acid through the enzymatic action of cyclooxygenase and lipoxygenase (Matsas *et al.*, 2023). Effects of the prostaglandins E₂ and F₂α creates pain due to

increased uterine contractility, decreased uterine blood flow, and increased sensitivity of peripheral nerves, which induce the symptoms of dysmenorrhea (Bajalan, Alimoradi and Moafi, 2019). Another interesting finding that vasopressin leads to ischemic pain by increasing the uterine contractility (Alateeq *et al.*, 2022).

Based on the underlying pathophysiology, there are two types of dysmenorrhea, namely primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea defined as spasmodic and painful cramps in the lower abdomen that begin shortly before or at the onset of menses in the absence of any pelvic pathology. Its onset occurs mainly during adolescence, within 6 to 24 months after menarche. The pain has a clear and cyclic pattern, which is typically severe during the first day of menses and lasts up to 72 hours (Itani *et al.*, 2022). Secondary Dysmenorrhea is a condition which occurs as a symptom of an existing pelvic pathology. Possible causes of this condition include but are not limited to; Endometriosis, Pelvic inflammatory diseases, adhesions, abscesses, Mullerian anomalies, and ovarian cysts (Monday *et al.*, 2019).

Factors that cause dysmenorrhea are physical activity, nutritional status, dietary intake (Pratiwi, Putri and Wilujeng, 2019), body mass index (BMI) (Naraoka *et al.*, 2023), and stress (Bolkar, Sanap and Shelke, 2023). Physical activity can reduce the risk of menstrual disorders, exercise can be one of the interventions to reduce the risk of dysmenorrhea events. Exercise can be beneficial in order to increase blood flow to the pelvic part and will also stimulate endorphins that act as non-specific analgesics. Exercise can reduce stress, fatigue, and depressive mood that can usually occur in primary dysmenorrhea. The diet that often causes dysmenorrhoea is the pattern of consumption of fast food. They have an impact on increasing the cascade of prostaglandins which result in hypertonus and vasoconstriction in the myometrium so that ischemia occurs (Mentari and Nurwanti, 2022). Deficiency of Vitamins like B1, B2, B5, B12, D and E and omega three adipose acid and folic acid play an important part in painful menstrual cramps as some vitamins part in constricting muscles and conducting whim-whams signals (Bolkar, Sanap and Shelke, 2023). Under stressful conditions, the human body produces excessive estrogen and prostaglandin hormones which causes excessive



contractions in the uterus, resulting in menstrual pain (Triwahyuningsih *et al.*, 2024).

Thus, this study explores the prevalence of dysmenorrhea and investigates its correlation with physical activity, stress, and Dietary Intake among female students studying nutrition in Universitas Negeri Surabaya, Indonesia.

METHOD

In this cross-sectional study, involving 114 female college students who enrolled in Department of Nutrition. This study included young women who had never given birth (nullipara), aged 17–25 years old, and had menstruated. Respondents with a history of reproductive disease or chronic disease, were excluded from the study. The respondent selection was based on cluster random sampling, in which each class contributed to a similar number of participants, ensuring the representativeness of all classes in this study. The number of respondents was calculated to achieve a significance of 0.05. Informed consent was obtained from the respondent prior to recruitment.

Primary data was collected using a set of questionnaires. Dysmenorrhea pain was assessed using the Numeric Rating Scale (NRS) and was categorized into no pain (0), mild pain (1–3), moderate pain (4–6), and severe pain (7–10) (Rodrigues *et al.*, 2022). Stress levels were measured by employing the Depression Anxiety Stress Scales 42 (DASS 42) and were classified into normal (0–14), mild (15–18), moderate (19–25), and severe (26–33) (Makara-Studzińska *et al.*, 2022). The International Physical Activity Questionnaire (IPAQ) was utilized to determine physical activity and its interpretations were divided into mild activities (<600 MET), moderate activities (600–<1500 metabolic equivalents (MET)-minutes/week) and high activities (1500–3000 MET-minutes/week or more) (Triwahyuningsih *et al.*, 2024). Dietary data including intakes of energy, iron, folate, and B12 was assessed using non-consecutive 3x24 hours food records, representing 2 weekdays and a weekend. A briefing on how to administer self-food record intake was carried out before data collection among the respondents assisted by the researcher. Energy and iron intakes were categorized according to Indonesian RDA sufficiency while folate and vitamin B12 intakes were categorized

into lower and equal or more than the mean value. The mean value was used as the cut-off since the distribution of folate and vitamin B12 intakes was skewed to the left and almost all of them were below the RDA.

Data was statistically analyzed using IBM SPSS Statistics ver. 22.0 (IBM Co., Chicago, IL, USA). P-value is analyzed using chi-square for category data and one-way Anova for continuous data. Data categories are presented in quantities and percentages (percentages on the same dysmenorrhea group), while continuous information is presented as mean and standard deviations (SD).

RESULT AND DISCUSSION

A total of 114 respondents were included in the study, as presented in Table 1. The majority of dysmenorrhea, 41.23% experienced moderate pain while mild pain affecting 32.46% of respondents (Table 1). More than half (58.77%) of the respondents had no stress, while 28.95% and 7.89% of the respondents had mild and moderate stress. Among all of them, 114 respondents (39.48%) engaged in moderate physical activity and 24.56% in high physical activity. The vitamin B12 intakes among the respondents were majority below the RDA and thus the classification was made by using mean value as the cut-off.

Table 1. Characteristics of Respondents

<i>Characteristics</i>	<i>N</i>	<i>%</i>
Body Mass Index (BMI)		
10-14	1	0,9
15-19	45	39,5
20-24	57	50
25-29	9	7,9
30-34	2	1,8
Total Body Fat (%)		
20-24	17	14,9
25-29	52	45,6
30-34	32	28,1
35-39	12	10,5
40-44	1	0,9
Dysmenorrhea		
No pain (0)	10	8.77
Mild pain (1-3)	37	32.46
Moderate pain (4-6)	47	41.23
Severe pain (7-10)	20	17.54
Stress		
normal (0–14)	67	58.77
mild (15–18)	33	28.95
moderate (19–25)	9	7.89
severe (26–33)	5	4.39
Physical Activity		
Mild (<600 MET)	41	35.96

Moderate (600-1500 MET)	45	39.48
High (1500-3000MET)	28	24.56

Furthermore, the stress, physical activity and dietary intakes were compared to examine whether there was any difference in those variables between no pain, mild pain, moderate pain, and severe pain respondents as depicted from Table 2. In general, there was no statistically difference can be found in stress and physical activity between no pain, mild pain, moderate pain, and severe pain groups. Only vitamin B12 that was statistically significant.

Table 2. Mean (SD) values of Stress, Physical Activity and Dietary Intakes according to Dysmenorrhea Pain Level

Categories	Dysmenorrhea Pain Level (SD)				P
	No pain (n=10)	Mild pain (n=37)	Moderate pain (n=47)	Severe pain (n=20)	
Stress					0,36
Normal	7 (70.0)	26 (70.3)	22 (46.8)	12 (60.0)	
Mild	2 (20.0)	5 (13.5)	20 (42.6)	6 (30.0)	
Moderate	1 (10.0)	4 (10.8)	3 (6.4)	1 (5.0)	
Severe	0 (0.0)	2 (5.4)	2 (4.3)	1 (5.0)	
Physical Activity					0,82
Mild (MET)	2 (20.0)	13 (35.1)	18 (38.3)	8 (40.0)	
Moderate (MET)	4 (40.0)	14 (37.8)	18 (38.3)	9 (45.0)	
High (MET)	4 (40.0)	10 (27.0)	11 (23.4)	3 (15.0)	
Dietary Intake					
Energy (kcal)	1575.99 (333.45)	1520.22 (422.23)	1415.81 (459.48)	1457.16 (374.42)	0,59
Fe (mg)	7.10 (1.43)	7.25 (3.43)	6.68 (2.91)	7.37 (4.20)	0,82
Folate (µg)	114.91 (49.70)	126.51 (80.88)	108.30 (65.70)	113.36 (51.15)	0,68
B12(mcg)	2.49 (1.95)	3.53 (4.40)	1.66 (1.48)	1.65 (0.91)	0,02

This present study aimed to investigate the pain level of dysmenorrhea among female college students who enrolled in Department of Nutrition and to determine if there is any connection between stress level, physical activity level and dietary intake with dysmenorrhea.

The estimated prevalence of dysmenorrhea ranges from 45% to 93% of women of reproductive age (Petraglia *et al.*, 2017). According to the World Health Organization (WHO), the global prevalence of dysmenorrhea ranges from 1.7% to 97%, with a higher prevalence in adolescents. In line with that statement, this

present study suggested that the dysmenorrhea among adolescents remains high, which was 91.23%. Approximately 10–15% of women complain about severe pain, resulting in a negative impact on their daily activities and requiring absence from school or work (Matsas *et al.*, 2023). Indeed, the severe pain level of this present study remains high, which were 17.54%. Moreover, the number of dysmenorrhea in this study was higher if compared to other studies.

The data analysis showed that there were no significant relationship between stress and dysmenorrhea. The same studies also found that there were no significant relationship between the severity of stress and the presence of last menstrual cramps ($p=0.745$) (Amarullah Ritonga, 2016). There are several possibilities that influenced the outcome of this study. The different method used in this research may be one of the possibilities, stress obtained in this research use DASS-42 is a self-report tool designed to maximize the differences between symptoms of depression and anxiety and to reveal their common features called stress. The procedure used in the long form of questionnaire (DASS-42) analysis was repeated, checking the modified three correlated factors model and the second-order three factors with cross-loading model (Makara-Studzińska *et al.*, 2022).

The data analysis showed that there were no significant relationship between physical activity and dysmenorrhea. The same studies also found that there were no significant relationship between physical activity and dysmenorrhea intensity ($p=0.225$) (P Hernanto and Polim, 2023). Another research on medical students in Cairo and discovered that there were also no significant relationship between physical activity and dysmenorrhea ($p=0.064$) (Kamel, Tantawy and Abdelsamea, 2017). There are several possibilities that influenced the outcome of this study. The different method used in this research may be one of the possibilities, physical activity obtained in this research were only a weekly physical activity history and were not differentiated between exercise and non-exercise through the International Physical Activity Questionnaire (IPAQ) that might give rise to recall bias. The studies that are significant were more likely to carry out interventions methods or by doing exercise such as stretching exercises. The IPAQ incorporates daily activities such as mopping, washing, walking as physical activities and did not explore aspects of a certain exercise or sports that were routinely carried out. The



lack of sample variation in this study may also be one of the factors that contributes to the outcome possibilities of this research.

Diet is a way to regulate the quantity of food types so that it can improve the quality of health, psychology, prevention and the process of healing pain (Mentari and Nurwanti, 2022). It has been known that female young adults are at risk to suffer from undernutrition and micronutrient deficiency (Tesema *et al.*, 2021). In line with that statement, this present study suggested that the underweight among reproductive age remains high, which was 48.24%. Indeed, the dietary intake (Fe, Folate, Vitamin B12) among reproductive age remains under RDA, which were 83.33%, 61.4%, and 66.67%. Its show that almost all reproductive age suffering from micronutrient deficiency. In general, micronutrients include necessary vitamins and minerals. Vitamin deficiency is the main contributor towards the cause of menstrual cramps in women and pain during periods. It is also found that a variety of dietary supplement along with Vitamin intake during and after cycles has been found affective in ameliorating the pain. Vitamin B1, B2, B5, B6, B12, D and E are the major contributors in the pain (Bolkar, Sanap and Shelke, 2023). In this study, dietary intake especially vitamin B12 was significantly associated with dysmenorrhea. Deficiency of vitamins B12 and folic acid plays an important part in painful menstrual cramps as some vitamins part in constricting muscles and conducting whim-whams signals. The Muscular system and nervous system are nearly linked in the uterus- the Muscular organ where period cramps be (Bolkar, Sanap and Shelke, 2023).

CONCLUSION AND SUGGESTION

In summary, this study emphasized the high prevalence of dysmenorrhea among female college students studying Nutrition, revealing important connections between stress, physical activity and dietary intake. Additionally, the research revealed a significant link between dietary intake (vitamin B12) and dysmenorrhea. These findings emphasized the importance of considering dietary quality in addressing dysmenorrhea among female college students, suggest the need for personalized dietary and lifestyle interventions in this population. Recommendations for educational institutions include organizing individual

dysmenorrhea counseling activities in collaboration with healthcare providers. Future studies could explore sample variation, research use DASS-42, DASS-21, and also DASS-12.

DECLARATION

Conflict of Interest

There is no conflict of interest in this research.

Authors' Contribution

Nur Anindya Syamsudi, conceptualised and designed the study, prepared the draft of the manuscript and reviewed the manuscript; Noor Rohmah Mayasari, led the data collection in Female Students, advised on the data analysis and interpretation and reviewed the manuscript; Lini Anisfatus Sholihah led the data collection in Female Students, assisted in drafting of the manuscript and reviewed the manuscript.

Ethical Approval

This research was approved by the Ethical Committee of Polytechnic Health Ministry of Surabaya number EA/2209/KEPK-Poltekkes_Sby/V/2024.

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Data Availability

Informed consent was obtained from the respondent prior to recruitment. Primary data was collected using a set of questionnaires.

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REFERENCE

- Alateeq, D. *et al.* (2022) 'Dysmenorrhea and depressive symptoms among female university students: a descriptive study from Saudi Arabia', *Egyptian Journal of Neurology, Psychiatry and Neurosurgery*, 58(1). Available at: <https://doi.org/10.1186/s41983-022-00542-1>.
- Amarullah Ritonga, M. (2016) *Relationship between Menstrual Profile and Psychological Stress with Dysmenorrhea*, *Althea Medical Journal*.
- Bajalan, Z., Alimoradi, Z. and Moafi, F. (2019) 'Nutrition as a potential factor of primary dysmenorrhea: A systematic review of observational studies', *Gynecologic and Obstetric Investigation*. S. Karger AG, pp. 209–224. Available at: <https://doi.org/10.1159/000495408>.
- Bolkar, P.E., Sanap, G.S. and Shelke, P.A. (2023) 'Review: Effect of medicinal herbs on dysmenorrhea', ~ 150 ~ *Journal of Pharmacognosy and Phytochemistry*, 12(2). Available at: <https://www.phytojournal.com>.
- Itani, R. *et al.* (2022) 'Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates', *Korean Journal of Family Medicine*. Korean Journal of Family Medicine, pp. 101–108. Available at: <https://doi.org/10.4082/kjfm.21.0103>.
- Kamel, D.M., Tantawy, S.A. and Abdelsamea, G.A. (2017) 'Experience of dysmenorrhea among a group of physical therapy students from Cairo University: An exploratory study', *Journal of Pain Research*, 10, pp. 1079–1085. Available at: <https://doi.org/10.2147/JPR.S132544>.
- Makara-Studzińska, M. *et al.* (2022) 'Confirmatory Factor Analysis of Three Versions of the Depression Anxiety Stress Scale (DASS-42, DASS-21, and DASS-12) in Polish Adults', *Frontiers in Psychiatry*, 12. Available at: <https://doi.org/10.3389/fpsy.2021.770532>.
- Matsas, A. *et al.* (2023) 'Vitamin Effects in Primary Dysmenorrhea', *Life*. MDPI. Available at: <https://doi.org/10.3390/life13061308>.
- Mentari, W.D. and Nurwanti, F. (2022) *RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND DIET WITH DYSMENORRHOEA DEGREE ON STUDENTS OF THE FACULTY OF HEALTH SCIENCES SEBELAS APRIL UNIVERSITY DURING COVID 19 PANDEMIC IN 2022*, *PHSAJ-Public Health Sebelas April Journal*. Available at: <https://ejournal.unsap.ac.id/index.php/phsaj>.
- Monday, I. *et al.* (2019) 'Prevalence and correlation between diet and dysmenorrhea among high school and college students in saint vincent and grenadines', *Open Access Macedonian Journal of Medical Sciences*, 7(6), pp. 920–924. Available at: <https://doi.org/10.3889/oamjms.2019.205>.

- Naraoka, Y. et al. (2023) 'Severity of Menstrual Pain Is Associated with Nutritional Intake and Lifestyle Habits', *Healthcare (Switzerland)*, 11(9). Available at: <https://doi.org/10.3390/healthcare11091289>.
- P Hernanto, A.D. and Polim, A.A. (2023) *Does Lifestyle Affect Dysmenorrhea Intensity? A Cross-Sectional Study Apakah Gaya Hidup Mempengaruhi Intensitas Dismenore? Sebuah Studi Cross-Sectional*.
- Petraglia, F. et al. (2017) 'Dysmenorrhea and related disorders', *F1000Research*. Faculty of 1000 Ltd. Available at: <https://doi.org/10.12688/f1000research.11682.1>.
- Pratiwi, T.D., Putri, R. and Wilujeng, C.S. (2019) 'Perbedaan Antara Asupan Vitamin B1, B6 dan B12 Dengan Kejadian Dysmenorrhea pada Remaja Putri di SMAN 8 Kota Malang dan MA Nurul Ulum Munjungan Kabupaten Trenggalek', *Journal Of Issues In Midwifery*, 3(2), pp. 1–15. Available at: <https://doi.org/10.21776/ub.JOIM.2019.003.02.1>.
- Rodrigues, J.C. et al. (2022) "'Painting my pain": the use of pain drawings to assess multisite pain in women with primary dysmenorrhea', *BMC Women's Health*, 22(1). Available at: <https://doi.org/10.1186/s12905-022-01945-1>.
- Tesema, A.K. et al. (2021) 'Spatial distribution and determinants of undernutrition among reproductive age women of Ethiopia: A multilevel analysis', *PLoS ONE*, 16(9 September). Available at: <https://doi.org/10.1371/journal.pone.0257664>.
- Triwahyuningsih, R.Y. et al. (2024) 'Role of stress and physical activity on primary dysmenorrhea: A cross-sectional study', *Narra J*, 4(1). Available at: <https://doi.org/10.52225/narra.v4i1.685>.
- Udayar, S.E., Jeergiyal, D.P. and Kruthika, K. (2022) 'Prevalence and Predictors of Dysmenorrhea and its Impact on Quality of Life among Tribal Adolescent Girls in India', *Unnes Journal of Public Health*, 11(1), pp. 23–32. Available at: <https://doi.org/10.15294/ujph.v11i1.45965>.



DIFFERENCES IN CHANGES IN KNOWLEDGE OF WOMEN ABOUT EARLY DETECTION OF CERVICAL CANCER BETWEEN USING PRESENTATION MEDIA COUNSELING AND LEAFLET COUNSELING

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Abstract

Background: Encouraging early detection and prompt treatment of precancerous lesions is the key to preventing cervical cancer in women who are fertile. IVA examinations are used to detect precancerous lesions early on. Thus far, both nationally and at Mojo Health Center, the IVA examination has been achieved. Women of reproductive age may not be as aware of early diagnosis of precancerous lesions as they should be, which could contribute to the low IVA examination achievement. Due to a lack of understanding regarding the early diagnosis of precancerous lesions, women of reproductive age have low awareness. **Method:** A lecture and leafleting approach were used to conduct this health counseling. This kind of study uses a quasi-experimental pretest-posttest one group design, which is experimental in nature. carried out in Surabaya City at the Mojo Health Center. A straightforward random sampling methodology was used to choose the sample of 84 WUS, who were then split into two groups: the treatment group, which received an intervention counseling lecture style, and the control group, which received a leaflet intervention. A questionnaire was utilized to collect the data, and the Wilcoxon signed rank test was used to evaluate it. Independent Samples Test ($p < 0.05$) and Wilcoxon signed Rank test. **Results:** The test results showing variations in both groups' knowledge levels produced the result $p = 0.000$ ($p < 0.05$). $P = 0.268$ ($p > 0.05$) was the outcome of the test to determine the value of differences in knowledge factors between the treatment group and the control group. **Conclusion:** There is no difference in WUS knowledge between the lecture method and leaflet media distribution when it comes to counseling, but there is a shift in the outcomes of WUS knowledge about early detection of cervical cancer before and after receiving counseling.

Keywords: Cervical cancer, Knowledge, presentation media counseling, presentation leaflet.

INTRODUCTION

Early identification and treatment of precancerous lesions are key factors in the prevention of cervical cancer in women who are fertile. IVA examination, early diagnosis of precancerous lesions is attempted. The current national IVA examination achievement rates for the years 2018–2021 are 7.34%, 12.2%, 8.3%,

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and 6,83%. This number still falls well short of the Ministry of Health's goal. (Kemenkes RI, 2021).

The preliminary study results from 2019 show that 142 out of 12,873 WUS people (1.10%) passed the IVA examination at Mojo Health Center, while 20 out of 12,685 WUS people (0.16%) passed the exam in 2020. The data on the achievement of IVA examination at Mojo Health Center was equally poor. In 2021, specifically 1.59%, there were only 202 out of 12,685 people out of 12,685 WUS (Dinas Kesehatan Kota Surabaya 2021). This compares to 0.16% of individuals out of 12,685 WUS population in 2021. In 2021, in Surabaya City. Women of childbearing age may not be fully aware of the significance of early detection of pregnancies by routine examinations, which is one of the variables believed to contribute to the poor IVA accomplishment. Women in the IVA examination possess knowledge on the early diagnosis of pre-cancer (Puskesmas Mojo 2022).

One of the anticipated initiatives to raise the level of awareness among fertile age women is through health counseling. Another approach that can be utilized to rapidly, easily, and effectively disseminate knowledge to a sizable target group is counseling through the Method Lecture. sufficiently big. According to Notoatmodjo (2012), every technique utilized in health counseling has benefits and drawbacks. Regrettably, it has not yet been established how counseling using the lecture technique increases WUS knowledge in the early detection of pre-cervical cancer.

Based on research, among others, counseling on early diagnosis of cervical precancerous lesions. Counseling on Knowledge and Attitudes of WUS Regarding Early Detection of Cervical Cancer with 73.3% of respondents having poor knowledge, compared to 100% who had good knowledge after counseling. Early detection of cervical cancer and positive attitudes are positively correlated with knowledge and education about the disease (Yosibellataufik, 2018). In contrast, a study on the impact of cervical cancer counseling after receiving counseling on knowledge and behavior about early detection of cervical cancer in women of childbearing age, 64.8% of participants had poor knowledge, only 54.5% had good knowledge after the counseling intervention. Increased knowledge was not significantly correlated with cervical cancer early detection rates (Laksita, 2022).



Research on how counseling affects awareness of early cervical cancer diagnosis is anticipated to serve as the cornerstone for successful cervical cancer prevention among women who are fertile. The awareness and motivation of women of reproductive age to independently do the IVA examination are likely to increase with increased understanding about early diagnosis of cervical cancer.

This study aimed to compare WUS's knowledge of early cervical cancer detection between two counseling approaches: the counseling method and the leaflet on examination IVA examination at Mojo Health Center in Surabaya City. This research was chosen to be conducted at Mojo Health Center because of the facility's poor IVA early identification of cervical cancer, which is indicative of low WUS participation.

METHOD

The pretest-posttest control group design used in this study is a form of quasi-experimental design. Such study this kind of study examines the variations between the groups receiving treatment and the control group (Sugiyono, 2020). 150 people that matched the researcher's criteria for the study's demographic were WUS moms who worked in the Mojo Health Center. After sampling using a basic random sampling technique, the Lemeshow formula was used to calculate the sample size, yielding a minimal sample size of 38 samples. Notoatmodjo (2014) 42 respondents from the treatment group and 42 respondents from the control group were employed in this investigation.

Information derived from the 20-question pretest and posttest results. The right response will receive a value of 1, the incorrect answer will receive a value of 0, and all answers will be processed after receiving a value of 1. Data outcomes both before and after in the event that the data is not regularly distributed, the Wilcoxon statistical test will be utilized for analysis. To ascertain changes in WUS knowledge levels before and after receiving counseling on the treatment group and leaflet distribution in the control group, a Signed Rank statistical test was utilized. The delta difference between the pretest and posttest results in both groups was used to calculate the difference in WUS's level of knowledge regarding the early detection of cervical cancer between counseling counseling method and leaflet,

while the Independent Samples Test statistical test was carried out because the data was not normal.

RESULT AND DISCUSSION

1. Variations in WUS Knowledge Level About Early Detection of Cervical Cancer Before and After Counseling with Lecture Method

Table 1. Alteration in Treatment Group's Level of Knowledge

Knowledge Variable	Output Rank		Mean Rank	z	p
	Rank	N			
Before-After (Technique of Lecture)	Negatif Rank	0 ^a	0,000	-5.659 ^b	0,000
	Positif Rank	42 ^b	21,50		
	Ties	0 ^c			

**Wilcoxon Signed Rank Test*

There is a substantial difference in the knowledge category before and after the intervention, as indicated by table above, which displays the results of statistical tests. The specifics of the frequency distribution research results, which show that 33 persons (78.6%) had practically all low knowledge, confirm this. Following the intervention, the majority of respondents' knowledge improved; specifically, 31 persons (73.8%) fell into the good group, while the average or mean rank 21.50 was the increase. According to the statistical test, the lecture technique counseling has a substantial impact on the knowledge of paired respondents (p value = 0.000 <0.05).

Notoatmodjo (2012), states that the lecture style counseling is one of the most efficient ways to expand one's knowledge. In its most basic form, lecture method counseling is the process of imparting knowledge from the extension worker to the target in order to help the response go from ignorance to knowledge. The five senses hearing, vision, smell, sensation, and touch account for this understanding (Notoatmodjo, 2014).

A person's age might have an impact on their knowledge due to various aspects, including their attitude and the power of capture. Notoatmodjo (2012), supports this idea, The power of capture and mindset get more developed with age, improving the quality of the knowledge acquired. The majority of respondents had only completed high school. Education has an impact on learning, the more educated someone is, the easier it is for them to receive information. People with

higher levels of education are more likely to obtain information from electronic media as well as from other people, the more information that is received, the more knowledge they possess (Wawan and Dewi 2011). Almost all of the respondents' vocations indicated that they were unemployed. Occasionally, the work that a person performs will offer more opportunities for people to learn new things, or it may be the case that their ownership of the work activities prevents people from accessing information. Having access to a variety of information sources via electronic media is another element that can help people learn.

The knowledge picture of the respondents this is consistent with studies conducted by Ayuni and Ramaita (2019), Adista, et.al (2021), and Achmad (2016), which found that mean average knowledge of early detection of cervical cancer influences outcomes both before and after health education is provided. This study demonstrated that receiving counseling results in a change in knowledge.

2. Variations in WUS Knowledge Level Before and After Counseling with Leaflet about Early Cervical Cancer Detection

Table 2. Modification of WUS Knowledge before and after Leaflet Counseling

Variabel variable Knowledge	Output Rank		Mean Rank	z	p
	Rank	N			
Before-After (Leaflet)	Negatif Rank	0 ^a	0,000	-5.654 ^b	0,000
	Positif Rank	42 ^b	21,50		
	Ties	0 ^c			

**Wilcoxon Signed Rank Test*

Leaflet is a type of marketing or promotional tool that is printed on a sheet of paper using art paper or art carton in most cases. Because of its practical and straightforward form which consists solely of sheets with information or writing and eye-catching images leaflet media, also known as pamphlets, are portable, practical, and effective learning tools (Pakpahan, et.al 2021).

The results collected show that there is a difference in the knowledge score of WUS before and after leaflets regarding cervical cancer and its detection were distributed. This difference can be seen in the above table seen an increase in general. Before leaflets were distributed, the findings of 42 WUS studies revealed that the majority of participants up to 30 individuals, or 71.4% had inadequate knowledge. This is because the vast majority of respondents did not obtain

comprehensive information regarding cervical cancer and how it is detected, which had an impact on their knowledge. Impact the respondent's comprehension when completing the survey. Following the distribution of the leaflets, the study's findings indicate that most respondents' final measurements showed improvement, namely there were 29 people (69,0%). The statistical test findings indicate that there is an influence of leaflets on WUS knowledge regarding early detection of cervical cancer in the working area of the Mojo Surabaya City Health Center (p value = $0.000 < 0.05$). Respondents' increased understanding of WUS can be attributed to the information they learned from the offered leaflet as given medium. The respondent is aware of cervical cancer and its detection, which is in keeping with the theory that states that the more knowledge one possesses, the greater one's capacity for health education (counseling and simulation).

According to Ayuni and Ramaita (2019) research, 53.3% of respondents had less awareness about cervical cancer before to receiving counseling. These findings are consistent with the findings of this study, 93.3% of respondents reported having an excellent degree of understanding about cervical cancer after receiving counseling about the disease. Providing health education on cervical cancer is one way that Lani and Rusnanti (2021), believe that efforts to enhance knowledge of early detection of cervical cancer in women and sexually active women are very important to minimize the prevalence of cervical cancer.

3. Differences in Knowledge Improvement WUS About Early Detection of Cancer Cervical Between Counseling Methods Lecture and Leaflet

Table 3. Difference in Counseling Lecture Method and Leaflet on Increasing Knowledge of WUS

Increasing Knowledge	N	Mean Rank	ρ
Control	42	33,45	0,268
Treatment	42	36,67	

The findings showed that prior to counselling, almost all respondents from the treatment and control groups had poor knowledge about early detection of cervical cancer. Results This study is in line with the results of research conducted



by Bahar (2013), which shows that most respondents had a poor level of knowledge because most of the respondents have never received information about early detection of cervical cancer and only get information from electronic media. This is in line with Notoatmodjo (2014), that states that knowledge is a form of knowing, that happens after the sense of a certain object. As a result, the level of knowledge will be lower for those that never encountered information. A person needs a health care center to be the place of treatment for themselves and others the more aware they are, according to Goldman and Pabari (2020), This way, if WUS get information, they will know how important they are to go to the health care center.

Both in the treatment and control groups, respondents' knowledge about early detection of cervical cancer increased to a good level after counselling. This is in accordance with Indriani (2016) research which showed that after counselling, respondents' knowledge increased. The results of this study indicate that counselling activities are a learning process that causes a person's skills and knowledge to change or increase in a positive direction (Setyaningrum, et.al 2021). In accordance with the theoretical framework used in this study, the Attkinson-Shiffrin model in Solso (2008), three memory systems namely sensory memory, short-term memory, and long-term memory affect the structure and memory processes involved in increasing cognitive knowledge.

There is no difference in the average value of knowledge between group respondents in the form of counseling methods with the control group, which only in the form of leaflet distribution, according to statistical tests for variables based on the difference in knowledge level about early detection of cervical cancer between counseling lecture method and leaflet method after treatment is obtained.

Information is one of the things that influence knowledge. The form of information can be data, numbers, measurements, words, sentences, writings, descriptions, stories, pictures, and symbols can all be considered as a form of information to be received (Darmawan 2012). When individuals are able to answer a question both orally and in writing, it can be believed that the individual has understood the information provided. Information can affect a person's memory, and result in changes or additions to knowledge. This set of answers is called knowledge (Budiman, et.al 2013).

According to Nursalam (2016), knowledge is the result of knowing and arises when people perceive a certain object. In the opinion of Effendy (2019), most human knowledge is obtained with the eyes and observing through gifts such as posters, leaflets, lectures, or information in the form of writing and sound such as lectures, counselling, or videos for education that help stimulate the senses.

Research by Nofia, et.al (2023), on the effect of teaching mothers about basic immunization in Pasiwaru Village in 2022 with lecture and leaflet methods is not in line with this study. Research Munawaroh and Sulistyorini (2015), on health education about free sex at SMA Negeri Ngrayun found that there were differences in the level of knowledge before and after the provision of health education about free sex. They also found that the lecture method was more effective than the leaflet method. According to research by Purba, et.al (2022), the study "The Effect of Lecture Method on Knowledge and Attitude of WUS in IVA Examination at Puskesmas Semula Jadi Tanjung Balai City" is in line with this study. The results of the Independent sample test on the difference value (delta), the increase before and after in both groups obtained an average value in the control group of 33.45 and the treatment group of 36.67. Researchers assume that the provision of counselling lecture method is not meaningful compared to the leaflet distribution method, so there is no difference in the level of knowledge about early detection of cervical cancer between the lecture method and the leaflet distribution method. When compared to the leaflet distribution method, the lecture extension method is not as effective as leaflet distribution as indicated by a p value of 0.268 which is greater than 0.05.

This is due to the fact that respondents are more interested in seeing the information directly from the leaflet media rather than listening to the material and remembering it in its entirety. The leaflet itself will serve an additional purpose as its contents can be read and used over a long period of time, or even throughout the year. Mothers' reading attention can be captured with an attractive layout and various colours, ensuring that they receive accurate information about IVA. As a result, this can help to increase the awareness of the respondents and with the leaflet media, can increase their motivation to perform IVA examination as soon as



possible to prevent the disease, namely cervical cancer. The use of leaflet media will motivate and interest WUS to get information about IVA.

CONCLUSION AND SUGGESTION

The following are conclusions that can be drawn from the results of the research that has been completed, namely :

1. The experimental and control groups had increased knowledge about early detection of cervical cancer.
2. The results of the hypothesis are either rejected or not statistically significant, and there is no difference in the working area of Public health Services Mojo Surabaya between the treatment group's counseling with lecture method and the control group's distribution of leaflets about early detection of cervical cancer.
3. This can be combined as a form of follow-up to the health program in providing information related to early detection of cervical cancer in WUS in the Mojo Health Center Working Area, Surabaya City. It is expected to further improve or the need for counseling with presentation media or leaflet media for health services, especially Public health Services. Because presentation media is portable, effective, and leaflets do not require additional equipment or electricity, making it easier to disseminate information to the general public.

DECLARATION

Conflict of Interest

Author declare there is no conflict of interest in this research

Authors' Contribution

All author contribute from concept until writing draft article.

Ethical Approval

Research Ethics Committee of Faculty o Medicine, Universitas Airlangga.
No.129/EC/KEPK/FKUA/2023

Funding Source

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Data Availability

The data supporting this research are available from the authors on reasonable request.

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REFERENCE

- Achmad, N. (2016) 'Peubahan Pengetahuan Sikap Wania Usia Subur Sebelum Dan Sesudah Diberikan Penyuluhan Tentang Deteksi Dini Kanker Serviks Dengan Pemeriksaan Meode IVA Di Wilayah Kerja Puskesmas Pembangunan Kecamatan Tarogong Kidul Kota Garut'. *Jurnal.umj.ac.id/index.php/semnastek*
- Adista, N.F., Apriyanti, I., and Halwani, M.M. (2021) 'The Effect Of Cervical Cancer Counseling On The Knowledge Of Female Age Women About IVA Test Examination In Pegading Village And Working Area Of Kramatwatu Puskesmas'. *Journal Of Applied Health Research And Development* [online] 3 (1), 17–29. available from <<https://jurnal.poltekkes-aisyiyahbanten.ac.id/index.php/path/article/view/96>> [7 November 2023]
- Ayuni, D.Q. and Ramaita, R. (2019) 'Pengaruh Pemberian Pendidikan Tentang Kanker Serviks Terhadap Pengetahuan Deteksi Dini Kanker Serviks Pada Wanita Usia Subur'. *JURNAL KESEHATAN PERINTIS* [online] 6 (2), 89–94. available from <<https://jurnal.upertis.ac.id/index.php/JKP/article/view/270>> [12 November 2023]
- Bahar, A.A. (2013) *Perbedaan Pengaruh Penyuluhan Pemeriksaan Payudara Sendiri (SADARI) Antara Penggunaan Media Video Dengan Media Booklet Terhadap Pengetahuan Dan Sikap Deteksi Dini Ca Mammae Pada Siswi Kelas X SMA Negeri 1 Semarang* [online] skripsi. Universitas Airlangga. available from <<http://lib.unair.ac.id>> [6 November 2023]
- Budiman, Riyanto, and Agus (2013) *Kapita Selekta Kuisisioner Pengetahuan Dan Sikap Dalam Penelitian Kesehatan*. Jakarta: Salemba Medika
- Darmawan, D.Dr.S.P. (2012) *Pendidikan Teknologi Informasi Dan Komunikasi : Teori Dan Aplikasi*. Bandung: PT Remaja Rosdakarya Offset
- Dinas Kesehatan Kota Surabaya (2021) *Profil Dinas Kesehatan Kota Suarabaya*.
- Effendy, O.U. (2019) *Ilmu Komunikasi: Teori Dan Praktik*. Cet. 29. Bandung: Remaja Rosdakarya
- Goldman, I. and Pabari, M. (2020) 'Lessons for Using Evidence in Policy and Practice'. in *Using Evidence in Policy and Practice* [online] 1st edn.



- Goldman, I. and Pabari, M. London: Routledge, 224–241. available from <<https://www.taylorfrancis.com/books/9781003007043/chapters/10.4324/9781003007043-13>> [28 March 2023]
- Indriani, F. (2016) ‘Kompetensi Pedagogik Mahasiswa Dalam Mengelola Pembelajaran Tematik Integratif Kurikulum 2013 Pada Pengajaran Mecro Di PGSD UAD Yogyakarta’. *Elementary School: Jurnal Pendidikan Dan Pembelajaran Ke-SD-An* [online] 3 (1). available from <<http://es.upy.ac.id/index.php/es/article/view/362>> [30 November 2023]
- Kemenkes RI (2021) *Profil Kesehatan Indonesia*. Kemenkes RI
- Laksita, G.A. (2022) *Pengaruh Penyuluhan Kanker Serviks Terhadap Pengetahuan Dan Perilaku Deteksi Dini Kanker Serviks Pada Wanita Usia Subur Di Dusun Pomo Desa Ampel*. other. Universitas dr. Soebandi
- Lani, T. and Rusnanti, W. (2021) ‘Hubungan Pengetahuan Dengan Sikap Deteksi Dini Kanker Serviks Pada Wanita Usia Dewasa Di Puskesmas Malinau Tahun 2020’. *Jurnal Ilmu Kesehatan Insan Sehat* [online] 9 (1), 30–32. available from <<http://jurnalstikesintanmartapura.com/index.php/jikis/article/view/18>> [12 November 2023]
- Munawaroh, S. and Sulistyorini, A. (2015) *Efektifitas Metode Ceramah Dan Leaflet Dalam Peningkatan Pengetahuan Remaja Tentang Seks Bebas Di SMA Negeri Ngrayun* [online] available from <<https://docplayer.info/270102-Efektifitas-metode-ceramah-dan-leaflet-dalam-peningkatan-pengetahuan-remaja-tentang-seks-bebas-di-sma-negeri-ngrayun.html>> [6 November 2023]
- Nofia, W., Hidayani, H., and Hardiana, H. (2023) ‘Efektivitas Pendidikan Menggunakan Metode Ceramah Dan Leaflet Terhadap Pengetahuan Ibu Tentang Imunisasi Dasar Di Desa Pasiwaru Tahun 2022’. *SENTRI: Jurnal Riset Ilmiah* [online] 2 (5), 1530–1541. available from <<https://ejournal.nusantaraglobal.ac.id/index.php/sentri/article/view/839>> [4 November 2023]
- Notoatmodjo, S. (2014) *Metodologi Penelitian Kesehatan*. Rineka Cipta
- Notoatmodjo, S. (2012) *Promosi Kesehatan Dan Prilaku Kesehatan*. Jakarta: PT. Rineka Cipta.
- Nursalam (2016) *Metodologi Penelitian Ilmu Keperawatan*. Salemba Medika : Jakarta.
- Pakpahan, M., Siregar, D., and Susilawaty, A. (2021) *Promosi Kesehatan Dan Perilaku Kesehatan, Cetakan 1*. Jakarta: Yayasan Kita Menulis [online] 1st edn. Jakarta: Yayasan Kita Menulis. available from <<https://kitamenulis.id/2021/02/19/promosi-kesehatan-dan-perilaku-kesehatan/>>
- Purba, E.C., Utami, T.N., and Asriwati, A. (2022) ‘Pengaruh Metode Ceramah terhadap Pengetahuan dan Sikap WUS dalam Pemeriksaan IVA di Puskesmas Semula Jadi Kota Tanjung Balai’. *JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan)* [online] 7 (2), 141. available from <<http://jurnal.uinsu.ac.id/index.php/kesmas/article/view/11515>> [4 November 2023]
- Puskesmas Mojo (2022) *Profil Puskesmas Mojo Tahun 2022*.

- Setyaningrum, A., Purwitaningtyas, R.Y., and Anggari, R.S. (2021) ‘Peran Simulasi Sadari Sebagai Upaya Meningkatkan Pengetahuan Remaja Putri Akan Resiko Kanker Payudara’. *Jurnal Ilmiah Kesehatan Rustida* [online] 8 (2), 141–148. available from <<https://e-journal.akesrustida.ac.id/index.php/jikr/article/view/142>> [6 November 2023]
- Solso, R.L. (2008) *Cognitive Psychology*. Eighth Edition. Allyn and Bacon
- Sugiyono, Prof.D. (2020) *Metode Penelitian Kuantitatif, Kualitatif Dan Kombinasi (Mixed Methods)*. Alfabeta, cv
- Wawan and Dewi (2011) *Teori Dan Pengukuran Pengetahuan Sikap Dan Perilaku Manusia : Dilengkapi Contoh Kuesioner*. Yogyakarta: Nuha Medika
- Yosibellataufik, A. (2018) *Pengaruh Penyuluhan Terhadap Penegtahuan dan Sikap WUS Tentang Deteksi Dini Kanker Serviks di PKK Dusun Jetis Patalan Jetis Banyul DIY*.



THE EFFECT OF IRON SUPPLEMENTATION AND OTHER SCHOOL-BASED SUPPORT ON ANEMIA STATUS IN ADOLESCENTS: A SYSTEMATIC LITERATURE REVIEW

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Abstract

Background: Anemia among adolescent girls is still problematic. The 2018 RISKESDAS Indonesia survey revealed that anemia among pregnant women was linked to the high prevalence of anemia among adolescents (25%) and women of reproductive age (17%). School support is considered important to help overcome the problem of anemia among adolescent girls. This research aims to assess the effectiveness of school support in providing iron supplements and other support for anemia status in adolescents. **Method:** This was Systematic Literature Review of publications found on Google Scholar and Pubmed databases using the following inclusion criteria: published in Indonesian or international journals between 2018 – 2023 and written in Bahasa Indonesia or English. The article search utilized the following keywords on Google Scholar: "*dukungan sekolah dan tablet tambah darah dan status anemia remaja dan kepatuhan*" and "*dukungan sekolah dan ttd dan status anemia remaja dan kepatuhan*". The keywords used on PubMed were: "school AND (iron OR fe) AND suppl* AND (teen* OR adolescent*) AND (anemia OR anaemia)". The search for publications using these keywords in the databases resulted 1593 articles. Then, all articles entered the screening stage based on title relevance, duplicate articles, abstract, and full text access. Five articles were found to be eligible for review. **Result:** From the five articles obtained, the results showed that the provision of iron supplements coupled with health education and counseling about anemia in schools can reduce the risk of anemia in adolescents by 16%-48%. Both supports are considered effective in overcoming the problem of anemia among adolescent girls. **Conclusion:** Providing iron supplements coupled with health education and counseling about anemia at school can reduce the risk of anemia in adolescent girls.

Keyword: school support, anemia, adolescent girls, iron supplementation, malnutrition

INTRODUCTION

Anemia is a condition where the Hemoglobin (Hb) level in the blood is below the normal value for age, sex, and physiological condition. Normally, the Hb level in adolescents is >12 g/dL (Kaimudin, Lestari and Afa, 2017). Anemia is a

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nutritional problem among adolescents caused by various factors, including physiological factors, sex, age, race, infection, genetic disorders, social behavior, and environmental factors (Sari *et al.*, 2022). Adolescence is a phase that requires adequate nutritional intake, including iron. Anemia is more common in adolescent girls than in adolescent boys. This is because adolescent girls experience menstruation every month (Eni Elawati *et al.*, 2023). RISKESDAS 2018 data shows the occurrence of anemia in pregnant women caused by the high prevalence of anemia in adolescent girls (25%) and women of childbearing age (17%) (Amir and Djokosujono, 2019).

Providing iron supplementation containing folic acid to adolescent girls is one of the efforts to address the problem of anemia among adolescents. School-aged children who are already menstruating are recommended to consume 30-60 mg of elemental iron daily for three consecutive months in a year (Samson, Fischer and Roche, 2022). A study shows that consuming iron supplements can improve adolescents learning concentration (Falkingham *et al.*, 2010). Indonesian government deploys a program to provide free iron supplements to female adolescents in junior high school and senior high school, which is regulated in the Circular Letter of the Ministry of Health of the Republic of Indonesia No. HK.03.03/V/0595/2016 concerning the Provision of Iron Tablets for Adolescent Girls and Women of Childbearing Age.

School-based iron supplementation is considered an effective way to address anemia in adolescents. According to research conducted in Bogor City in 2017 showed that teacher support factors greatly influenced adolescents compliance in consuming iron tablets (Nuradhiani, *et al.*, 2017). A study in Ghana also showed that school-based iron supplementation is highly recommended to address anemia in adolescents (Gosdin *et al.*, 2021). Research at SMAN 3 Pekalongan, Indonesia, reported that Focus Group Discussion (FGD) in schools is an effective activity that can encourage compliance of iron supplementation consumption, proper food selection, and thus can be an alternative program to overcoming anemia in adolescent girls (Fitranti *et al.*, 2022).

Several studies have shown that school-based iron supplementation can reduce the prevalence of anemia. Some research has also found a link between

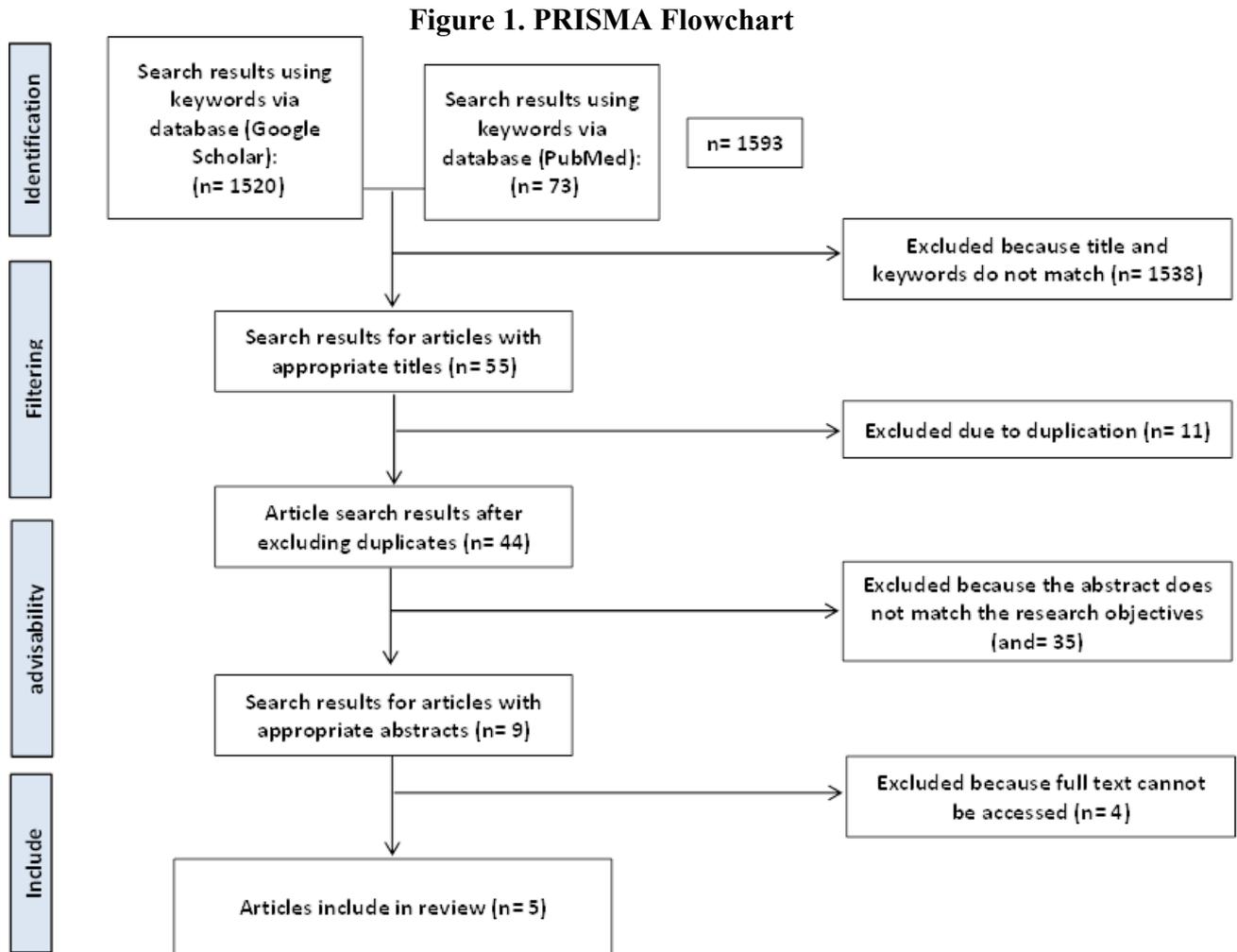


school support and a decrease in anemia rates among adolescent girls. A literature review conducted in 2022 discussed the effectiveness of iron supplementation in influencing anemia status in adolescents (Nurhayati and Susilowati, 2022), but there is a scarcity of literature reviews that discusses the forms of school support that influence adolescents anemia status. Based on this, this study aims to examine the effectiveness of iron supplementation support and other school-based support on anemia status in adolescents. This literature will also provide an overview of what forms of support are more effective in improving the influence of anemia status in adolescent girls.

METHOD

This research employed the Systematic Literature Review method by searching for relevant articles in the Google Scholar and PubMed databases. The article search was conducted in May 2023 using the following keywords on Google Scholar: "*dukungan sekolah dan tablet tambah darah dan status anemia remaja dan kepatuhan*" and "*dukungan sekolah dan ttd dan status anemia remaja dan kepatuhan*". The keywords used on PubMed were: "school AND (iron OR fe) AND suppl* AND (teen* OR adolescent*) AND (anemia OR anaemia)". The inclusion criteria for this study were as follows: (1) articles published in both national and international journals, (2) articles in either Indonesian or English, (3) full-text articles accessible, and (4) articles published within the 2018-2023 timeframe.

The eligibility criteria for the publications are: (1) The population is female students or women worldwide, (2) The exposure is the provision of iron supplementation and school support, (3) The outcome of is anemia status. Results of the search is provided with PRISMA standard.



RESULT AND DISCUSSION

The search for publications using keywords in the databases resulted in 1593 articles, 1520 publications of which came from the Google Scholar database and 73 publications came from the PubMed database. Then, all articles entered the screening stage based on title's relevancy to the inclusion criteria and 1538 articles were excluded because the titles did not discuss school support and therefore did not match the research topic. Of the 55 articles selected after title screening, duplicate articles were edited using the Mendeley application and 11 articles were found to be duplicates and excluded. The remaining 44 articles were screened based on the research abstract, and 35 articles had to be excluded because the abstract did not meet the research criteria. From the remaining articles, 4 articles were excluded



because the full text could not be accessed. After all identifications, 5 articles were found to be eligible for review (Figure 1).

Some research from the articles reviewed were conducted in schools located in several provinces in Indonesia, such as Lampung, Yogyakarta, West Java, and East Nusa Tenggara. In addition to schools in Indonesia, one article involved research in a school in New Delhi, India. From the five articles, four articles by Wio, Jutomo and Boeky, (2022), Rahmadi, (2018), Singh, Rajoura and Honnakamble, (2020), dan Novrita *et al.*, (2020) conducted research in schools with female students as respondents, and one article by Sari, Surtimanah and Ruhyat, (2022) was conducted with female student in Islamic boarding school as respondents.

Two articles only discussed the impact of iron supplementation (Wio, Jutomo and Boeky, 2022; (Rahmadi, 2018), two articles compared the impact of adding health education to iron supplementation (Singh, Rajoura and Honnakamble, 2020; Sari, Surtimanah and Ruhyat, 2022), and one other article discussed the impact of adding counseling to an iron supplementation program (Novrita *et al.*, 2020) (Table 1).

Table 1. Summary Results of Literature Search for The Systematic Review

Author, Year, Country	Research Title	Method	PECO (Population, Exposure, Comparison, Outcome)	Results
Article on Providing Iron Supplementation Only				
Adrianus Wio, Lewi Jutomo, Daniela L. A. Boeky. 2022. Indonesia	Relationship of Fe Supplement Consumption With Anemia In Students of SMAK Tunas Gloria and SMAS Beringin, Kupang City	Design: Cross Sectional Sample: 61 female student Method of collecting data: Questionnaire and measurement of Hb levels with the Easy Touch (GCHb) tool Analysis: Chi-Square test.	P: Female students E: Providing Iron Supplementation once a week for one month C: - O: Effect of providing iron tablet on the anemia status of female students	The results of the chi-square analysis indicate a significant relationship between iron supplementation consumption and anemia incidence, with a p-value of 0.018 and a PR of 6.66. This means that students who do not consume iron tablets are 6.66 times more likely to develop anemia.
Antun Rahmadi. 2018. Indonesia	<i>Perbedaan Status Anemia Gizi Besi Remaja Putri Yang Bersekolah di SMA Program Dan Non-Program Suplementasi Tablet Tambah Darah (Differences in Iron Anemia Status of Adolescent Girls Attending High Schools with Programs and Non-Programs for Blood Supplementation Tablets)</i>	Design: Cross Sectional Sample: 75 program school students and 72 non-program school female students Method of collecting data: Questionnaire and measurement of Hb levels Analysis: Chi-Square Test.	P: Female students E: Students in program school receive one iron supplementation every week. Non Program school do not provide iron supplementation C: - O: Effect of providing iron tablet on the anemia status of female students	A total of 31 female students (43%) from non-program schools were found to be anemic, while only 18 students (24%) from program schools were anemic. The results of the Chi-Square test analysis showed a p-value of 0.023 and an OR of 2.4. Female students in non-iron supplementation program schools are 2.4 times more likely to develop anemia.



Articles on Providing Iron Supplementation with Health Education				
<p>Monika Singh, Om Prakash Rajoura, Raghavendra Appasaheb Honnakamble. 2020. India</p>	<p>Assessment of Weekly Iron–Folic Acid Supplementation with and without Health Education on Anemia in Adolescent Girls: A Comparative Study</p>	<p>Design: Comparative Study Sample: 210 female students. Method of collecting data: Hb measurements were carried out before and after the study using the Hemocue method Analysis: T Test and Paired T Test</p>	<p>P: Female student E: Over a period of 6 months, 106 female students in the intervention group received iron supplementation and health education, while 104 female students in the control group received only iron supplementation. C: - O: The effect of iron tablet supplementation with and without health education on the anemia status of female students</p>	<p>A total of 77 female students from the control group and 41 female students from the intervention group were diagnosed with anemia following the intervention. The results showed a greater reduction in anemia prevalence in the intervention group compared to the control group, with a p-value of 0.001. This indicates that the combination of iron supplementation and health education can effectively lower the prevalence of anemia by 54.7%.</p>
<p>Tiara Rinta Sari, Tuti Surtimanah, Ejeb Ruhayat. 2022. Indonesia</p>	<p><i>Perbandingan Kadar Hemoglobin Santriwati Sesudah Konsumsi Tablet Tambah Darah Ditambah Edukasi Video Singkat Dengan Hanya Konsumsi Tablet Tambah Darah (Comparison of Hemoglobin Levels of Female Students in the Islamic boarding school After</i></p>	<p>Design: Quasi experiment Sample: 37 Female students in Islamic boarding school Method of collecting data: Hb measurements using the Fora 6 Plus digital Hb check tool were carried out before and after the intervention Analysis: T Test</p>	<p>P: Female students of AWL Islamic Boarding Svchool E: For 4 weeks, 18 female students in the control group were given 1 tablet of iron supplementation 1 week, while 19 female students in the intervention group were given iron supplementation accompanied by short video education.</p>	<p>Following the intervention, there were changes in Hb levels in both groups. However, the results of the analysis showed no statistically significant difference in the change in Hb levels before and after the intervention between the two groups, with a p-value of 0.588. After the intervention, the mean Hb level in the intervention group increased by 0.3 mg/dL, while the mean Hb level in the control group increased by 0.8</p>

	Consuming Iron Supplementation Accompanied by Short Video Education with Only Consuming Blood Enhancing Tablets)		C: - O: Differences in female students Hb levels after giving iron supplementation with and without video education.	mg/dL. The possible reason for the lack of a significant change in Hb levels is that the duration of iron supplementation was insufficient.
Article on Providing Iron Supplementation with Health Counseling				
Sisri Novrita, Ika Puspitasari, Nanang Munif Yasin, Chrisna Wardhani. 2020. Indonesia	<i>Pengaruh Konseling Apoteker Terhadap Outcome Anemia pada Siswi SMA yang Menerima Program Suplementasi Zat Besi (The Effect of Pharmacist Counseling on Anemia Outcomes in Female High School Students Who Receive the Iron Supplementation Program)</i>	Design: Pretest Posttest with Control Group Design Sample: 68 female students. Method of collecting data: Measurement of Hb levels using a Hemoglobinometer. Compliance measurement use a questionnaire Analisis: T Test dan Paired T Test	P: Female students with Hb levels below normal E: 33 female students in the control group did not receive counseling and 35 female students in the treatment group received counseling for 7 months. Both groups received iron supplementation C: - O: The effect of counseling on compliance with iron supplement consumption and anemia status	The results indicate that the counseling intervention had a significant impact on both compliance and Hb levels. Following the intervention, compliance rates increased significantly ($p = 0.020$), while Hb levels also showed an improvement ($p = 0.042$). Student compliance increased by 18%, and the percentage of anemia cases decreased by 54%.



Based on Table 1, the five reviewed articles had mixed results. Most articles suggest that iron supplementation for adolescents can be an effective strategy to address anemia by increasing hemoglobin levels in female adolescents. A study conducted at SMAK Tunas Gloria and SMAS Beringin found a significant association between iron supplementation and anemia incidence, with a PR value of 6.66. This indicates that female students who did not consume iron supplements were six times more likely to develop anemia compared to those who did (Wio, *et al.*, 2022). Another study by Rahmadi, (2018) also showed a 44% reduction in the risk of anemia among female students who received iron supplementation.

Apart from providing iron supplementation, it was found that additional school support was carried out simultaneously with iron supplementation, such as providing health education can further enhance the effectiveness of iron supplementation in improving hemoglobin levels and reducing anemia risk in female adolescents. A study conducted in India found a 54.7% reduction in anemia prevalence among female adolescents after receiving health education and iron supplementation for six months. The health education provided included presentations using PowerPoint, pamphlets, and visual displays of examples of iron-rich foods and vitamin C (Singh, Rajoura and Honnakamble, 2020). In this Indian study, participants were also encouraged to consume iron-rich foods. Similarly a study conducted on female students at AWL Islamic Boarding School found a 0.3 mg/dL increase in hemoglobin levels after four weeks of iron supplementation combined with health education (Sari, Surtimanah and Ruhyat, 2022).

However, a study conducted at AWL Islamic Boarding School on the effectiveness of iron tablets and health education using short videos showed inconclusive results. While the study found an increase in hemoglobin levels among the female students, the levels remained below the normal range of 12 mg/dL, indicating a persistent state of anemia. The average hemoglobin level among the students increased from 10.4 mg/dL to 10.7 mg/dL after receiving health education through short videos and iron tablets, representing a mere 0.3 mg/dL increase. There was no statistically significant difference in hemoglobin levels before and after the intervention. (Sari, Surtimanah and Ruhyat, 2022). These findings contrast with the

results of the Indian study, which showed an average increase in hemoglobin levels of 2.3 mg/dL and a 54.7% reduction in anemia prevalence among female adolescents who received iron supplementation and health education. Following iron supplementation combined with health education, no female adolescents were found to have severe anemia or hemoglobin levels below 7 mg/dL (Singh, Rajoura and Honnakamble, 2020).

The differences between the two studies could be attributed to several factors, including sample size, the form of education provided, and the duration of the intervention. The Indian study had a larger sample size of 210 female adolescents compared to the 37 female students in the study on the Islamic boarding school. The form of education in the Indian study involved presentations using PowerPoint and pamphlets. Additionally, the female students were encouraged to consume iron-rich foods, and visual displays of examples of iron-rich foods and vitamin C were provided. In contrast, the study on the Islamic boarding school students only utilized short videos as the medium for health education. The duration of the intervention was also shorter in the Islamic boarding school study. The Indian study implemented the intervention for six months, while the Islamic boarding school study lasted only one month. Iron supplementation for adolescents can effectively increase hemoglobin levels if administered regularly over a specific period (Rahmadi, 2018).

In addition to health education, schools can provide further support to enhance the effectiveness of iron supplementation by offering counseling on anemia and iron tablets. This counseling aims to improve female students' adherence to iron supplementation. A study conducted in Yogyakarta found a 28.6% increase in iron tablet consumption adherence following counseling (Novrita et al., 2020).

Comparing the results from the five articles, the combined approach of iron supplementation with health education and health counseling shows a greater reduction in anemia risk compared to iron supplementation alone. Iron supplementation alone was found to reduce anemia risk by 44% (Rahmadi, 2018). Additional support through health education and counseling can further reduce the risk of anemia among adolescent girls by 16% to 48% more than iron



supplementation alone (Singh, Rajoura and Honnakamble, 2020; Sari, Surtimanah and Ruhyat, 2022; Novrita *et al.*, 2020). Consuming iron supplements regularly can effectively elevate hemoglobin (Hb) levels in the blood and reduce the risk of anemia by addressing iron deficiencies that may not be adequately met through dietary intake (Rahmadi, 2018; Wio *et al.*, 2022). However, combining health education and counseling with iron supplementation can further reduce the risk of anemia even more. Health education and counseling for adolescents can enhance their knowledge and compliance to iron supplementation, leading to improved outcomes (Mulyadi, Warjiman. and Chrisnawati, 2018; (Novrita *et al.*, 2020).

Research of school-based interventions for anemia prevention among adolescents has not yet been carried out using the literature review method. No one has conducted an extensive review so that this literature can help to prove the most effective school-based support strategies to address anemia in adolescents. However, the results of this review cannot be generalized to all settings due to limitations in the scope of the literature review. The included studies were restricted to Indonesia and India, and the review period was limited, resulting in a lack of diversity in the literature and coverage of only a few regions. Additionally, none of the studies included in this review employed a randomized controlled trial design, raising the possibility of selection bias.

CONCLUSION AND SUGGESTION

The systematic literature review of the five articles revealed that providing iron tablets combined with health education and counseling in schools is more effective in reducing anemia among adolescent girls compared to iron supplementation alone. This comprehensive support can enhance hemoglobin levels and reduce anemia prevalence among school aged adolescents. Implementing iron supplementation alongside health education and counseling in schools is crucial to improve adolescents' knowledge about iron tablets and promote compliance to iron supplementation. The Health Office can collaborate with the Educational Office to expand the coverage of the iron supplementation program alongside health education and counseling to schools that have not yet implemented the program.

DECLARATION

Conflict of Interest

The authors declare that they have no competing interest.

Authors' Contribution

First author: conceptualized the study, designed the methodology, collected data, analyzed data, wrote the manuscript, and revised the manuscript.

Second author: contribute to the design and methodology of the study, verified research findings, review, and revised the manuscript.

Ethical Approval

This study employs systematic literature review method and thus, does not require ethical approval.

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Data Availability

The publication reviewed in this research are available and accessible through Google Scholar and PubMed databases.

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REFERENCE

- Amir, N. and Djokosujono, K. (2019) 'Faktor-faktor yang berhubungan dengan konsumsi tablet tambah darah (TTD) pada remaja putri di Indonesia: Literatur review', *Jurnal Kedokteran dan Kesehatan*, 15(2), pp. 119–129. Available at: <https://jurnal.umj.ac.id/index.php/JKK/article/view/3865> (Accessed: 22 May 2023).
- Eni Elawati, N. et al. (2023) 'Edukasi dan Pemeriksaan Hemoglobin Sebagai Gerakan Sehat tanpa Anemia pada Siswa SMK Nurul Islami Semarang Info Articles', *Jurnal Pengabdian dan Pemberdayaan Masyarakat*, 3, pp. 132–145. Available at: <http://e-journal.ivet.ac.id/index.php/manggali>.



- Falkingham, M. *et al.* (2010) 'The effects of oral iron supplementation on cognition in older children and adults: a systematic review and meta-analysis.', *Nutrition journal*, 9, p. 4. doi: 10.1186/1475-2891-9-4.
- Fitranti, D. Y. *et al.* (2022) 'Pencegahan Anemia Pada Remaja Putri dengan Metode Focus Group Discussion di SMA Negeri 3 Pekalongan', *Jurnal Proactive*, 1(1), pp. 46–54. Available at: <https://ejournal2.undip.ac.id/index.php/proactive/article/view/13764> (Accessed: 22 May 2023).
- Gosdin, L. *et al.* (2021) 'A School-Based Weekly Iron and Folic Acid Supplementation Program Effectively Reduces Anemia in a Prospective Cohort of Ghanaian Adolescent Girls.', *The Journal of nutrition*, 151(6), pp. 1646–1655. doi: 10.1093/jn/nxab024.
- Kaimudin, N. I., Lestari, H. and Afa, J. R. (2017) 'Skrining Dan Determinan Kejadian Anemia Pada Remaja Putri Sma Negeri 3 Kendari Tahun 2017', *Jurnal Ilmiah Mahasiswa Kesehatan Masyarakat*, 2(6), pp. 1–10.
- Mulyadi, M. I., Warjiman. and Chrisnawati (2018) 'Efektivitas pendidikan kesehatan dengan media video terhadap tingkat pengetahuan perilaku hidup bersih dan sehat', *Jurnal Keperawatan STIKES Suaka Insan*, 3(2), pp. 1–9. Available at: <http://journal.stikessuakainsan.ac.id/index.php/jksi/article/view/111>.
- Novrita, S. *et al.* (2020) 'Pengaruh Konseling Apoteker Terhadap Outcome Anemia Pada Siswi SMA Yang Menerima Program Suplementasi Zat Besi', *Majalah Farmaseutik*, 18(2). Available at: <https://journal.ugm.ac.id/majalahfarmaseutik/article/view/60555> (Accessed: 23 May 2023).
- Nuradhiani, A., Briawan, D. and Dwiriani, C. M. (2017) 'DUKUNGAN GURU MENINGKATKAN KEPATUHAN KONSUMSI TABLET TAMBAH DARAH PADA REMAJA PUTRI DI KOTA BOGOR', 12(November), pp. 153–160. doi: 10.25182/jgp.2017.12.3.153-160.
- Nurhayati, J. and Susilowati, S. T. (2022) *Literature Review: Efektivitas Suplementasi Zat Besi Terhadap Kadar Hemoglobin Pada Remaja Putri*. Universitas Muhammadiyah Surakarta. Available at: <http://eprints.ums.ac.id/id/eprint/104471> (Accessed: 22 May 2023).
- Rahmadi, A. (2018) 'Perbedaan Status Anemia Gizi Besi Remaja Putri yang Bersekolah di SMA Program dan Non-Program Suplementasi Tablet Tambah Darah', *Borneo Journal of Medical Laboratory Technology*, 1(1). Available at: <https://journal.umpr.ac.id/index.php/bjmlt/article/view/462> (Accessed: 23 May 2023).
- Samson, K. L. I., Fischer, J. A. J. and Roche, M. L. (2022) 'Iron Status, Anemia, and Iron Interventions and Their Associations with Cognitive and Academic Performance in Adolescents: A Systematic Review.', *Nutrients*, 14(1). doi: 10.3390/nu14010224.
- Sari, P. *et al.* (2022) 'Anemia among Adolescent Girls in West Java, Indonesia: Related Factors and Consequences on the Quality of Life', *Nutrients*, 14(18), pp. 1–13. doi: 10.3390/nu14183777.
- Sari, T. R., Surtimanah, T. and Ruhyat, E. (2022) 'Perbandingan Kadar Hemoglobin Santriwati Sesudah Konsumsi Tablet Tambah Darah Ditambah Edukasi Video Singkat Dengan Hanya Konsumsi Tablet Tambah Darah',

Perilaku dan Promosi Kesehatan: Indonesian Journal of Health Promotion and Behavior, 4(1), p. 39. doi: 10.47034/ppk.v4i1.5973.

- Singh, M., Rajoura, O. P. and Honnakamble, R. A. (2020) 'Assessment of Weekly Iron-Folic Acid Supplementation with and without Health Education on Anemia in Adolescent Girls: A Comparative Study.', *International Journal of Preventive Medicine*, 11, pp. 1–4. doi: 10.4103/ijpvm.IJPVM_552_18.
- Wio, A., Jutomo, L. and Boeky, D. L. A. (2022) 'Relationship of Fe Supplement Consumption With Anemia In Students of SMAK Tunas Gloria and SMAS Beringin, Kupang City', *Media Kesehatan Masyarakat*, 4(1), pp. 9–17. Available at: <https://doi.org/10.35508/mkmhttps://ejurnal.undana.ac.id/MKM>.