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The Relationship between Morning Sickness, Food Intake, and Weight Changes in Pregnant Women Aged 1 to 20 Weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency

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ABSTRACT

Pregnancy is one of the phases of a woman's life during which one or more babies grow and develop inside her.The purpose of this research was to determine the relationship between the incidence of morning sickness and food intake and changes in body weight of pregnant women aged one to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency. This type of research is a quantitative research with correlational method with a cross sectional approach. Respondents were pregnant women with a gestational age of one to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency and were taken using the total sampling method, namely 35 pregnant women. Data was collected using the PUQE (Pregnancy Unique Quantification of Emesis). In this research, the results showed that there was a significant relationship between the incidence of morning sickness and the food intake of pregnant women aged one to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency with ρ value = 0.006. Furthermore, the results obtained were that there was no relationship between the incidence of morning sickness and changes in the weight of pregnant women aged one to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency with ρ value = 0.292. Thus it can be concluded that there is a significant relationship between the incidence of morning sickness and the food intake of pregnant women and there is no relationship between the incidence of morning sickness and changes in the weight of pregnant women aged one to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency.

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1. INTRODUCTION

Pregnancy, also known as gravidity or gestation, is a time of a woman's life during which one or more babies develop and grow inside her. Pregnancy can be achieved through sexual contact or with the use of reproductive technologies. The gestational phase lasts from 28 and 40 weeks and concludes with the birth of a child. It is not unusual for a woman to suffer physical and psychological changes throughout her pregnancy. Pregnant women experience a variety of discomforts throughout pregnancy, including nausea and/or vomiting, sometimes known as morning sickness (Obrowski S et al., 2016). Morning sickness is a symptom of nausea and vomiting that pregnant women suffer, particularly in the first trimester. However, it is not unusual for pregnant women to have morning sickness as late as the twenty-second week of pregnancy. The majority of pregnant women have morning sickness during the

first trimester owing to hormonal changes coupled by a sense of discomfort that causes food to be regurgitated (Walyani, 2015). The origin and pathophysiology of morning sickness remain unknown at this time. According to Mukherjee et al. (2017), there are various plausible explanations, including an increase in hormones in pregnant women, such as human chorionic gonadotropin (hCG), estrogen, and progesterone. It is also believed that digestive system contractions impact the occurrence of morning sickness. In addition, work position, age of pregnant women, parity, level of education, and gestational age are demographic characteristics that might influence the incidence of nausea and vomiting during pregnancy (Rika AP, 2020). Even across two pregnancies in the same individual, the sensation of nausea and vomiting during pregnancy varies substantially. Although it is often called morning sickness, only 17% of pregnant women experience nausea and vomiting in the morning, the rest are felt by pregnant women throughout the day (Purwoastuti & Walyani, 2016).

According to Crozier et al. (2017), as many as 89% of pregnant women, or the large majority, feel nausea throughout early pregnancy. Followed by a rise in food intake for 39% of pregnant women in early pregnancy, as opposed to a reduction for 34% of pregnant women in early pregnancy. In the case of pregnant women who had a drop in food intake, only those with severe nausea and vomiting were affected, accounting for 70% of the rise (16%) in food intake. Dietary differences between pregnant women during the first trimester and before pregnancy do not rule out the potential of first-trimester weight alterations in pregnant women. It is possible for pregnant women to lose weight owing to the sickness they suffer, which reduces their appetite and therefore the amount of food they consume. In addition, hormonal hormones, exercise factors, and illness factors might alter dietary changes that result in weight fluctuations (Subratha, et al, 2018). According to research done by A.S. It was found that 28 pregnant women (58.3%) in the first trimester did not gain weight, while another 20 pregnant women (41.7%) experienced weight gain. Two-fifths of pregnant women, according to Hamzah I (2015), said that they weighed 50 kg prior to pregnancy and 49.4 kg afterwards. Meanwhile, another pregnant lady who likewise suffered weight loss reported that she weighed 46 kg prior to pregnancy and 44.7 kg after giving birth.

In December, the Working Area of the Kebomas Public Health Center, which includes eight communities, has 35 pregnant women with a duration of pregnancy between one and twenty weeks. According to the medical records of pregnant women who attended the Kebomas Public Health Center Health Center, six out of ten pregnant women suffered morning sickness or nausea, vomiting, which in some cases was accompanied by dizziness. There have been a large number of research on morning sickness; however, there have been less research linking this occurrence with food consumption and weight changes in pregnant women. In order to improve the prediction of high-risk pregnancies and to assist the care of pregnant women who suffer morning sickness, it is necessary to do research on the relationship between the occurrence of morning sickness and food intake and weight changes in pregnant women. Based on this background description, the researcher is interested in conducting research on the relationship between morning sickness, food intake, and weight changes in pregnant women aged 1 to 20 weeks in the working area of the Kebomas Public Health Center, Gresik Regency.

2. METHOD

This is a quantitative research employing a correlational methodology and a cross-sectional design. This research was done in the eight-village Working Area of the Kebomas Public Health Center in Gresik Regency. In July 2022, 35 pregnant women aged 1 to 20 weeks who received antenatal care (ANC) visits at the Kebomas Public Health Center, Gresik Regency, were sampled using a total sampling method. This research's instruments included a questionnaire on respondent characteristics such as age, address, education level, occupation, distance between pregnancies, parity, and gestational age of the mother, as well as the Pregnancy Unique Quantification of Emesis (PUQE) questionnaire to measure the severity of morning sickness, which focused on the duration of nausea and vomiting experienced by pregnant women for 24 hours. To determine the food consumption of pregnant women, a 3x24-hour food recall is conducted, and the MCH handbook is used to analyze the medical records of pregnant women with a gestation length of 1 to 20 weeks in relation to changes in their body weight.

Each variable was evaluated univariately to characterize each respondent's attributes. In addition, a bivariate analysis was conducted to assess the relationship between the two variables.

3. RESULTS AND DISCUSSION

The total number of respondents involved in this research is 35 people. The age of pregnant women with a gestational age of 1 to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency, who were the most respondents in this research were aged 21 to 25 years (68.6%). This research was carried out at each of the pregnant women's residences which were visited door-to-door by researchers. All pregnant women who participated in this research lived in around 8 Working Areas of the Kebomas Public Health Center in Gresik Regency, which were dominated by the Kebomas area with a percentage of 22.8%. The most recent education of pregnant women who were respondents to this research was at the senior high school/vocational school level, which was 45.7%. Furthermore, being a housewife is the job most done by respondents with a percentage of 82.8%.

The parity of pregnant women was broken down into 3 parts in this research, namely, first pregnancy (primigravida), second pregnancy (secundigravida), and third pregnancy (multigravida) with the first pregnancy (94.2%) being the most numerous. Meanwhile, pregnant women with second pregnancies, in this research both had the same pregnancy interval, which was less than 2 years (5.7%). The gestational age in this research was divided into 2, namely 1 to 10 weeks of gestation (62.8%) and 11 to 20 weeks of gestation (37.1%).

Table 1. Respondents' Characteristics

Characteristics (n=35)	n	Percentage (%)
Age		
21 – 25	24	68,6
26 – 30	11	31,4
Address		
Kebomas	8	22,8
Randuagung	2	5,7
Sidomukti	6	17,1
Kawisanyar	6	17,1
Singosari	1	2,8
Ngargosari	4	11,4
Kedanyang	2	5,7
Giri	6	17,1
Education Level		
Elementary School	4	11,4
Junior High School	2	5,7
Senior High School/Vocational School Level	16	45,7
Diploma	2	5,7
Bachelor	11	31,4
Profession		
Housewife	29	82,8
Private employees	3	8,5
Laborer	2	5,7
Civil servant	1	2,8
Farmer	0	0
Etc	0	0
Parity		

First pregnancy (primigravida)	33	94,2
Second pregnancy (secundigravida)	2	5,7
Pregnancy more than two (multigravida)	0	0
Pregnancy Distance		
< 2 years	2	5,7
≥ 2 years	0	0
Gestational Age		
1 – 10	22	62,8
11 – 20	13	37,1

The Relationship between Morning Sickness and Food Intake of Pregnant Women Age 1 – 20 Weeks

In this research, morning sickness data were collected for pregnant women using the standard measurement of The Pregnancy-Unique Quantification of Emesis (PUQE) and obtained the result that, out of a total of 35 pregnant women who experienced nausea and vomiting during pregnancy 1 to 20 weeks, 45.7% with mild degrees or a number of 16 people, 54.2% with medium degrees or a number of 19 people, while severe degrees were not found in this research. Classification of the occurrence of nausea and vomiting in pregnant women is said to be mild if based on the results of the PUQE-score totaling ≤6 points; medium 7-12 points; weight ≥13 points.

This is in line with research conducted by Nugroho, AS (2018) which states that most pregnant women experience morning sickness during their pregnancy, especially in the first trimester. In the results of interviews conducted by researchers at the time the questionnaire was administered, pregnant women who being research respondents admitted that most of them experienced nausea and vomiting when they smelled the smell and taste of food that was too strong.

For a pregnant woman, food intake during pregnancy must meet sources of nutrients, namely carbohydrates, proteins, fats, vitamins, and minerals. This is intended to maintain the health of the mother and the fetus she contains (Ramadhan K, 2019). Pregnant women will experience a basal metabolic rate and increase in body weight, this will make their nutritional needs increase compared to when they are not pregnant (Pritasari, et al, 2017). During the first trimester to the third trimester, pregnant women will experience a gradual increase in nutritional needs. According to the 2019 Nutrition Adequacy Rate (RDA), additional energy in the first trimester is 180 kcal, while in the second and third trimesters it is 300 kcal.

Table 2. Cross Tabulation of Morning Sickness and Food Intake of Pregnant Women Aged 1 – 20 Weeks in the Work Area of the Kebomas Public Health Center, Gresik Regency

Variable	**Degrees of Morning Sickness**			**TOTAL**
	Light	**Medium**	**Heavy**	
Energy Food Intake				
Normal	2	0	0	2
Mild deficit	4	1	0	5
Medium deficit	6	2	0	8
Weight deficit	7	13	0	20
TOTAL	**19**	**16**	**0**	**35**
Carbohydrate Food Intake				
Medium deficit	1	0	0	1
Weight deficit	18	16	0	34

TOTAL	**19**	**16**	**0**	**35**
Protein Food Intake				
Normal	0	1	0	1
Mild deficit	4	1	0	5
Medium deficit	2	4	0	6
Weight deficit	13	10	0	23
TOTAL	**19**	**16**	**0**	**35**
Fat Food Intake				
Above the number of needs (> RDA)	1	1	0	2
Normal	2	0	0	2
Mild deficit	2	0	0	2
Medium deficit	2	2	0	4
Weight deficit	12	13	0	25
TOTAL	**19**	**16**	**0**	**35**

The most energy intake of pregnant women in this research was 2268.9 kcal or 93.37%. Meanwhile, the lowest energy intake is 1010.1 kcal or equivalent to 41.57%. The results of Spearman's data analysis showed ρ value = (0.006), so it can be interpreted that there is a significant relationship between the variable incidence of morning sickness and the energy intake of pregnant women aged 1 to 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency. With the level of closeness of the relationship shown by the correlation coefficient value of 0.454 or it can be said to have sufficient correlation between the two. The direction of the correlation that is owned by these two variables is negative. This means that, as the degree of morning sickness increases, the level of energy intake of pregnant women will decrease. This is in line with research conducted by Dewi, A.K., et al (2021) in a research conducted on 50 first-trimester pregnant women in the work area of the Salatiga City Public Health Center, it was found that the level of energy adequacy of first-trimester pregnant women was with mild to severe deficit levels.

Almost all of the pregnant women with morning sickness experienced at 1 to 20 weeks of gestation had carbohydrate intake with a deficit interpretation of the severity level, namely as many as 34 pregnant women. Meanwhile, 1 other pregnant woman experienced a medium level deficit in her carbohydrate intake. In this research, it was found that the highest intake of carbohydrates for pregnant women was 282.7 grams or 73.4%. Meanwhile, the least amount of intake is 64.9 grams or equivalent to 16.86%. The results of Spearman's data analysis showed ρ value = (0.367), so it can be interpreted that there is no relationship between the incidence of morning sickness and carbohydrate intake of pregnant women. In the results of interviews conducted by researchers, most pregnant women admitted that pregnant women's appetite tends to be lower for consuming all types of carbohydrate sources, especially rice. Thus, pregnant women reduce the portion of rice as a source of carbohydrates and replace it with other types of carbohydrates.

In accordance with A. K. Dewi's findings, the majority of pregnant women in this research (83%) reported a significant carbohydrate deficiency. Rice is the most common source of carbohydrates taken by pregnant women, with an average daily intake of 251.66 grams. This contradicts the views of some of the respondents in this survey, who claimed that they replace carbohydrate sources with foods other than rice since it is thought to be more likely to induce nausea and vomiting before to and after consumption. In contrast, Crozier et al. (2017) found that when the duration of nausea and vomiting in pregnant women increased, their rice and pasta consumption reduced as well. In the meantime, the intake of cereals, nuts, sour fruits and fruit juices, white bread, and carbonated beverages tends to rise.

In the Working Area of the Kebomas Public Health Center in the Gresik Regency, just one pregnant lady had a normal level of protein consumption. Five pregnant women reported mild deficits, six pregnant women experienced medium deficits, and twenty-three pregnant women experienced severe deficits. The highest quantity of protein consumed was 60.9 grams (99.84%) and the lowest

amount was 15.7 grams (25.55%). The analysis of data by Spearman revealed a value of 0.847, indicating that there is no correlation between the occurrence of morning sickness in pregnant women and their protein consumption.

In interviews with researchers, respondents confessed that they tend to take more sources of protein since they feel queasy after consuming more sources of carbs, particularly rice. After analyzing the protein consumption of the respondents, it was shown that the majority of pregnant women were still underweight. Based on the findings of the food recall, pregnant women in this research frequently met their protein requirements by consuming tempeh, tofu, eggs, chicken, and fish. However, it is not unusual for product recall data to reveal that protein sources for pregnant women are derived from fewer diverse protein sources.

According to research done by Dewi, A.K., et al. (2021), as many as 19 (38%) pregnant women developed a significant protein deficiency during the first trimester. Protein deficit during pregnancy can result in fetal development abnormalities, leading to low birth weight (LBW) infants. In a research done by Ningsih, NS., et al. (2021), it was shown that 26 pregnant women (55.3%) had an inadequate protein consumption, with 15 of them falling below the RDA. As a method of delivering iron into the body, protein plays a crucial role for pregnant women (Azizah, A. & Adriani, M., 2017). The most consumed amount of fat intake by pregnant women in this research was 86.85 grams or equivalent to 129% of the requirement. Meanwhile, 23.7 grams (35.26%) is the least amount of fat consumed by pregnant women. The results of Spearman's data analysis showed ρ value = (0.180), so it can be interpreted that there is no relationship between the incidence of morning sickness and fat intake in pregnant women.

In line with the research of Simbolon, H. B. & Sry, W. (2020) that first trimester pregnant women have a deficit category. Furthermore, in a research conducted by Ningsih, NS., et al (2021), it was found that 41 pregnant women (87.2%) had bad fat intake. Fat intake is said to be good if it fulfills around 20 to 30% of total energy. However, mothers who have a higher BMI are required to pay attention to fat intake because mothers with higher BMI tend to get energy from fat that has been stored by the body and do not experience excessive weight gain in general (Danielewicz, et al., 2017). If the higher the fulfillment of fat intake during pregnancy, the higher the weight gain of pregnant women. Fat functions as a source of energy, a source of essential fatty acids, maintains body temperature, protects the placenta, and prepares breast milk production (Setyarahma, et al., 2019). Fitri & Wiji (2018) in their research, which states that the baby's birth weight is significantly influenced by fat intake from the mother.

The Relationship between Morning Sickness and Weight Changes in Pregnant Women Age 1 – 20 Weeks

Table 3. Cross Tabulation of Morning Sickness and Weight Change in Pregnant Women Aged 1 – 20 Weeks in the Work Area of the Kebomas Public Health Center, Gresik Regency

Variable	Morning Sickness Degree			TOTAL
	Mild	Medium	Weight	
Weight Change				
No change in weight	16	11	0	27
Upgrade	0	0	0	0
Downgrade	3	5	0	8
TOTAL	**18**	**16**		**35**

In this study, it was found that 16 pregnant women with mild morning sickness did not experience weight changes between 1 and 20 weeks of pregnancy, while 11 pregnant women with medium morning sickness did not experience weight changes. Furthermore, in this study there were no pregnant women who experienced weight gain during pregnancy 1 to 20 weeks. However, there were 3 pregnant women with mild morning sickness who experienced weight loss. Followed by 5 pregnant women with morning

sickness who were experiencing weight loss during their 1st to 20th week of pregnancy.

The results of Spearman's data analysis showed ρ value = (0.292), so it can be interpreted that there is no relationship between the variable incidence of morning sickness and changes in the weight of pregnant women 1 – 20 weeks in the Working Area of the Kebomas Public Health Center, Gresik Regency. This is in line with research by Nugroho, A. S. (2018) who found that there is no significant relationship between morning sickness and weight gain. Factors that affect changes in maternal weight during pregnancy are not only caused by the incidence of morning sickness during pregnancy. Changes in maternal weight can also be caused by low food intake, especially during the pre-pregnancy period, decreased appetite during early pregnancy, and the lack of information related to healthy food for pregnant women.In a research done by Ningsih, N. S., et al. (2021), 68.4% of 47 pregnant women with insufficient carbohydrate, fat, and protein consumption had a strong correlation with weight gain. This indicates that the consumption of macronutrients by pregnant women influences their body weight fluctuations throughout pregnancy. The increase in the mother's weight during pregnancy, which is 11 to 12.5 kg or 20% of the mother's weight before pregnancy, is one way to characterize the nutritional adequacy of a pregnant woman, with weight gains of approximately 1 kg in the first trimester, 3 kg in the second, and 6 kg in the third. Women who have a slender physique and/or acquire little weight during pregnancy, or even lose up to 10 kg, likely to have an increased chance of giving birth to infants with low birth weight (Huda S.N., et al, 2019).

4. CONCLUSION

This study concludes that the incidence of morning sickness is related to the energy intake of pregnant women aged 1 to 20 weeks but not to changes in body weight of pregnant women aged 1 to 20 weeks in the Kebomas Public Health Center Working Area, Gresik Regency. Thus, it is anticipated that future researchers will be able to improve this research, particularly with regard to the factors that affect weight changes in pregnant women.

REFERENCES

[1] AKG. 2019. Angka Kecukupan Gizi Yang Dianjurkan Untuk Masyarakat Indonesia. Peraturan Kementrian Kesehatan Republik Indonesia Nomor 28 Tahun 2019.
[2] Azizah, A., & Adriani, M. 2017. Tingkat kecukupan energi protein pada ibu hamil trimester pertama dan kejadian kekurangan energi kronis. Media Gizi Indonesia. 12 (1): 21–26.
[3] Crozier, SR, Inskip, HM, Godfrey, KM, Cooper, C, Robinson, SM, SWS Research Group. Nausea and vomiting in early pregnancy: Effects on food intake and diet quality. Maternal & Child Nutrition. 2017; 13:e12389. https://doi.org/10.1111/mcn.12389
[4] Danielewicz, H., Myszczyszyn, G., D, A., Myszkal, A., & Bozna, A. (2017). Diet in pregnancy-more than food. 1573-1579. https://doi.org/10.1007/s00431-017-3026-5
[5] Dewi, A. K., Dary, D., & Tampubolon, R. (2021). Status Gizi dan Perilaku Makan Ibu Selama Kehamilan Trimester Pertama. *Jurnal Epidemiologi Kesehatan Komunitas*, 135-144.
[6] Fitri, I., & Wiji, R. N. (2018). Asupan zat gizi makro dan kenaikan berat badan selama hamil terhadap luaran kehamilan. Jurnal Gizi Klinik Indonesia, 15(2), 66.
[7] Hamzah, I. (2015). Hubungan Morning Sickness Dengan Status Gizi Pada Ibu Hamil Trimester 1 Di Puskesmas Limba B. Skripsi, 1(841411130).
[8] Huda, S. N., Kartasurya, M. I., & Sulistiyani, S. (2019). *Perilaku Berpantang Makan Pada Ibu Hamil Sebagai Faktor Risiko Berat Badan Lahir Rendah (BBLR) Di Masyarakat Suku Dayak Kabupaten Sintang Kalimantan Barat* (Doctoral dissertation, UNIVERSITAS DIPONEGORO).
[9] Irmawati, Hamzah. 2015. *Hubungan Morning Sickness dengan Status Gizi pada Ibu Hamil Trimester I Puskesmas Limba B*. Gorontalo: Universitas Negeri Gorontalo.
[10] Kemenkes RI. 2015. Buku Kesehatan Ibu dan anak. Jakarta: Kemenkes RI.
[11] Kumalasari I. 2015. Panduan Praktik Laboratorium dan Klinik Perawatan Antenatal,Intranatal, Postnatal, Bayi Baru Lahir dan Kontrasepsi. Jakarta: Salemba

[12] Kusharto, Clara M. dan Supariasa I Dewa Nyoman. 2014. Survei Konsumsi Gizi. GRAHA ILMU. Yogyakarta.
[13] Marmi. 2015. *Kesehatan Reproduksi*. Yogyakarta: Pustaka Pelajar
[14] Muhammad, I. 2015. *Panduan Penyusunan Karya Tulis Ilmiah Bidang Kesehatan Menggunakan Metode Ilmiah*. Bandung: Cipta Pustaka.
[15] Mukherjee, Subhajit. Ross, William A. Pan, Jen-Jung. Guha, Sushovan. 2017. "Nausea and Vomiting in Pregnancy". *The McGovern Medical School Journal of Medicine*. Vol. 1(2).
[16] Ningsih, N. S., Simanjuntak, B. Y., & Haya, M. (2021). Asupan Energi, Zat Gizi Makro dan Pertambahan Berat Badan Ibu Hamil. *Jurnal Kesehatan Tanjung Karang*, *12*(2), 156-161.
[17] Notoadmodjo, S. 2012. *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta.
[18] Nugroho, A. S. (2018). Hubungan morning sickness dengan status gizi pada ibu hamil trimester I. *SKRIPSI-2018*.
[19] Obrowski S, Obrowski M, Starski K. Normal Pregnancy: A Clinical Review. Acad J Ped Neonatol. 2016; 1(1): 555554. DOI: 10.19080/AJPN.2016.01.555554
[20] Pritasari., Damayanti, Didit., Lestari, Nugraheni Tri. 2017. *Bahan Ajar Gizi: Gizi dalam Daur Kehidupan*. Kementerian Kesehatan Republik Indonesia.
[21] Purwoastuti & Walyani. 2015. *Ilmu Obstetri dan Ginekologi Sosial Untuk Kebidanan*. Yogyakarta: Pustaka Baru Press.
[22] Ramadhan, K. 2019. Skripsi Penelitian Hubungan Status Gizi dan Pola Makan dengan Penambahan Berat Badan Ibu Hamil di Puskesmas Maccini Sawah Makassar.
[23] Rika Armalini, Prasetyaningsih. 2020. *Relationship Between Knowledge And Attitudes Of Pregnant Women And The Occurrence Of Vomiting In First Trimester Pregnancy In Poskesdes Ampalu Kota Pariaman Bidan Helfiati, Amd. Keb.*
[24] Setyarahma, A. F. . M. I. K. R. A. (2019). Hubungan Asupan Makanan Dengan Penambahan Berat Badan Pada Remaja Hamil Usia 15-19 Tahun (Studi pada Kelurahan Rowosari Kota Semarang). Jurnal Kesehatan Masyarakat (E-, 53(9), 1689-1699.
[25] Simbolon, H. B., & Sry, W. (2020). Pengaruh penyuluhan gizi terhadap pengetahuan gizi dan pola konsumsi ibu hamil di Desa Bangun Sari Kecamatan Tanjung Morawa.
[26] Walyani, E. S. 2015. *Asuhan Kebidanan pada Kehamilan*. Yogyakarta: Pustaka Baru.
[27] WHO. World Health Statistics 2015. 2015. In: Organization WH, editor. Geneva" World Health Organization.
[28] Yulistiana, Evayanti. 2015. Hubungan Pengetahuan Ibu Dan Dukungan Suami Pada Ibu Hamil Terhadap Keteraturan Kunjungan Antenatal Care (Anc) Di Puskesmas Wates Lampung Tengah Tahun 2015. Jurnal Kebidanan Vol 1, No 2, Juli 2015: hal 81-90.