Journal of Applied Health Management and Technology Vol 6, No 1 (2024)

Journal of Applied Health Management and Technology

p-ISSN: 2715-3061
e-ISSN: 2715-307X

http://ejournal.poltekkes-smg.ac.id/ojs/index.php/JAHMT

INCREASED KNOWLEDGE AND MOTIVATION FOR PREGNANT MOTHERS IN DETECTING STUNTED PREMATURE APPLICATIONS USING WEB-BASED STUNTING (WARD ACTION) FORMS

Intan Nugraheni Hasanah[1], **Melyana Nurul Widyawati**[2], **Dhita Aulia Octaviani**[3]
[1,2,3]*Department of Midwifery Poltekkes Kemenkes Semarang, Indonesia*

Corresponding author: Intan Nugraheni Hasanah
Email: intankemal82@gmail.com

Received: 30 January 2024;
Accepted: 26 April 2024

ABSTRACT

Background: Stunting is a chronic undernourishment problem caused by chronic insufficient nutrition intake through a food supply that fails to meet the nutritional needs that occur while the fetus is still in the womb. Stunting or short growth mostly occurs due to growth disorders at an early age even starting from the mother's womb, this can be caused by a lack of knowledge about the concept of stunting. In addition, the importance of motivation for pregnant women to support efforts to detect early stunting in their children in the future. Using information technology through smartphones as social media for early stunting detection is expected to increase maternal knowledge and motivation to detect stunting. ***Methods:*** The study is a quasi-study of experiments using the design of one group pre-post test. The population in this study is expectant mothers in the region of central Kesmas now the city of Semarang. Sampling in this study USES an impressive sample. The number of samples in the treatment group was 215 expectant mothers who were determined to use the sample count formula. Research instruments use a questionnaire on the web application. ***Results:*** Research shows that most of the respondents are 20-35 years old, with their last level of education: high school /SMK/ equality, working, level > 150 cm, pregnancy distance > 2 years, and have normal hb levels. There is an increased knowledge of stunting concepts and motivations in pregnant mothers before and after interventions using web-based "critical applications" with a p-value of 0,000 (< 0.05). ***Conclusion:*** There is an increased knowledge of stunting concepts and motivations in pregnant mothers before and after interventions using web-based "critical applications." The need for innovation and creativity of the young generation to create easily accessible applications to increase public awareness in anticipation of a stunted application of this application is expected to support a 2020-2024 government plan program to lower stunting rates in Indonesia.

Keywords: Pregnant Mother 1; Stunting 2; Knowledge 3; Motivation 4; Web Application 5

Introduction

Stunting is a chronic undernourishment problem caused by a lack of long-term nutrition because of a mismatch between the food being given and the need for nourishment. Stunting occurs while the fetus is still in the womb. Malnutrition at the beginning of life increases the mortality of infants and children as a result of childhood illnesses and poor posture. The presence of a short child is often overlooked by parents and by society since the signs of delay in development usually take place within two years. One of the main challenges of tackling this in Indonesia is that stunting is often considered normal for genetic reasons.

Stunting is not due to genetic impact but rather is the result of accelerated growth in early life, which can begin in the womb. To keep such Numbers in check, people need to understand what factors are responsible for stunting. Lack of access to nutritious foods, low intake of vitamins and minerals, and a low variety of foods and animal protein sources provide a cause. Maternal factors and improper upbringing especially are contributing factors in stunted growth. The malnutrition of a woman in her teen years, even during pregnancy and lactating, can seriously affect the development of a child's body and brain. Other factors that contribute to stunting include the prevalence of maternal infection, teen pregnancy, maternal disorders, short birth distances, and high blood pressure. In addition, poor access to sanitation services, including sanitation facilities and safe water, is one of the factors affecting child growth.

The result of the integration of national socioeconomic surveys (SSGBI) and the Indonesia child's nutritional status (SSGBI) March 2019 stunting rates, which yield 27.7%. Compared with the 2013 stunting, the stunting rate has averaged 1.6% per year over the past 6 years. According to these data, it would require further effort across ministries and institutions to achieve 3,0% per year, or 14% by 2024 through specific and sensitive nutrition interventions.

According to Renstra Health Service of central Java in 2019, stunting measures in central Java increased by 28.5%. According to the March 2019 consolidated reports, stunting case requirements in Semarang City of 26.01%. According to the data from the Semarang City Health Service in 2020, stunting in the center is now 9.58%, with 243 stunted toddlers. Possible side effects of short-term growth retards are developmental disorders, intelligence, physical developmental disorders, and body metabolic disorders. In the long run, possible side effects may be lower cognitive and learning ability, lower immunity and falling ill easily, and higher risk of diabetes, obesity, cardiovascular disease, cancer, stroke, and disability in parents.

Mother's knowledge was one of the factors that affected stunting events. Knowledge of stunting is essential to the mother because her lack of knowledge of stunting puts the child at risk of stunting. The more mothers know about stunting and health, the better the assessment of nutrition, while children from low-knowledge families often obtain less nutrition and nourishment from their needs. Good parental knowledge can help increase the child's nutritional status for growth and development. Inadequate knowledge and a lack of awareness of good eating habits and stunting determine a mother's attitude and behavior about the feeding of her children, including the right kind and number for optimum growth and development. The mother's lack of knowledge of stunting concepts presents one challenge, requiring cooperation to increase her knowledge and literacy in stunting prevention.

The health promotion efforts of lectures, interactive discussions, visual materials, and a direct combination of

Characteristics	*F*	%
Age		
< 20 years old	7	5,1
20-35 years old	208	80,9
>35 years old	30	14
Total	**215**	**100**
Education Level		
SD/MI/Similar	6	2,8
SMP/MTS/Similar	29	13,4
SMA/SMK/Similar	120	55,6
College	60	27,8
Total	**215**	**100**
Pekerjaan		
Unemployed	69	31,9
Employee	146	67,6
Total	**215**	**100**
Mother's Height		
Height <150 cm	18	7,5
Height ≥150 cm	197	92,5
Total	**215**	**100**
Pregnancy Distance		
≤ 2 years old	39	29,8
> 2 years old	66	50,4
Total	**215**	**100**
Hb Levels		
Normal	182	84,4
Mild Anemic	33	15,6
Heavy Anemic	0	0
Total	**215**	**100**

practices are alternative methods for improving maternal knowledge. Government management of stunting through various programs such as companion food (PMT) for toddlers and expectant mothers, blood tonic tablets (TTD) for young women and pregnant mothers and complete basic immunizations, vitamins in infants and small children, and zinc for diarrhea, especially in pregnant mothers and young children.

One of the recent innovations is the use of information technology as a means to facilitate access and transfer materials in today's technology-development learning process to create a system that can help health professionals fulfill their roles. In addition to being a communications medium, the smartphone has become a modern society necessity, so it is probably used as a social media for stunting detection and monitoring of child nutrition status. Web applications fed into smartphones are designed to increase the efficiency of use and enhance knowledge about stunting, thus attracting researchers to do this research aimed at improving maternal knowledge and motivation in detecting stunting by creating web-based media innovation.

Methods

The study is a quasi-study of experiments using the design of one group pre-post test. The population in this study was pregnant mothers in the area of Sekaran Puskesmas the city of Semarang. Sampling in this study uses an impressive sample. The number of samples in the treatment group was 215 expectant mothers who were determined to use the sample count formula. Research instruments use a questionnaire on the web application

Results and Discussion

1. Univariate Analysis
   a. Characteristics of respondents

Most respondents aged 20-35 years 208 respondents (80.9%) have the latest level of SMA/SMK/similar to 120 respondents (55.6%), working as many as 146 respondents (67.6%), have a height of 150 cm as many as 197 respondents (92.5%), pregnancy distance> 2 years as many as 66 respondents (50.4%) and have normal Hb level of 182 respondents (84.4%)

b. Distribution of Frequency of Knowledge before and after education with web applications

Based on the above chart it can be seen that as many as 141 respondents before being given interventions with web-based "Genting Applications" on stunting concepts indicate

Level of knowledge	Pre-test		Post-test	
	F	%	*f*	%
Good	11	5,1	125	58,2
Enough	141	65,3	78	39,1
Less	63	29,6	12	5,7
Total		**100**		**100**

that the majority of respondents have a sufficient knowledge level of 65.3%. The intervention of education with web-based "Genting Applications" applications on stunting concepts shows that there is an increased level of knowledge in which respondents who have a good knowledge level as many as 125 (58.2%).

c. Distribution of the motivational frequency before and after each is done education with the application media

Table 4. 3 Distribusi Frekuensi Motivasi Sebelum dan Setelah Dilakukan Edukasi dengan Media Aplikasi Web

Motivation	**Pre-test**		**Post-test**	
	f	***%***	***f***	***%***
Strong	93	48,9	227	77,3
Medium	157	51,6	24	20,7
Weak	1	0,5	0	0
Total		**100**		**100**

Based on the above chart it can be seen that respondents were before interventions with web-based "Genting Applications" on stunting concepts indicating that most of the respondents have a current motivational level of 157 (51.6%). The intervention of education with web-based "Genting Applications" on stunting concepts shows that there is an increased motivation where respondents have a level of motivation. Powerful 227 of respondents (77.3%).

2. Bivariate Analysis

a. Differences in the pregnant mother's knowledge of the stunting concept before and after the web-based "Genting Applications"

Table 4. 4 Differences in maternal knowledge about stunting concepts before and after being given web-based "Genting Applications"

Knowledge Variable	**N**	***Positive Ranks***	***Negative Ranks***	***Ties***	***p***
Pre-test Post-test	215	186	7	22	0,000

According to Wilcoxon's test, there are value changes before and after intervention. "Positive reviews by 186" means that as many as 186 respondents have increased in value from pre-test to post-test, negative pressures by 7 means 7 respondents have a lower value of post-test than pre-test scores, and a value of 22 means that there are 22 samples of pre-test and post-test equals. The p-value obtained based on Wilcoxon's test is 0,000 (p-value 0.05). This suggests the effect "critical applications" have on stunting motherhood's knowledge

b. Differences in motivation for pregnant mothers about stunting concepts before and after being given web-based "Genting Applications".

Table 4. 5 Differences in motivation for pregnant mothers about stunting concepts before and after being given web-based "Genting Applications".

Motivation Variabel	**N**	***Positive Ranks***	***Negative Ranks***	***Ties***	***p***
Pre-test Post-test	215	164	34	17	0,000

Based on the Wilcoxon test there is a change in the prior to and after the intervention. Positive Ranks with 164 means 164 respondents increased the value of the pre-test to post-test, negative rank with 34 means 34 respondents have lower post-test values than pre-test values, as well as the value of Ties with 17 values means 17 samples have pre-test and post-test values. The value of the P-value obtained based on the Wilcoxon test is 0.000 (P-value <0.05). This indicates the effect of the "Genting app" on the pregnant mother's motivation for early detention of stunting.

Mom's age when pregnant is not at risk of ranging from 20 to 35 years. Mothers aged <20 and> 35 years are at risk during pregnancy. Female fertile age is 20 to 35 years is a safe period of pregnancy, because the reproductive organs and mental organs

have been mature to live during pregnancy and labor. At the age of <20 and> 35 years, fertility decreases. Mothers who are pregnant her age is more than 35 years have a 2.74-day risk of giving birth late than mothers who gave birth between the ages of 25 and 35 years

Education is one of the internal factors that will affect knowledge because higher education will facilitate one person in receiving information so that the information obtained by the mother can understand how to detect early stunting in his child. The level of education may affect the knowledge and attitude of a person in overcoming an event. Knowledge will affect the formation of one's attitude and behavior. One's knowledge can be obtained through formal and non-formal education for example through lectures and counseling to the community or through media communications and education media both print media and other electronic media and other social media.

One of the factors that affect knowledge is the work. The job factor affects knowledge, a person who works knowledge will be wider than someone who does not work because people who work more information because in work for the mothers will interact, and work with others. Communication at work is one way of gaining knowledge because the mother can exchange information with peers with similar problems.

The mother’s height is an indicator that serves to predict the child's explicitly childhood. The mother's posture also reflects the height of the mother and this will contribute to his child's height. But in this case, the male body is not a major determinant because the child's height is a combination of the genetic potential of the height of the father and mother. When short parents are due to nutritional or illness, the possibility of children can grow to normal height while the child is not exposed to other risk factors. Short mothers tend to have short children, as well as the normal mother's body also tends to have a child of height and normal. This biological aspect is associated with internal factors, which are influenced by genetic factors derived from the mother

Height is one of the forms of genetic expressions and is a factor that is derived from the child and is related to the stunting event. Children with short parents, either one or both more risky stunting when compared to children who have parents with normal height. Parents are short because genes in chromosomes that bring a short nature will most likely decrease the short nature of their children. But if the short nature of the parents is due to nutritional and pathological problems, then the short nature will not be derived to his child.

Factors that affect the growth of children, ie genetic factors and the environment. Genetic factors are the basic capital in achieving the final result of the child's growth process. The genetics contained in the fertilized egg cell can determine the quality and quantity of growth. Genetic factors include different normal and pathological, native, native, nation or nation. Environmental factors are also a very determining factor achieved or not innate potential. A good enough environment will enable the achievement of congenital potential, while less goodwill inhibits it. This environmental factor is one of the intakes consumed, by pregnant women to meet the needs of fetuses and intake of toddlers. The Importance of Malnutrition in Mothers needs to be seen from various aspects. In addition to access to food safety and health services, miniature conditions have also socialized and economic impacts. A mother's nutritional state does not only negatively affect the health status and risk of self-death, but also against the survival and the development of the fetus he contains and further the fetal growth until adulthood. The most specific nature in the child is growing house. This

nature is already programmed since the baby is conceived. This specific nature is determined by the innate of the child itself and the effect of direct or indirect environment on children. Factors of intake and disease play a role that determines whether children will be stunted during their lifetime or successfully achieve maximum catch-up grow

The nearby birth distance, making Mother has not recovered perfectly from the condition after delivery, so the mother has not been able to create a good pattern of good in parenting and raising his son. The birth distance is one of the factors causing stunting. Distance birth or also called the difference between the age of birth before or after birth. The birth distance can cause stunting because the mother who gives birth at a time too close does not have time to prepare for the condition and nutrition of the mother for further pregnancy. A stunting child will have difficulty achieving optimal height, which may cause disorder development of cognitive and psychomotor function, intellectual decline, high risk of degenerative disease, and in the future decreased productivity

Stunted toddlers have been chronically undernourished which may have occurred during pregnancy. A fetus is not getting sufficient nutrition, one cause is a pregnancy distance of fewer than 2 years. Frequent expectant mothers cause the body to fail to restore conditions and nutritional status to previous pregnancies, so the body is not ready to receive a new one. This can cause a baby to be born with various health problems of BBLR and premature. An overly close birth results in a family's inability to nurse their young well because mothers are expected to nurse their babies for up to 18 elementary schools 24 months, to provide nourishment for the baby..

Society now has a lot of family planning programs (KB) which are launched by the government, so the distance of birth/birth can be adjusted to the maternal desire. Mothers who have toddlers with birthdays in the 2nd year with nutritional status of toddlers stunting can be caused because some of the moments when pregnant have chronic nutritional lacks, thus affecting the growth of the fetus and the child's ability to be stunted. Mothers who have hopes of <2 years with nutritional status of toddlers stunting can be caused because the mother who has 2 toddlers will have difficulty dividing the time for 2 toddlers and tend to hassle even usually focus more on the baby newly born so that the mother is less optimal in taking care of the first child.

The breast distance is made up so the mother can recover perfectly from the condition after delivery. When the mother is comfortable with his condition then the mother can create a good pattern of good in parenting and raising his son. The breast distance is made up so the mother can recover perfectly from the condition after delivery. When the mother is comfortable with his condition then the mother can create a good pattern of good in urban and raise his son so it attention to the child feeding well.

Hemoglobin levels when pregnant women are related to the length of the baby will be born, the higher the level of HB is the longer the size of the baby to be born. Prematurity and BBLR are also a risk factor for stunting events, so indirectly anemia in pregnant women can cause stunting events in toddlers. Pregnant women who experience anemia result in reduced oxygen supply to body cells and brain especially supply to placenta. This will cause malnutrition in the fetus which will eventually lead to stunting.

In general, the cause of anemia in pregnant women is the lack of nutrition, lack of iron in foods consumed, less common absorption, and chronic diseases (such as TBC, lungs, intestinal worms, and malaria). Pregnant women are categorized in anemia if

hemoglobin levels on laboratory examination <11 gr% and on Anamnesa are obtained by rapidly comprehensive, often dizzy, eye-rapid eyes and vomiting. Anemia is a risk factor for the long incident of short birth bodies or hypothesis acceptable. Physiologically, hemoglobin levels may vary depending on age, gender, presence of pregnancy, and high residence. Some signs and symptoms of iron deficiency anemia (fe) are loss of appetite, fatigue, functional capacity interference, difficulty concentrating, sensitivity to cold, breathe fast when doing activities. In addition, dry and pale skin, easy hair loss, fox-shaped and fragile stuff. Other marks can be known by taking into account the cardiovascular systems that as exertional dyspnea, fast heart rate, palpitation, and easy dizziness. The occurrence of decreased immune systems is easily affected by infections and vulnerable to malaria.

Pregnant mothers with iron nutrition anemia are susceptible to premature birth and underweight to a baby. This is because during pregnancy increased production of erythrocyte a relative compound in the hypo intrauterine environment and the fetal oxygen supply needed for development. A sufficient amount of iron is needed on the trip across the placenta to ensure birth according to full gestation age. In addition, iron is also needed for postnatal growth in red blood cells and as a building element in infancy. Some of the principal causes of stunting are obstacles to growth in the womb, insufficient intake of nutrients to support accelerated growth and development in infancy and children, and frequent infections during early life

Of the 215 respondents in this study, before the education with the web-based "Genting Applications" media on the stunting concept there were as many as 11 respondents (5.1%) had a good level of knowledge, then after the educational intervention with the media with the web-based "Genting Applications" media about the concept of stunting there is an increase in the level of knowledge of respondents that has a good level of knowledge as much as 125 respondents (58.2%)

Knowledge is the result of knowing after someone does the sensitivity of a particular object. A person's knowledge lays the basis for decision-making and decisive action on the issue at hand. How to acquire knowledge, one way to do so is through the visual sense, to educate via the media of web-based applications associated with it. According to the results of pre-tests and post-tests, there has been an improvement in the knowledge category, both good and sufficient.

Lack of Mother's knowledge about stunting one of them lack of information greatly affects the level of mother's knowledge. The other cause of the lack of maternal knowledge about stunting is that not all toddlers visit Posyandu. Knowledge is closely related to education, it can be assumed that with high education then the person will be increasingly widely knowledgeable. Low education does not guarantee a mother has not enough knowledge of his family's nutrition. The existence of high curiosity may affect the mother in getting information about the right food for the child. Increased knowledge is not absolute obtained from formal education alone, but can be obtained through non-formal education. One's knowledge of an object contains two aspects that is an aspect of positive aspects and negative aspects. These two aspects will determine someone's attitude, more and more positive aspects, and the known objects will cause a positive attitude towards certain objects.

Knowledge of nutrition in parents is influenced by several factors: age, the older one gets, the better the mental development process, and the intelligence or ability to learn and think abstractly. adjust to a new

situation, then the environment in which one can learn good and bad depends on the character of the group and the culture that plays a vital role in knowledge, Education is fundamental to developing knowledge, and the experience that is the best teacher of learning. According to Notoatmodjo 2010, knowledge is the result of tofu and occurs after people make an attachment to certain objects. Sensing takes place through the human senses of smell, sight, hearing, and experimentation. Knowledge is the total of ideas, ideas, that humans have of the world on their own, including man and his life

Self-knowledge is usually acquired from information obtained from both formal education and other information such as radio, TV, the Internet, newspapers, magazines, education, etc. The level of education affects a person's receiving information. People with better education would be easier to receive information than people with less education. That information was used as a mother's science to care for her young children in daily life. Perception itself can be interpreted as a way to view something after gaining knowledge both directly and indirectly. Informed sources and technological advances provided a variety of media that could influence public knowledge of new information, such as television, radio, newspapers, education, etc.

Researchers assume that a parent's knowledge of nutrition helps improve the nutritional status of a child to attain growth maturity. With stunted children, health problems are both physical and psychological. Thus, not all children can grow and develop according to their age, some with disabilities and disorders. Stunting needs to be prevented and treated as quickly as possible because it produces adverse effects that result in children's growth failure, cognitive & motoric development barriers to cognitive development and educational success, and is lacking in optimizing body physical size and metabolic disorders. Long periods interfere with intellectual capacity, structural impairment, neurological function, and brain cells are permanent and cause impairment of the ability to digest lessons that will affect their productivity in adulthood, and that can lead to lower human resources in the future

Factors that can affect the stunting events of one of them are the knowledge of the mother. Knowledge of stunting is necessary for a mother because the mother's knowledge of stunting can not cause children to risk suffering. The government's efforts to lower the stunting incident is to join Scaling Up Nutrition (SUN). This SUN's movement is an effort made by various countries to strengthen the action plan for acceleration of nutritional repairs, especially nutrition handling from 1,000 days from pregnancy until children are 2 years. In the SUN movement is done specific intervention that is a specialized activity for the first 1000 days of life (HPK) and short-term. In addition, the intervention conducted on the sun movement is a sensitive intervention which is a development of development activities outside the health sector intended for the general public. In addition, village midwives and nurses Puskesmas can work together to increase community empowerment because one of the efforts to prevent stunting can be done through community empowerment.

Health messages are very necessary to be delivered to the target community. Delivery of messages to targets requires the media as an intermediary. Media is one of the elements of communication. In addition to the media, other communication elements are the sender of the message (communicator), messages (information), the recipient of the message (communicant), and the media and the feedback. Media is something that can be used to channel messages from communicators to the communicant so that the communicant understands the contents of

the message. Media Promotional Media is all the means that can be used to deliver health messages with the purpose of the health level of the target community increases. Many medical promotion media can be selected to order messages more easily accepted by the community

A person is motivated by motive or motivation, such motivation exists because of an innate desire to satisfy a need, it is the result of physical and psychological demands arising through the mechanisms of the human biological system. The communicator is the one who gives information to the one who receives it. The other role of health-care workers is as a motivator, the motivator being the one who gives motivation to others. The ultimate role as a facilitator, a facilitator is a person or an agency that makes it easier to provide facilities for others in need. It is this role that influences one's knowledge and attitude.

The mother's motivation is the dominant or most influential factor in affecting her behavior in stunting prevention in her toddlers. The mother's motivation becomes the most influential variable in the study because self-motivation is a major factor or primary element in doing something for an object to be achieved. Midwives and healthcare workers should always be enlightening in information and education about stunting so that mothers with toddlers can participate or attend counseling, thereby motivating stunting prevention. The support of the people closest to you will also strongly influence your self-motivation for healthy behavior.

Health education is an effort or activity to create societal behavior that is conducive to health. It means that health education seeks to make the public aware of how to care for their health, and how to avoid or prevent things that harm both their health and that of others. Motivation is a fundamental impulse that moves a person to act, and it is in the person who is moving to do something that matches the impulse inside him.

Stunting prevention efforts in pregnancy can be achieved when motivated to seek out needs at a higher level. Stunting prevention behaviors in pregnant mothers include balanced nutrition, supplemental (PMT) meals for pregnant mothers with KEK, blood-added tablets, clean and healthy living behaviors (PHBS), providing access to clean water and sanitation facilities, and keeping the environment clean.

Conclusion

There is an increased knowledge of stunting concepts and motivations in pregnant mothers before and after interventions using web-based "Genting Applications." The need for innovation and creativity of the young generation to create easily accessible applications to increase public awareness in anticipation of a stunted application of this application is expected to support a 2020-2024 government plan program to lower stunting rates in Indonesia.

References

1. Adriani, M. d. (2016). *Peranan Gizi dalam Siklus Kehidupan.* Jakarta: Kencana. AKG. (2013). *Angka Kecukupan Gizi yang Dianjurkan Bagi Bangsa Indonesia.*Jakarta: Menteri Kesehatan RI.

2. Akib, A. d. (2017). *Kebiasaan Makan Remaja Putri yang Berhubungan dengan Anemi: Kajian Positive Deviance.* Amerta Nutr, hal. 105-116.

3. Fauziah, D. (2012.). Fauziah, D., 2012. Hubungan Antara Pola Menstruasi dan Konsumsi Besi dengan Kejadian Anemia pada Remaja Putri di SMA Informatika Ciamis. *Universitas Siliwangi.*

4. Ferawati. (2016). Hubungan Pola Konsumsi Pangan Inhibitor dan Enhancer Fe, Bioavailabilitas Fe, Status Gizi dengan Status Anemia Mahasiswa IPB. *Skripsi. Institut Pertanian Bogor*.

5. Hasdianah, H. R. (2014). *Gizi Pemanfaatan Gizi, Diet, dan Obesitas.* Yogyakarta:Nuha Medika.

6. Indartanti, D. d. (2014). Indartanti, D., dan Kartini, A., 2014. Hubungan Status Gizi dengan Kejadian Anemia pada Remaja Putri. *Journal of Nutrition College, Vol. 3*, No. 2: 33-39.

7. Intifada, N. (2015). Hubungan Asupan Fe, Zinc, dan Kalsium dengan Kejadian Anemia pada Remaja Putri Usia 13-18 Tahun, di Pulau Jawa 2007 (analisis Data Sekunder Riskesdas 2007). *Skripsi. Universitas Esa Unggul*.

8. Masthalina, H. L. (2015). Pola Konsumsi (Faktor Inhibitor dan Enhancer Fe) terhadap Status Anemia Remaja Putri. *Jurnal Kesehatan Masyarakat, Vol. 11,*, No. 1: 80-86

9. Narulita, A. E. (2012). Narulita, A. E., 2012. Hubungan Lama Menstruasi dan Siklus Menstruasi dengan Perubahan Kadar Hemoblobin Siswi Kelas II SMK YPM 11 Wonoayu Sidoarjo. *Skripsi. Universitas Airlangga.*

10. Nasution, R. S. (2021). Konsumsi Jus Bayam Merah dapat Meningkatkan Kadar Hemoglobin pada Ibu Hamil Trimester II. *JKM (Jurnal Kebidanan Malahayati)7.2*, 215-221.

11. Neneng Latifah, S. S. (2019). Konsumsi Jus Bayam Merah Campur Madu terhadap Peningkatan Kadar Hemoglobin pada Ibu Hamil Trimester III. *Jurnal Kesehatan*, 10.3: 360-366.

12. Notoatmodjo, S. (2012). *Metodeologi Penelitian Kesehatan.* Jakarta: Rineka Cipta

13. Noviandari, I. (2016). Hubungan Antara Status Gizi dan Anemia dengan Siklus Menstruasi pada Remaja Putri di SMA Batik 1 Surakarta. *Publikasi Ilmiah. Universitas Muhammadiyah Surakarta*

14. Nugraheni. (2013). Perbedaan Kadar Hemoglobin Sebelum dan Sesudah Menstruasi pada Mahasiswa DIII Keperawatan Universitas Muhammadiyah Surakarta. *Naskah Publikasi. Universitas Muhammadiyah Surakarta.*

15. Permatasari, W. M. (2016). Hubungan Antara Status Gizi, Siklus, dan Lama Menstruasi dengan Kejadian Anemia Remaja Putri di SMA Negeri 3 Surabaya. *Skripsi. Universitas Airlangga.*

16. Sholicha, C. A. (2018). Hubungan Asupan Zat Besi, Protein, Vitamin C, dan Pola Menstruasi dengan Kadar Hemoglobin pada Remaja Putri di SMAN 1 Manyar Gresik. Media Gizi Indonesia, Vol. 14, No. 2. *Media Gizi Indonesia*, Vol. 14, No. 2.

17. Situmorang, R. (2015). Situmorang, R., 2015. Hubungan Durasi Pendarahan Haid dan Kadar Hemoglobin pada Mahasiswi Stambuk 2014 Fakultas Kedokteran Universitas Sumatera Utara. *Karya Tulis Ilmiah. Universitas Sumatera Utara.*

18. Sugiyono. (2007). *Stastistika Untuk Penelitian.* Bandung: Alfabeta.