



The Relationship of Spiritual Well-Being, Antenatal Care Frequency and Sleep Quality with Anxiety: A Cross-Sectional Study

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Abstract

Pregnancy is accompanied by physical and psychological changes that may increase anxiety, particularly during the third trimester, with potential consequences for maternal and fetal health. This study aimed to examine the associations between spiritual well-being, antenatal care (ANC) frequency, sleep quality, and anxiety among third-trimester pregnant women at Karawang Health Center, Sukabumi Regency. A cross-sectional study was conducted among 62 pregnant women selected using consecutive sampling. Data were collected using validated instruments, including the Spiritual Well-Being Scale (SWBS), Pittsburgh Sleep Quality Index (PSQI), and Pregnancy-Related Anxiety Questionnaire-Revised 2 (PRAQ-R2). Ethical approval was obtained from the STIKES Sukabumi Research Ethics Committee (No. 317/II.I.AU/KET.ETIK/XI/2025). Associations were analyzed using the Chi-square test, with odds ratios (ORs) and 95% confidence intervals (CIs) reported as measures of association. Low-moderate spiritual well-being was associated with higher odds of anxiety (OR = 7.27; 95% CI: 2.28–23.13; $p < 0.001$). Non-compliance with ANC visits was also associated with higher odds of anxiety (OR = 4.23; 95% CI: 1.28–14.03; $p = 0.032$), while poor sleep quality showed the largest magnitude of association (OR = 15.54; 95% CI: 4.27–56.60; $p < 0.001$). In conclusion, spiritual well-being, ANC frequency, and sleep quality were significantly associated with anxiety among third-trimester pregnant women. Future studies with larger and more diverse samples and longitudinal or prospective designs are recommended to further clarify the direction and strength of these associations.

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1. INTRODUCTION

Pregnancy is an important stage in a woman's life that brings many changes physically, psychologically, and socially (Bagherzadeh et al., 2021). This condition often triggers anxiety due to hormonal changes and daily stress. Pregnancy can lead to increased anxiety in women. In the first trimester, the anxiety experienced by pregnant women is generally categorized as mild. However, in the following trimesters, this anxiety may double in intensity or develop into severe anxiety (Rachma et al., 2024). Although mild anxiety can be considered a normal response to pregnancy, persistent or excessive anxiety may adversely affect both maternal and fetal health (Fahma, 2024).

Pregnant women experience increased anxiety, especially in the third trimester, which is more complex than the previous trimester. Data shows that around 7-20% of pregnant women in developed countries experience anxiety, while in developing countries this figure is more than 20% (Pamungkas et al., 2024). In Indonesia, around 28.7% of pregnant women experience anxiety in the final trimester, even other studies recorded up to 57.1% (Ardan et al., 2022). The impact of uncontrolled anxiety includes impaired fetal development to an increased risk of autism. Anxiety during early pregnancy can lead to miscarriage, while in the second and third trimesters, it may result in low birth weight and increased activity of the hypothalamic-pituitary-adrenal (HPA) axis. This can contribute to social behavioral disorders and fertility problems in adulthood. Anxiety during the third trimester may also impair a child's cognitive development. In addition, excessive stress hormones in anxious pregnant women can restrict blood supply to the fetus, leading to fetal hyperactivity and potentially increasing the risk of autism in the child (Ardan et al., 2022; Suparno et al., 2021).

Good coping mechanisms can help pregnant women overcome anxiety, one of which is through social and spiritual support. Support from family, health workers, and spiritual activities such as reading scripture and worshiping can help reduce anxiety. Spirituality is believed to be a helpful strategy for individuals to find meaning and belief systems that enable them to cope with difficult situations. Several studies have shown a relationship between spirituality and anxiety in pregnant women, as well as the positive effects of spirituality-based interventions on anxiety during pregnancy. Pregnant women who do not engage in spiritual coping are more likely to experience depression. Several studies have shown an association between spirituality and anxiety in pregnant women, as well as the effect of spiritual-based interventions on anxiety during pregnancy. Pregnant women who do not use spiritual coping strategies are more likely to suffer from depression (Maasoumi et al., 2023)

In addition to anxiety, pregnancy can also trigger stress which results in poor quality sleep for the mother. This condition can jeopardize the health of the fetus. Sleep disturbances in the third trimester are more common, with up to 40.5% of pregnant women experiencing sleep deprivation (Pascal et al., 2023) The impacts can be hypertension, memory impairment, and increased fetal heart rate which can lead to hyperactivity and premature birth (Querejeta Roca et al., 2020).

Previous studies have generally examined spirituality, ANC attendance, or sleep quality in relation to maternal anxiety separately (Chehrazhi et al., 2021; Gupta et al., 2022; Pamungkas et al., 2024; Salsabila et al., 2022). However, evidence evaluating these three factors concurrently among third-trimester pregnant women remains limited, particularly within the primary health-care context of Karawang Health Center, Sukabumi Regency. Moreover, no previous study at this health center has specifically assessed spiritual well-being and sleep quality in relation to anxiety before childbirth. Therefore, the novelty of this study lies in the concurrent assessment of spiritual well-being, ANC frequency, and sleep quality as factors associated with anxiety among third-trimester pregnant women

within a primary health-care setting. This study aimed to determine the relationships between spiritual well-being, ANC frequency, sleep quality, and anxiety among third-trimester pregnant women at Karawang Health Center, Sukabumi Regency. This study aims to determine the relationship between spiritual well-being, frequency of Antenatal Care (ANC), and sleep quality with anxiety in pregnant women in the third trimester.

2. METHODS

This study aims to determine the relationship between spiritual well-being, frequency of Antenatal Care (ANC), and sleep quality with anxiety in pregnant women in the third trimester at the Karawang Health Center, Sukabumi Regency use method correlational with approach cross-sectional. The study was conducted at the KIA clinic of Karawang Health Center, Sukabumi Regency, from Oktober to Desember 2025. The population of this study were all third trimester pregnant women who visited the Karawang Health Center as many as 62 people. The sample was determined using the Slovin formula, with a minimum sample size of 62 people. The sampling technique used consecutive sampling, namely selecting subjects who met the research criteria until the sample size was met. Data were collected through questionnaires on spiritual well-being, ANC frequency, sleep quality, and anxiety of pregnant women and literature from books, journals, and related reports.

The instruments used in this study were the Spiritual Well-being Scale (SWBS) questionnaire, which was modified to measure spiritual well-being, and the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality; meanwhile, the Pregnancy-Related Anxiety Questionnaire (PRAQ-R2) was used to measure anxiety levels in pregnant women in their third trimester. Validity and reliability tests were based on standardised instruments. For the spiritual well-being variable, the Spiritual Well-being Scale (SWBS) was used, with a validity test result of <0.05 and a reliability test result with a Cronbach's alpha value of 0.895 (Fijianto et al., 2020). For the sleep quality variable, using the Pittsburgh Sleep Quality Index (PSQI), a Cronbach's α value of 0.719 was obtained (Scialpi et al., 2022). For the anxiety level variable, the Pregnancy-Related Anxiety Questionnaire (PRAQ-R2) was used, with external validity test r-values ranging from 0.446 to 0.837 and a Cronbach's α of 0.85 (Adilla et al., 2023). The ethical review of the research entitled "The relationship between spiritual well-being, frequency of antenatal care (ANC) visits, and sleep quality with anxiety among third-trimester pregnant women at the Karawang Community Health Centre, Sukabumi Regency" was conducted at STIKES Sukabumi and has received approval from the Research Ethics Committee through the issuance of decision letter number: 317/II.I.AU/KET. ETIK/XI/2025.

Univariate analysis was performed to describe the characteristics of the respondents and the distribution of spiritual well-being, ANC frequency, sleep quality, and anxiety. Anxiety was assessed using the Pregnancy-Related Anxiety Questionnaire-Revised 2 (PRAQ-R2) and subsequently categorized into "no anxiety" and "anxiety". Bivariate associations between spiritual well-being, ANC frequency, sleep quality, and anxiety were examined using the Pearson Chi-square test. Prior to analysis, the assumptions of the Chi-square test were assessed. All variables were categorical, observations were independent, and no expected cell frequency was below 5. The minimum expected cell count across the analyses was approximately 5.94; therefore, the assumptions for the Pearson Chi-square test were satisfied. Statistical significance was set at $p < 0.05$. Odds ratios (ORs) with 95% confidence intervals (CIs) were also calculated to estimate the magnitude of the associations.

3. RESULTS AND DISCUSSION

Table 1. Univariat Analysis (n = 62)

Variable	Frequency	Percentage (%)
Spiritual Well-being		
High	39	62.9
Moderate	15	24.2
Low	8	12.9
ANC Frequency		
Compliant	46	74.2
Non-compliant	16	25.8
Sleep Quality		
Good	41	66.1
Poor	21	33.9
Maternal Anxiety		
No anxiety	39	62.9
Anxiety	23	37.1
Total	62	100

Table 1 shows that of the 62 respondents, the majority namely 39 respondents (62.9%) had a high level of spiritual well-being, 46 respondents (74.2%) adhered to the recommended frequency of ANC visits, 41 respondents (66.1%) had good sleep quality, and 39 respondents (62.9%) did not experience anxiety.

Table 2. Relationships between spiritual well-being and anxiety in third-trimester pregnant women.

Spiritual Well-being	Anxiety				Total		p-Value	OR (95% CI)
	No Anxiety		Anxiety					
	F	%	F	%	F	%		
High	31	79.5	8	20.5	39	100	< 0.001	7.27 (2.28-23.13)
Low - Moderate	8	34.8	15	65.2	23	100		
Total	39	62.9	23	37.1	62	100		

Based on Table 2, most pregnant women with high spiritual well-being did not experience anxiety, accounting for 31 respondents (79.5%), while 8 respondents (20.5%) experienced anxiety. In contrast, among pregnant women with low–moderate spiritual well-being, most experienced anxiety, with 15 respondents (65.2%), whereas 8 respondents (34.8%) did not experience anxiety.

The analysis showed a statistically significant association between spiritual well-being and anxiety, with a p-value < 0.001. The odds ratio (OR) was 7.27 (95% CI: 2.28–23.13), indicating that pregnant women with low–moderate spiritual well-being had 7.27 times higher odds of experiencing anxiety compared with those with high spiritual well-being. Since the 95% confidence interval did not include 1, the association was statistically significant.

Table 3. Relationship between ANC frequencies and anxiety of pregnant women in third trimester.

ANC Frequency	Anxiety				Total		p-Value	OR (CI 95%)
	No Anxiety		Anxiety					
	F	%	F	%	F	%		
Compliant	33	71.7	13	28.3	46	100	0.032	4.23 (1.28-14.03)
Non-compliant	6	37.5	10	62.5	16	100		
Total	39	62.9	23	37.1	62	100		

Most pregnant women who were compliant with ANC visits did not experience anxiety, accounting for 33 respondents (71.7%), while 13 respondents (28.3%) experienced anxiety. In contrast, among pregnant women who were non-compliant with ANC visits, 10 respondents (62.5%) experienced anxiety, whereas 6 respondents (37.5%) did not experience anxiety.

The analysis showed a statistically significant association between ANC frequency and anxiety, with a p-value of 0.032. The odds ratio (OR) was 4.23 (95% CI: 1.28–14.03), indicating that pregnant women who were non-compliant with ANC visits had 4.23 times higher odds of experiencing anxiety compared with those who were compliant with ANC visits. Since the 95% confidence interval did not include 1, the association was statistically significant.

Table 4. Relationships between sleep quality with anxiety of pregnant women in third trimester.

Sleep Quality	Anxiety				Total		p-value	OR (CI 95%)
	No Anxiety		Anxiety					
	f	%	f	%	F	%		
Good	34	82.9	7	17.1	41	100	< 0.001	15.54 (4.27-56)
Poor	5	23.8	16	76.1	21	100		
Total	39	62.9	23	37.1	62	100		

Table 4 shows that most pregnant women with good sleep quality did not experience anxiety, accounting for 34 respondents (82.9%), while 7 respondents (17.1%) experienced anxiety. In contrast, among pregnant women with poor sleep quality, most experienced anxiety, with 16 respondents (76.1%), whereas 5 respondents (23.8%) did not experience anxiety. The analysis showed a statistically significant association between sleep quality and anxiety, with a p-value < 0.001. The odds ratio (OR) was 15.54 (95% CI: 4.27–56.60), indicating that pregnant women with poor sleep quality had 15.54 times higher odds of experiencing anxiety compared with those with good sleep quality. Since the 95% confidence interval did not include 1, the association was statistically significant.

The results showed that high spiritual well-being was associated with lower levels of anxiety. This is related to parity, as primigravida mothers tend to experience higher levels of anxiety. In a first pregnancy, most women lack knowledge about how to manage pregnancy and go through labor smoothly, which contributes to their anxiety. Additionally, the various physical and emotional changes they experience can affect their ability to practice spiritual self-care, further intensifying the anxiety they feel. Studies show that spiritual activities, such as prayer and meditation, can promote inner calm and reduce anxiety. A holistic approach that incorporates physical, psychological and spiritual aspects can reduce anxiety in pregnant women (Susilawati, 2024).

Spirituality has a positive relationship with an individual's psychological well-being (Božek et al., 2020). A decline in spiritual well-being during pregnancy can reduce fetal

adrenaline secretion by increasing maternal cortisol levels, which directly affects fetal well-being. A study by Yousriatin et al. (2022) found that spirituality is significantly associated with anxiety ($p = 0.025$; $r = 0.224$) and adaptation in pregnant women ($p = 0.00$; $r = 0.507$) (Gupta et al., 2022). Literature reviews from previous studies mostly confirm the relationship between anxiety and variables such as age, education, spousal support, family support, occupation, maternal knowledge about ANC, ANC compliance, spiritual adaptation, and spiritual well-being (Salsabila et al., 2022).

Pregnant women with the greatest spiritual needs are those in the third trimester through to the postpartum period. This stage is considered the peak of anxiety during pregnancy, as it brings a mix of new emotional experiences related to the unborn baby and growing concerns about the childbirth process. Good spiritual well-being plays an important role in ensuring healthy fetal development and a smoother labor process. However, the findings of this study contrast with those of Oktafia et al., (2021), who reported that among high-risk pregnant women, 73 respondents (76%) had a high level of spiritual well-being, 22 (22.9%) had a moderate level, and only 1 respondent (1%) had a low level. This result differs significantly from the current study, which involved mostly third-trimester Muslim pregnant women in normal physiological condition, yet showed that the majority had only moderate levels of spiritual well-being. Kosasih & Hermawan, (2023) explains that spiritual development can naturally occur within every individual. However, it can also be enhanced by external environmental influences that offer spiritual experiences and reinforcement, allowing the spiritual dimension to grow stronger and better balance other areas of personal development.

In addition to statistical significance, the magnitude of the association was assessed using the odds ratio as an effect size measure. Pregnant women with low–moderate spiritual well-being had 7.27 times higher odds of experiencing anxiety than those with high spiritual well-being. This relatively large odds ratio indicates a substantial association between lower spiritual well-being and anxiety among third-trimester pregnant women. The confidence interval did not cross 1, supporting the statistical significance of this association. These findings suggest that spiritual well-being may represent an important psychological resource that helps pregnant women cope with emotional stress and concerns related to pregnancy and childbirth. However, the relatively wide confidence interval indicates some uncertainty in the magnitude of the effect, which may be related to the limited sample size. Individuals with strong spiritual values tend to be more motivated to find solutions to the problems they face. For pregnant women, spirituality can enhance happiness and provide a sense of inner peace. When a mother's spiritual needs are unmet, her anxiety tends to increase; conversely, when those needs are fulfilled, anxiety levels are reduced. Anxiety can cause emotional turmoil, creating a deep need for inner calm and for many, the greatest source of peace is found in a connection with God. Mothers who have strong faith and seek tranquility through worship tend to experience lower levels of anxiety compared to those who do not rely on spiritual strength to cope. When practiced effectively, spirituality can transform stressors from sources of psychological pressure or pain into triggers for improved physical and mental well-being.

Most respondents in this study had met the recommended frequency of antenatal care (ANC) visits. A significant relationship was found between ANC visit frequency and anxiety levels among third-trimester pregnant women. The majority of respondents had attained at least a secondary level of education, making them more likely to access and understand health-related information. Geographically, they also had easy access to ANC services through nearby community health posts (Posyandu), minimizing barriers related to distance and travel time. One of the key factors influencing anxiety is a mother's compliance with regular pregnancy check-ups. Ideally, a pregnant woman who receives

ANC in the first trimester (K1) should continue receiving care consistently through to the third trimester (K4). A significant gap between K1 and K4 visits may indicate suboptimal achievement of the K4 coverage target (Kementerian Kesehatan Republik Indonesia, 2020).

Several factors affect ANC attendance, including poverty, education, geographic access, and broader social development. Pregnant women from poor households with limited educational backgrounds often face challenges accessing health services due to financial constraints and lack of awareness. When pregnant women receive comprehensive and quality ANC services, they are more likely to have positive pregnancy and delivery experiences and give birth to healthy babies. Anxiety during pregnancy can be exacerbated by a lack of information. Inadequate knowledge of reproductive health and limited access to pregnancy-related information may lead to increased anxiety. Regular ANC visits provide mothers with essential knowledge about pregnancy, maternal and fetal health, and childbirth, helping them understand their condition and make rational decisions. This reduces anxiety by equipping them with a clearer picture of their health status and enabling early detection and intervention for any complications. Normal pregnancy itself can cause discomfort and anxiety due to various physiological changes and the need for maternal adaptation. A mother's adherence to ANC enhances her understanding of pregnancy, postpartum, and childbirth, thereby reducing anxiety and helping her better navigate the childbirth process (Pratiwi, 2022).

The strength of the association between ANC frequency and anxiety was also evaluated using the odds ratio. Pregnant women who were non-compliant with recommended ANC visits had 4.23 times higher odds of experiencing anxiety compared with those who were compliant. This finding indicates a meaningful association between inadequate ANC attendance and maternal anxiety, beyond the statistically significant p-value of 0.032. Regular ANC visits may provide pregnant women with opportunities to obtain information regarding pregnancy progression, fetal health, preparation for childbirth, and potential complications, thereby reducing uncertainty and psychological distress. Nevertheless, the relatively wide confidence interval suggests that the exact magnitude of this association should be interpreted cautiously.

Research shows a statistically significant relationship between sleep quality and anxiety in third-trimester pregnant women. These findings are consistent with a study conducted by Mia Widiastuti and colleagues in 2019. The study revealed that among third-trimester pregnant women, only 12% (6 respondents) had good sleep quality, while the remaining 88% (42 respondents) experienced poor sleep quality. Statistical analysis using the Spearman Rank test yielded a correlation coefficient of 0.542 (indicating a strong correlation) with a p-value of 0.000, indicating a significant relationship between anxiety levels and sleep quality among third-trimester pregnant women in the working area of Handapherang Public Health Center (Asiah et al., 2023).

This study is supported by findings from Sudirman et al. (2021) shows that there is a significant relationship between anxiety levels and sleep quality in third-trimester pregnant women. A study by Rahmasita et al. (2021) also found that anxiety levels affected the sleep quality of third-trimester pregnant women at Tanjung Karang Mataram Public Health Center. These findings that anxiety can lead to behavioral responses such as fatigue. Anxiety triggers a physiological response involving an increase in adrenaline levels, which places the body in a heightened state of alert. This surge in adrenaline significantly raises heart rate and causes tension in the central nervous system. Such excessive tension ultimately leads to fatigue. Generally, individuals experiencing fatigue tend to seek sleep as a means to restore their physical energy (Asiah et al., 2023).

Among the three factors examined, sleep quality showed the largest magnitude of association with anxiety. Pregnant women with poor sleep quality had 15.54 times higher odds of experiencing anxiety than those with good sleep quality. This large odds ratio indicates a particularly substantial association between poor sleep quality and maternal anxiety. Sleep disturbances may increase psychological vulnerability through difficulty relaxing, frequent nocturnal awakenings, and physiological arousal, while anxiety itself may further interfere with sleep, suggesting a potentially reciprocal relationship. Although the association was statistically significant ($p < 0.001$), the wide confidence interval indicates considerable uncertainty regarding the precise effect magnitude and therefore warrants cautious interpretation.

The researcher assumes that anxiety affects the sleep quality of pregnant women, as many women in their third trimester begin to worry about the approaching labor process. The higher the level of anxiety experienced, the more likely it is to disrupt their sleep quality. Therefore, the role of midwives is crucial in providing emotional support and motivation, as well as reassuring the mother that both her condition and that of the fetus are healthy, and emphasizing the importance of attending regular antenatal check-ups. Physiologically, anxiety can increase norepinephrine levels in the blood through activation of the sympathetic nervous system. Anxiety is a psychological response to a situation that can affect the subconscious mind and lead to physical symptoms. Excessive anxiety often disrupts the sleep process. Individuals experiencing anxiety tend to have difficulty relaxing, especially before bedtime, as their minds are filled with personal worries. This anxiety triggers an increase in norepinephrine levels through sympathetic nervous system stimulation, ultimately disrupting sleep architecture by reducing the duration of stage IV NREM and REM sleep, and causing frequent awakenings during the night.

4. CONCLUSION

This study found significant associations between spiritual well-being, ANC frequency, sleep quality, and anxiety among third-trimester pregnant women at Karawang Community Health Center, Sukabumi Regency. Pregnant women with low–moderate spiritual well-being, non-compliance with ANC visits, and poor sleep quality had higher odds of experiencing anxiety than their respective comparison groups. Among the factors examined, poor sleep quality showed the largest magnitude of association with anxiety. These findings highlight the relevance of spiritual well-being, ANC attendance, and sleep quality as factors associated with maternal anxiety during the third trimester.

However, these findings should be interpreted with caution. The cross-sectional design does not allow determination of temporal or causal relationships between the studied factors and anxiety. In addition, the relatively small sample size and recruitment from a single health center may limit the precision of the effect estimates and the generalizability of the findings to broader populations. Future studies with larger and more diverse samples and longitudinal or prospective designs are recommended to further clarify the direction and strength of these associations.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Ranti Lestari contributed to conceptualization, methodology, data collection, data analysis, and writing the original draft. Elisya Handayani Sodikin contributed to methodology, data collection, data curation, and validation. Megayana Yessy Maretta contributed to

conceptualization, supervision, interpretation of results, and critical review of the manuscript. Kusuma Putri Pratiwi contributed to data collection, data analysis, literature review, and manuscript preparation. Nuur Octascriptiriani Rosdianto contributed to data validation, interpretation of results, and writing, review, and editing. All authors reviewed and approved the final version of the manuscript.

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REFERENCES

- Adilla, I., Misrawati, M., & Indriati, G. (2023). The Effectiveness of Mindfulness Bonding Interventions for Mother and Fetus Using Smartphones on Anxiety in Pregnant Women Before Childbirth. *Jurnal Kesehatan Komunitas (Journal of Community Health)*, 9(2 SE-Articles), 257–264. <https://doi.org/10.25311/keskom.Vol9.Iss2.1382>
- Ardan, A., Umar, Z., Indonesiani, E. N., Ngkode, M. R., & Patrizia, J. (2022). Effectiveness of smarted b father intervention to reduce a pregnant mother's anxiety in the third trimester. *Jurnal EduHealth*, 13(02 SE-Articles), 478–484.
- Asiah, A., Septaliani, D. D., & Herlinawati, H. (2023). Hubungan antara tingkat kecemasan dengan kualitas tidur ibu hamil trimester III di Klinik Pratama. *Jurnal Kampus STIKes YPIB Majalengka*, 11(1), 19–31. <https://doi.org/10.51997/nnwhcg23>
- Bagherzadeh, R., Gharibi, T., Safavi, B., Mohammadi, S. Z., Karami, F., & Keshavarz, S. (2021). Pregnancy; an opportunity to return to a healthy lifestyle: a qualitative study. *BMC Pregnancy and Childbirth*, 21(1), 751. <https://doi.org/10.1186/s12884-021-04213-6>
- Božek, A., Nowak, P. F., & Blukacz, M. (2020). The relationship between spirituality, health-related behavior, and psychological well-being. *Frontiers in Psychology*, 11, 1997. <https://doi.org/10.3389/fpsyg.2020.01997>
- Chehrizi, M., Faramarzi, M., Abdollahi, S., Esfandiari, M., & Shafie Rizi, S. (2021). Health promotion behaviours of pregnant women and spiritual well-being: Mediatory role of pregnancy stress, anxiety and coping ways. *Nursing Open*, 8(6), 3558–3565. <https://doi.org/10.1002/nop2.905>
- Fahma, H. (2024). Anxiety in pregnancy: A literature review. *Journal of Diverse Medical Research : Medicosphere*, 1(4), 1–6. <https://doi.org/10.33005/jdiversemedres.v1i4.17>
- Fijianto, D., Aktifah, N., & Rejeki, H. (2020). Hubungan tingkat pendidikan dengan spiritual well being warga binaan pemasyarakatan laki-laki di lembaga pemasyarakatan jawa tengah. *Jurnal Ilmiah Kesehatan*, XIII(li), 109–114. <https://doi.org/10.48144/jiks.v13i2.259>

- Gupta, A., Gupta, U., Gupta, A., & Sharma, A. (2022). A study to assess spiritual well-being on anxiety among women with pregnancy. *International Journal of Health Sciences*, 6(S4), 10109–10114.
- Kementerian Kesehatan Republik Indonesia. (2020). *Pedoman Pelayanan Antenatal, Persalinan, Nifas, dan Bayi Baru Lahir di Era Adaptasi Kebiasaan Baru* (2 (ed.)). Kementerian Kesehatan Republik Indonesia.
- Kosasih, E., & Hermawan, R. (2023). Spiritual development in adulthood and later life from the perspective of psychology and religious studies. *International Journal Of Research And Scientific Innovation (IJRSI)*, X(2321), 138–145. <https://doi.org/10.51244/IJRSI.2023.101013>
- Maasoumi, R., Dastaran, F., Faghihinyia, F., Haghani, S., & Sabetghadam, S. (2023). The Effect of Spiritual Self-care Intervention with a Blended Learning Approach on Anxiety in Women with Preterm Labor: A Randomized Controlled Trial. *International Journal of Community Based Nursing and Midwifery*, 11(2), 85–95. <https://doi.org/10.30476/IJCBNM.2023.96119.2106>
- Oktafia, R., Indriastuti, N. A., & Kusuma, A. N. (2021). Association between spiritual well-being and anxiety among high-risk pregnant women. *Bali Medical Journal*, 10(3), 1375–1378. <https://doi.org/10.15562/bmj.v10i3.3055>
- Pamungkas, I. G., Dewi, A., & Pertiwi, H. (2024). Frequency of antenatal care : does it affect pregnant women ' s anxiety in the third trimester ? a cross- sectional study. *Journal of Nursing and Midwifery Sciences*, 3(April), 17–22. <https://doi.org/10.54771/tk50sx23>
- Pascal, R., Casas, I., Genero, M., Nakaki, A., Youssef, L., Larroya, M., Benitez, L., Gomez, Y., Martinez-Aran, A., Morilla, I., Oller-Guzmán, T. M., Martín-Asuero, A., Vieta, E., Crispi, F., Gratacos, E., Gomez-Roig, M. D., & Crovetto, F. (2023). Maternal stress, anxiety, well-being, and sleep quality in pregnant women throughout gestation. In *Journal of Clinical Medicine* (Vol. 12, Issue 23, p. 7333). <https://doi.org/10.3390/jcm12237333>
- Pratiwi, L. (2022). Hubungan kecemasan ibu hamil dengan kepatuhan antenatal care pada saat pandemi covid-19 Di Puskesmas Cinere. *Bunda Edu-Midwifery Journal (Bemj)*, 5(1), 6–10. <https://doi.org/10.54100/bemj.v5i1.59>
- Querejeta Roca, G., Anyaso, J., Redline, S., & Bello, N. A. (2020). Associations between sleep disorders and hypertensive disorders of pregnancy and materno-fetal consequences. *Current Hypertension Reports*, 22(8), 53. <https://doi.org/10.1007/s11906-020-01066-w>
- Rachma, G. N., Irwanto, I., & Izzati, D. (2024). Differences in the level of anxiety of pregnant women in the i, ii, and iii trimester. *Indonesian Midwifery and Health Sciences Journal*, 8(2), 156–170. <https://doi.org/10.20473/imhsj.v8i2.2024.156-170>
- Rahmasita, S. A., Mahardika, A., & Jumsa, M. R. (2021). Pengaruh tingkat kecemasan terhadap kualitas tidur ibu hamil trimester III di Puskesmas Tanjung Karang Mataram. *Smart Society Empowerment Journal*, 1(3), 81–90. <https://doi.org/10.20961/ssej.v1i3.56071>
- Salsabila, H. N., Sulistiawati, S., & Jayanti, R. D. (2022). Correlation between antenatal care and anxiety in primigravida pregnant women at glagah community health center. *Journal of Maternal and Child Health*, 7(1), 110–116. <https://doi.org/10.26911/thejmch.2022.07.01.12>
- Scialpi, A., Mignolli, E., De Vito, C., Berardi, A., Tofani, M., Valente, D., & Galeoto, G. (2022). Italian validation of the pittsburgh sleep quality index (psqi) in a population of healthy children: a cross sectional study. *International Journal of Environmental Research and Public Health*, 19(15). <https://doi.org/10.3390/ijerph19159132>.
- Sudirman, N., Muzakkir, M., & Mato, R. (2021). Hubungan kecemasan terhadap kualitas tidur

- ibu hamil primigravida trimester III. *JIMPK: Jurnal Ilmiah Mahasiswa & Penelitian Keperawatan*, 1(3), 381–386. <https://doi.org/10.35892/jimpk.v1i3.600>
- Suparno, A. U., Budiastuti, U. R., & Murti, B. (2021). Meta-analysis: the effect of anxiety during pregnancy on the risk of premature birth and low birth weight in infants. *Journal of Maternal and Child Health*, 6(5), 580–591. <https://doi.org/10.26911/thejmch.2021.06.05.08>
- Susilawati. (2024). The relationship of mental readiness of primigravida pregnant women with the level of anxiety before childbirth. *Bulletin of Inspiring Developments and Achievements in Midwifery*, 1(1 SE-Articles), 40–51. <https://doi.org/10.69855/bidan.v1i1.397>
- Yousriatin, F., Anggreini, Y. D., & Kirana, W. (2022). Hubungan spiritual self-care dengan kecemasan ibu hamil trimester III. *Khatulistiwa Nursing Journal*, 4(2), 40–46. <https://doi.org/10.53399/knj.v4i0.178>