JETISH: Journal of Education Technology Information Social Sciences and Health
E-ISSN: 2964-2507 P-ISSN: 2964-819X
Vol. 4 No. 2 September 2025

The Influence of Health Education and Tele-nursing on Folic Acid Adherence in Pregnant Women at Puskesmas Payung Sekaki

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Abstract

Folic acid is essential for supporting maternal health and fetal development, with a daily requirement of 400 mcg. Folic acid deficiency can cause maternal anemia and fetal growth and development disorders. However, compliance of pregnant women in taking folic acid supplements is still low, due to lack of knowledge and forgetting to take supplements. To improve compliance, health education and telenursing efforts can be applied as an effective solution. This study used a quantitative approach using the one group pretest posttest method. The sample in the study amounted to 34 pregnant women who were taken using non-probability sampling technique with purposive sampling type. The analysis used used the Wilcoxon statistical test. After being given health education and telenursing on the level of compliance of pregnant women drinking folic acid, the results showed an increase in the average compliance between pretest and posttest. The average value before being given health education and telenursing was 2.7353 (SD = 1.24307), after being given health education and telenursing the average increased to 6.7500 (SD = 1.88997). The results of the Wilcoxon test analysis showed that there was an effect of health education and telenursing with the results of p value (0.000) < α (0.005). Providing health education and telenursing has an effect on increasing the compliance of pregnant women in consuming folic acid at Puskesmas Payung Sekaki.

Keywords: Folic Acid, Health Education, Pregnant Women, Telenursing, Health Education

INTRODUCTION

Pregnancy is a critical period within the first 1,000 days of life, requiring increased nutritional and mineral intake compared to normal or pre-pregnancy periods due to significant physical and physiological changes. These include increased plasma volume, food reserves, uterine blood flow, fetal weight, amniotic fluid, and placenta (Sudargo et al., 2018). During pregnancy, the nutritional needs of the mother increase to ensure safe development and the health of both mother and baby, requiring attention to nutrition from the first to the third trimester (Ahmar et al., 2020). Adequate nutrition, especially the intake of essential micronutrients, such as folic acid, is critical for preventing complications like anemia, premature birth, and miscarriage (Aghadiati, 2020). Folic acid is a vital micronutrient during pregnancy as it plays a crucial role in the development of red blood cells and overall fetal development (Muldianah et al., 2023). A deficiency in folic acid can lead to metabolic issues affecting DNA replication and cell division (Hasanah et al., 2023). The Indonesian Ministry of Health recommends that pregnant women consume 400 mcg of folic acid daily, yet many face difficulties with adherence due to side effects, such as nausea and abdominal pain, though these are generally not harmful (Pritasari et al., 2017).

Anemia among pregnant women in Indonesia remains a significant issue, with a prevalence of 13.06% in Riau Province in 2022, particularly high in Kuantan Singingi (42.16%) (Kemenkes RI, 2022). Despite ongoing iron and folic acid supplementation programs, adherence to supplementation remains a major challenge, particularly due to factors such as lack of knowledge, forgetfulness, and side effects. Non-adherence to supplementation programs

is identified as one of the key barriers to preventing anemia (Budiarni & Subagio, 2012). Health education plays a crucial role in improving maternal knowledge and behavior regarding nutrition during pregnancy. Studies have shown that health education, particularly through audiovisual media, can significantly enhance pregnant women's understanding of the importance of folic acid supplementation and improve adherence (Jannah & Murni, 2019). Audiovisual media, such as PowerPoint presentations, offer an effective and engaging method for delivering health messages and improving knowledge retention (Hasan, 2016). Additionally, the rise of tele-nursing, utilizing mobile technology and remote communication, has proven effective in encouraging health behavior changes, providing further support in improving folic acid adherence (Aisyan & Lazuardi, 2018).

A preliminary survey conducted at Puskesmas Payung Sekaki in Pekanbaru found that a significant number of pregnant women did not consistently adhere to folic acid supplementation, citing forgetfulness and boredom as major factors. This indicates a clear need for interventions to enhance adherence through improved education and remote support. This study, therefore, seeks to examine the impact of health education and tele-nursing on folic acid adherence among pregnant women at Puskesmas Payung Sekaki. By improving knowledge and providing consistent reminders, health education, and tele-nursing can potentially play a vital role in addressing the challenges faced by pregnant women in adhering to folic acid supplementation, ultimately improving maternal and fetal health outcomes in this region..

RESEARCH METHODS

This is a quantitative study with a quasi-experimental research design using a one-group pretest-posttest approach aimed at examining the differences in adherence between the pre-test and post-test. The sample in this study was selected using the purposive sampling technique. The inclusion criteria for the sample in this study were pregnant women with a gestational age of ≤ 34 weeks. The questionnaire used in this study is the MMAS-8 questionnaire, which has been adapted into Indonesian. The researcher collected data by meeting directly with respondents who were visiting the Puskesmas. The respondents then filled out the pretest questionnaire and were given health education about folic acid using audiovisual media. Subsequently, the respondents received folic acid reminder chats for 14 days through the WhatsApp application. After the data collection process was completed, the researcher conducted univariate and bivariate analyses. In this study, univariate analysis was used to describe the characteristics of the respondents: age of the pregnant women, gestational age, education, and occupation of the pregnant women. Bivariate analysis was performed to describe the data distribution and measure the effect between the two variables being studied using the Wilcoxon test. This research was conducted in the working area of Puskesmas Payung Sekaki from November 25, 2024, to December 9, 2024.

RESEARCH RESULTS AND DISCUSSION

This study was conducted at Puskesmas Payung Sekaki, involving 34 respondents. The results obtained are as follows:

Respondent Characteristics

Table 1. Distribution of Respondent Characteristics

Characteristics	Frequency (n)	Percentage (%)
Age		
1. <20 years old (late adolescence)	0	0.0
2. 20 – 30 years old (early adulthood)	33	97.1

3. > 35 years old (late adulthood)	1	2.9
Gestational Age		
1. Fisrt Trisemester	2	5.9
2. Second Trisemester	19	55.9
3. Third Trisemester	13	38.2
Education		
1. Elementary School	2	5.9
2. Junior High School	3	8.8
3. Senior High School	17	50.0
4. Bachelor's Degree	12	35.3
Occupation		
1. Entreprenuer	9	26.5
2. Civil Servant	3	8.8
3. Housewife	18	52.9
4. Private Employee	4	11.8
Total	34	100

Table 1 on the distribution of respondent characteristics shows that out of the 34 respondents studied, the majority of pregnant women are aged 20-35 years (early adulthood) with a total of 33 people (97.1%). The gestational age of the respondents in the table above shows that the majority of respondents are in the second trimester (13-26 weeks), with a total of 19 people (55.9%). The majority of respondents have a high school education, with a total of 17 people (50%). The occupation of the respondents in the table above shows that the majority of pregnant women are housewives, with a total of 18 people (52.9%).

Distribution of Adherence Categories Before (Pretest) and After (Posttest) Receiving Telenursing

Table 2. Distribution of adherence categories of pregnant women in consuming folic acid before receiving the intervention

Adherence Level Category	N	%
High	0	0.0
Moderate	0	0.0
Low	34	100.0

Table 3 shows that the adherence category level of pregnant women in consuming folic acid before receiving the intervention was high adherence with 0 people (0.00%), moderate adherence with 0 people (0.00%), and low adherence with 34 people (100%).

Table 3. Distribution of adherence categories of pregnant women in consuming folic acid after receiving the intervention

Adherence Level Category	N	%
High	20	58.8
Moderate	5	14.7
Low	9	26.5

Based on table 3 it can be seen that the adherence of pregnant women after receiving the intervention was high adherence in 20 people (58.8%), moderate adherence in 5 people (14.7%), and low adherence in 9 people (26.5%).

Test of the Effect of Health Education and Telenursing on Pregnant Women's Adherence to Taking Folic Acid

Table 4. Wilcoxon test results and descriptive statistics

Variable	Min	Max	Mean	SD	P value

Pretest	0.00	5.50	2.7353	1.24307	0.000
Posttest	1.25	8.00	6.7500	1.88997	

Based on Table 4, a descriptive statistic test was conducted, and the average pretest score was 2.7353 with a standard deviation of 1.24307. The minimum pretest score was 0.00 and the maximum pretest score was 5.50. Meanwhile, the average posttest score was 6.7500 with a standard deviation of 1.88997. The minimum posttest score was 1.25, and the maximum posttest score was 8.00. The difference in the average adherence score before and after the intervention with health education and telenursing was 4.0147. The Wilcoxon test analysis showed a p-value of (0.000) < α (0.005), which indicates that there was a significant difference before and after the intervention using health education and telenursing on the level of adherence of pregnant women in consuming folic acid.

Discussion

The Effect of Health Education and Telenursing on Pregnant Women's Adherence to Taking Folic Acid

Based on the research conducted on 34 respondents who received interventions in the form of health education using audiovisual media for approximately 10 minutes, and telenursing with reminder messages via WhatsApp for 14 days, the average compliance level of the respondents before the intervention was 2.7353, with a difference of 4.0147 from the compliance level after the intervention, which was 6.7500. Based on the non-parametric Wilcoxon test, the p-value was 0.000 < α (0.05). It can be concluded that health education and telenursing significantly affect the improvement of pregnant women's compliance in consuming folic acid. Compliance in taking folic acid tablets can be interpreted as the behavior of pregnant women who adhere to all the instructions for taking folic acid tablets as recommended by health workers. There are several reasons why pregnant women do not comply with consuming folic acid tablets. One reason, according to a study by Fitria and Wulandari (2020), is that a lack of education leads to pregnant women not knowing much about the benefits of taking folic acid, being less active in asking questions, and not receiving sufficient information from health service providers regarding folic acid.

In Hasibuan's study (2017), it was found that the knowledge of pregnant women about folic acid consumption was generally low, because women were less active in asking healthcare providers about the benefits and uses of folic acid, and health workers also lacked information on folic acid. Additionally, there was no media to increase the knowledge of pregnant women about folic acid. When looking at the attitude variable, most respondents also appeared to have a negative attitude. This negative attitude is linked to a lack of knowledge. A tendency to avoid, dislike, and not appreciate an object is due to not being familiar with the object. Similarly, the negative attitude of pregnant women is caused by their lack of information about the importance of consuming folic acid. Health education is a form of communication aimed at improving understanding, knowledge, awareness, motivation, skills, and confidence to take action in improving health status (Astuti et al., 2017). The choice of media in providing health education is also crucial to ensure the message is effectively communicated (Rochani & Pamboaji, 2022). Health education can be delivered through various media, one of which is audiovisual media. Audiovisual is a medium that can be seen and heard, helping to stimulate the visual and auditory senses when receiving a message (Jatmika et al., 2019).

This study used audiovisual media in the form of a voiced PowerPoint presentation as a source of information to increase pregnant women's knowledge about the importance of folic acid supplements. The audiovisual media in the study was entirely provided by the researcher, with respondents observing through a laptop and speaker supplied by the researcher.

Audiovisual media combines visual and auditory senses in the learning process. Audiovisual media is highly effective in capturing material, with 82% relying on the visual senses and 11% on auditory senses (Simanjuntak et al., 2024). This research aligns with the study by Simanjuntak et al. (2024), where the results showed that compliance in the group receiving education using audiovisual media was significantly higher, with a score of 43.73, compared to the group that did not receive audiovisual media, which scored 31.60. The data were then analyzed using the paired t-test, which resulted in a p-value of 0.000, indicating that the use of audiovisual media has a significant effect on respondents' compliance.

In a study by Rahmawati and Subagio (2012), it was found that the majority of pregnant women did not comply with taking iron folate tablets, with 33 respondents (58.9%) being non-compliant. The reasons for non-compliance included forgetfulness (5.4%), boredom after taking the tablets for an extended period (7.1%), and side effects such as nausea (51.8%), constipation (32.1%), and changes in stool color (19.6%). This is also supported by a study by Gebremichael and Welesamuel (2020), where the compliance rate for iron-folic acid supplementation was 40.9%. The majority of pregnant women, 228 (36.6%), consumed supplements for two months. The main reasons for non-compliance included forgetfulness (30.2%), taking too many tablets (25.3%), and fear of side effects (12.5%). Additionally, a study by Getachew et al. (2018) found that barriers to compliance with iron and folic acid (IFA) among pregnant women included forgetfulness, side effects of the medication, and fear of side effects, which were the primary reasons for low compliance among women.

Telenursing, which involves providing healthcare through information and telecommunication technology, has a positive impact on patient compliance. It helps monitor medication adherence, with reminder messages sent via mobile phones being an effective tool for reminding patients and building trust (Fadhila & Afriani, 2020; Rahman et al., 2023). In this study, factors such as forgetfulness were found to affect pregnant women's adherence to folic acid consumption. Previous research (Rahmawati & Subagio, 2012; Gebremichael & Welesamuel, 2020) also identified forgetfulness as a major reason for non-adherence. Sending reminder messages via WhatsApp for 14 days proved to be a suitable intervention (Aisyan & Lazuardi, 2018). This aligns with the findings of Mawarti et al. (2023), which showed significant improvements in medication adherence in tuberculosis and schizophrenia patients after telenursing interventions through WhatsApp and Zoom. Similarly, Wirmando et al. (2021) found that telenursing significantly impacted adherence to iron supplementation among pregnant women. Based on these findings, the combination of audiovisual health education and telenursing with reminder messages via WhatsApp is effective in improving adherence, as it helps pregnant women better understand the material and remember daily folic acid intake.

CONCLUSION

This study is about the effect of health education and telenursing on the adherence level of pregnant women in taking folic acid, conducted at the Puskesmas Payung Sekaki in Pekanbaru City, from November 25, 2024, to December 10, 2024. The study shows that the majority of respondents were aged 20-35 years (33 respondents, or 97.1%), with the majority of respondents being in their second trimester of pregnancy (13-24 weeks), totaling 19 respondents (55.9%). Most respondents had a high school education (17 respondents, or 50%), and the majority were housewives (18 respondents, or 52.9%). Before the health education and telenursing intervention, all respondents (100%) were in the low adherence category. After the intervention, the adherence level improved, with 20 respondents (58.8%) showing high adherence. This indicates an increase in adherence before and after the health education and telenursing intervention. The Wilcoxon test results for 34 respondents on the influence of

health education and telenursing on the adherence level of pregnant women in taking folic acid showed a p-value of 0.000 < α (0.05). Therefore, it can be concluded that the null hypothesis (Ho) is rejected, meaning there is an effect of health education and telenursing on the adherence level of pregnant women in taking folic acid.

BIBLIOGRAPHY

Aghadiati, F. (2020). Hubungan Asupan Asam Folat, Zat Besi Dan Status Ekonomi Keluarga Dengan Berat Bayi Lahir. Jurnal Kesehatan Terpadu (Integrated Health Journal), 11(1), 1–7. https://doi.org/10.32695/jkt.v11i1.52

Ahmar, H., Prihati, D. R., Suryanti, Rahmawati, E., Azizah, N., Nurasmi, Alvionita, V., Raidanti, D., & Islamiah, A. (2020). All About Pregnancy: Panduan Menjalani Kehamilan Sehat. Literasi Nusantara.

Aisyan, S. D. S., & Lazuardi, L. (2018). Efektifitas Short Message Service (Sms) Reminder Terhadap Kepatuhan. Journal of Information Systems for Public Health, 3(1), 1–7.

Astuti, S., Susanti, A. I., Nurparidah, R., & Mandiri, A. (2017). Asuhan Ibu dalam Masa Kehamilan Buku Ajar Kebidanan-Antenatal Care (ANC). Erlangga.

Budiarni, W., & Subagio, H. W. (2012). Hubungan Pengetahuan, Sikap, Dan Motivasi Dengan Kepatuhan Konsumsi Tablet Besi Folat Pada Ibu Hamil. Journal of Nutrition College, 1(1), 99–106. https://doi.org/10.14710/jnc.v1i1.364

Fadhila, R., & Afriani, T. (2020). Penerapan Telenursing Dalam Pelayanan Kesehatan : Literature Review. Jurnal Keperawatan Abdurrab, 3(2), 77–84. https://doi.org/10.36341/jka.v3i2.837

Fitria, R., & Wulandari, S. (2020). Pemenuhan Asam Folat Pada Ibu Hamil Trimester I Di Desa Rambah Tengah Hilir. Journal : Maternity and Neonatal, 03(02), 125–131.

Gebremichael, T. G., & Welesamuel, T. G. (2020). Adherence to iron-folic acid supplement and associated factors among antenatal care attending pregnant mothers in governmental health institutions of Adwa town, Tigray, Ethiopia: Cross-sectional study. PLoS ONE, 15(1), 1–11. https://doi.org/10.1371/journal.pone.0227090

Getachew, M., Abay, M., Zelalem, H., Gebremedhin, T., Grum, T., & Bayray, A. (2018). Magnitude and factors associated with adherence to Iron-folic acid supplementation among pregnant women in Eritrean refugee camps, northern Ethiopia. BMC Pregnancy and Childbirth, 18(1), 1–8. https://doi.org/10.1186/s12884-018-1716-2

Hasan, H. (2016). Penggunaan Media Audio Visual Terhadap Ketuntasanbelajar Ips Materi Perkembangan Teknologi Produksi, Komunikasi, Dan Transportasi Pada Siswa Kelas Iv Sd Negeri 20 Banda Aceh. Jurnal Pesona Dasar, 3(4), 22–33.

Hasanah, U., Bustamam, N., Widyawardani, N., & Faranita, T. (2023). Peningkatan Pengetahuan Dan Perubahan Perilaku Melalui Edukasi Manfaat Asam Folat Pada Wanita Usia Subur Dan Ibu Hamil Di Desa Rajaiyang. BERNAS: Jurnal Pengabdian Kepada Masyarakat, 4(1), 376–385. https://doi.org/10.31949/jb.v4i1.4102

Hasibuan, E. R. (2017). Pengetahuan Dengan Sikap Ibu Hamil Dalam Mengonsumsi Asam Folat. Jurnal Endurance, 2(3), 245. https://doi.org/10.22216/jen.v2i3.1856

Jannah, M., & Murni, N. N. A. (2019). Penggunaan Media Audio Visual Meningkatkan Kepatuhan Konsumsi Tablet Tambah Darah Pada Ibu Hamil. Jurnal Kesehatan Prima, 13(2), 108. https://doi.org/10.32807/jkp.v13i2.235

Jatmika, S. E. D., Maulana, M., Kuntoro, & Martini, S. (2019). Buku Ajar Pengembangan Media Promosi Kesehatan. In K-Media. K-Media. http://eprints.ukh.ac.id/id/eprint/852/1/6_PERENCANAAN MEDIA PROMOSI KESEHATAN_1.pdf

Kementrian Kesehatan Republik Indonesia. (2022). Profil Kesehatan Indonesia 2022. Kementerian Kesehatan Republik Indonesia.

Mawarti, H., Umaroh, S. A., & Mukhoirotin, M. (2023). Pengaruh Telenursing Terhadap Kepatuhan Minum Obat Pasien Tuberculosis Paru Di Wilayah Kerja Puskesmas Dukuhklopo Kabupaten Jombang. Jurnal Ilmu Kedokteran Dan Kesehatan, 10(7), 2253–2260. https://doi.org/10.33024/jikk.v10i7.10308

Muldianah, D., Hilmi, I. L., & Salman, S. (2023). Review Article : Implikasi Suplemen Asam Folat Prenatal terhadap Risiko Autism Spectrum Disorder (ASD) pada Keturunannya. Journal of Pharmaceutical and Sciences, 6(2), 575–585. https://doi.org/10.36490/journal-jps.com.v6i2.45

Pritasari, Damayanti, D., & Lestari, N. T. (2017). Gizi Dalam Daur Kehidupan. In Kementerian Kesehatan Republik Indonesia.

Rahman, I. A., Gunawan, A., Sundewi, A., Azi, D. P., & Ningtias, R. P. (2023). Penerapan Telenursing N-Smsi (Ners-Short Message Service Intervention) Terhadap Manajemen Post Perawatan Pasien Tuberkulosis. Jurnal Keperawatan, 15.

Rahmawati, F., & Subagio, H. W. (2012). Kepatuhan Konsumsi Tablet Besi Folat Pada Ibu Hamil dan Faktor yang Mempengaruhi. 1. http://ejournal-s1.undip.ac.id/index.php/jnc

Rochani, S., & Pamboaji, G. (2022). Efektivitas Pendidikan Kesehatan dengan Flipchart Terhadap Pengetahuan dan Kepatuhan Pasien Dalam Melaksanakan Program Diet pada Pasien Diabetes Melitus. Jurnal Wacana Kesehatan, 7(2), 89–97. https://doi.org/10.52822/jwk.v7i2.411

Simanjuntak, P., Damanik, N. S., Ginting, S. S. T., Damanik, O., Manurung, B., & Pandiangan, H. (2024). Pengaruh Penyuluhan dengan Media Audiovisual terhadap Kepatuhan Perilaku Konsumsi Tablet Besi pada Ibu Hamil di Desa Bangun Rejo Kabupaten Deli Serdang Provinsi Sumatera Utara Tahun 2024. Jurnal Sains Dan Kesehatan, 8(1), 111–121. https://doi.org/10.57214/jusika.v8i1.551

Sudargo, T., Aristasari, T., & Afifah, A. (2018). 1000 Hari Pertama Kehidupan. Gadjah Mada University Press.

Wirmando, Ramadhani, N., Situngkir, R., & Exposto, A. A. (2021). Pengaruh Edukasi Metode Telenursing Terhadap Kepatuhan Minum Suplemen Fe Pada Ibu Hamil Di Puskesmas Pertiwi Kota Makassar. Jurnal Keperawatan Florence Nightingale, 4(1), 9–13. https://doi.org/10.52774/jkfn.v4i1.56