

## Original Research

# The Effectiveness of Pregnancy Online Classes (PROCLASS) on the Level of Knowledge and Anxiety Ahead of Labor During the COVID-19 Pandemic

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### ABSTRACT

**Background:** Restrictions on health services such as prenatal checks and the Pregnant Women Class program during the COVID-19 pandemic in several regions will have an impact on the quality of services for pregnant women. Purpose: Pregnancy online classes can potentially increase knowledge and reduce anxiety ahead of labor during the COVID-19 pandemic.

**Methods:** Quasi-experimental and nonequivalent control group, pretest and posttest design approach Each group of 30 people (purposive sampling technique). Pre-test and PROCLASS provide material every week through videos uploaded to the WhatsApp group. The instrument uses a questionnaire (Google Form). Independent t-test and Mann-Whitney test to compare the PROCLASS and control groups. Dependent t-test and Wilcoxon test to compare the pre-and post-test in the PROCLASS group.

**Results:** There were differences in the pre-post test on the variables of knowledge and anxiety in the PROCLASS group, respectively ( $p$ -value 0.000). There was a difference in knowledge between the PROCLASS and control groups ( $p$ -value 0.002), with an average knowledge of 88.83 in the PROCLASS group and 85.73 in the control group. There were also differences in anxiety levels between the PROCLASS and control groups ( $p$ -value 0.000), with an average anxiety level of 28.17 in the PROCLASS group and 45.70 in the control group.

**Conclusion:** PROCLASS has proven effective in increasing knowledge and reducing the anxiety level of pregnant women before giving birth during the COVID-19 pandemic so that health workers can carry out the process (Puskesmas).

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## INTRODUCTION

Maternal and infant mortality in Indonesia is still a big challenge and needs attention, especially during the COVID-19 pandemic situation. According to data from

the Inter-Census Population Survey in 2015, the Maternal Mortality Rate (MMR) due to pregnancy and childbirth in Indonesia is still high, namely 305 per 100,000 live births (Kemenkes RI, 2019). There were 4.9% of pregnant women confirmed positive for COVID-19 out of 1,483 confirmed cases who had co-morbid conditions. This shows that pregnant women, childbirth, postpartum, and newborns are vulnerable to COVID-19 (Kemenkes RI, 2020b).

Access to quality health services for pregnant women can accelerate efforts to reduce MMR, one of which is through classes for pregnant women (Kemenkes RI, 2020b). Several studies have shown the effectiveness of maternity classes for pregnant women. In Sweden, classes for pregnant women promote feelings of security, help prepare them for childbirth, and help them become parents (Ahldén I et al., 2012). In Laos, maternity classes increase pregnant women's knowledge and understanding of basic neonatal care (Weiner EA et al., 2011). In Indonesia, class activities for pregnant women increase knowledge about childbirth preparation (Lucia, Sorongan et al., 2015).

Classes for pregnant women are useful in preparing them physically and psychologically for childbirth. Pregnant women will experience physiological and psychological adaptations in the form of discomfort in the body (difficulty breathing, back pain, and frequent urination), fear of pain during childbirth, and fear of caring for their baby (Madhavanprabhakaran, Girija Kalayil et al., 2015; Mayo Clinic, 2017; Soma-Pillay, P. et al., 2016).

The condition of the COVID-19 pandemic will certainly add to the fear and anxiety of pregnant women going to healthcare facilities for fear of contracting it (Kemenkes RI, 2020b). Classes for pregnant women can increase mothers' confidence in facing childbirth because mothers are given counseling about childbirth, postpartum and neonatal care, physical activity, and local customary beliefs and can share their experiences with other pregnant women. So that pregnant women can be better prepared and less anxious when facing childbirth (Kemenkes RI, 2018; Kristianingsih & Suryanti, 2019).

The COVID-19 pandemic situation has caused restrictions on routine services, including health services for pregnant women. There are suggestions to postpone antenatal checks and classes for pregnant women, as well as the unpreparedness of services in terms of staff and infrastructure, including personal protective equipment. This has an impact on access to and quality of health services (Kemenkes RI, 2020b).

Implementing online classes for pregnant women as a medium for KIE (Information and Education Communication) is an effort to overcome this problem. Advances in technology in the digital era can be utilized to facilitate access and improve the quality of health services during the COVID-19 pandemic. In India, the online classroom training model has proven effective in increasing knowledge, skills, and satisfaction in maternal and child health management (Ayun Sriatmi, 2020).

The urgency of this research is based on the problems experienced by the local government in implementing pregnancy online classes during the COVID-19 pandemic, considering the positive impact of holding the class for pregnant women. Therefore, this research needs to be conducted to see how effective the implementation of online classes for pregnant women is, especially at the level of knowledge and anxiety before giving birth during the COVID-19 pandemic, which has so far been carried out face-to-face, as faced by the Puskesmas. So the results of this study can be used as a recommendation for the development of the local health center program.

The purpose of this study was to analyze the effectiveness of the pregnancy online classes (PROCLASS) on the level of knowledge and anxiety before delivery during the COVID-19 pandemic so that it could provide recommendations to related parties.

## MATERIALS AND METHOD

The research method used is quantitative research with quasi-experimental methods and a nonequivalent control group pretest and posttest design approach. This study was conducted in accordance with Ethical Assessment No. 0219/EA/KEPK/2022. The research was carried out in the working area of the Blora Public Health Center, Central Java, from April to November 2022.

The sample size is 30 for each group. Sampling with the purposive sampling technique. The sample inclusion criteria are third-trimester pregnant women, residing in the COVID-19 pandemic area, owning a cell phone, and having had their first contact with a health worker, while the sample exclusion criteria are high-risk pregnant women with a history of co-morbidities or chronic diseases and pregnant women who refused to participate in this study.

The Community Health Center organizes online classes, providing material every week with an intervention period of one month. The online class intervention group for pregnant women (PROCLASS) is in the form of health education material provided via video (extension text), which is uploaded via the WhatsApp group (WAG), which was previously formed by the facilitating midwife. Material is distributed once a week, with a duration of 10–20 minutes per video.

The discussion and question-and-answer mechanism are carried out through the WA group chat, where the midwife facilitator is responsible as the group administrator and can bring in other resource persons to provide support material in the class for pregnant women. While the control is pregnant women who get information through the KIA book, The Maternal and Child Health Book (KIA Book) contains information sheets and health records as well as special notes on abnormalities in the mother during pregnancy, childbirth, the postpartum period, and in children (fetuses, newborns, infants, and children up to age 6).

The research instrument used a questionnaire to measure knowledge with the Guttman scale and anxiety with the Zung Self-Rating Scale (ZSAS). The anxiety questionnaire instrument has been tested for validity (Pearson correlation) with a result  $> 0.444$  and tested for reliability (Cronbach's alpha) with a result of 0.829. This study used the independent t-test and the Mann-Whitney non-parametric test to compare the PROCLASS and control groups. Dependent t-test and the non-parametric Wilcoxon test to compare the pre- and post-test in the PROCLASS group.

## RESULTS

Following are the characteristics of age, gestational age, and parity of respondents in the intervention group (PROCLASS) and the control group (KIA book):

**Table 1.** Distribution of Respondents by Age, Gestational Age and Parity in the PROCLASS Group and the Control Group

Variable	Mean	Median	Standard Deviation	Minimum-Maximum
<b>PROCLASS Group</b>				
Age	27,43	27	5,137	20 – 41

Variable	Mean	Median	Standard Deviation	Minimum-Maximum
Gestational Age Parity	30,93	30	2,612	28 – 36
Age Parity	1,83	2	0,950	1 – 4
<b>Control Group</b>				
Age	27,83	27	4,829	22 – 40
Gestational Age Parity	31,07	31	4,685	28 – 35
Parity	1,50	1	0,630	1 – 3

It can be seen from Table 1 that the average age of the PROCLASS and Control groups was almost the same, respectively, 27.43 years and 27.83 years. The average gestational ages of the PROCLASS and control groups were 30.93 weeks and 31.07 weeks, respectively. Meanwhile, the average parity of the PROCLASS and control groups was 1.83 and 1.50.

**Table 2.** Distribution of Average Knowledge of Pregnant Women Before and After Participating PROCLASS in the Blora Work Area in 2022

Variable	PROCLASS Group	Mean	Mean Rank	Sum of Rank	P value	N
Knowledge Pretest	Negatif Rank	78,57	0,00	0,00	0,000	0
Posttest	Positif Rank	88,83	15,00	465,00		30
	Ties					0

The (positive) difference between the results of knowledge before and after taking PROCLASS is 24, so there is an increase in knowledge before and after taking PROCLASS. The mean rank on average for this increase is 15.50, while the total positive ranking or sum of ranks is 465.00. Meanwhile, the (negative) difference between knowledge before and after taking PROCLASS is (0) in pregnant women, meaning that there are no pregnant women who experience a decrease in knowledge before and after taking PROCLASS. There were no (0) pregnant women who experienced an increase or decrease (same value) in knowledge before and after participating in PROCLASS.

Based on the statistical test results, it is known that the significance value is 0.000, which is <0.05, meaning that there is a difference in the knowledge of pregnant women before and after participating in PROCLASS. So it can be concluded that there is also an effect of following PROCLASS with increased knowledge of pregnant women.

**Table 3.** Distribution of Average Anxiety of Pregnant Women Before and After Participating PROCLASS in the Blora Work Area in 2022

Variable	Mean	SD	SE	P value	N
Pretest	58,27	3,741	0,683	0,000	30
Posttest	28,17	5,584	1,019		30

The anxiety average before joining PROCLASS was 58.27, with a standard deviation of 3.741. After participating in PROCLASS, the average anxiety level was 28.17, with a standard deviation of 5.584. The statistical test results obtained a significance value of 0.000, which is <0.05, so it can be concluded that there is a difference in anxiety in pregnant women before being given the intervention (PROCLASS) and after being given the intervention (PROCLASS).

**Table 4.** Distribution of Average Knowledge and Anxiety Levels of Pregnant Women Between the Intervention Group (PROCLASS) and the Control Group (KIA Book) in the Work Area of the Blora Health Center in 2022

Variable	Mean	Mean Rang	Sum of Rank	P value	N
<b>Knowledge</b>					
PROCLASS Group	88,83	37,52	1125,50	0,002	30
Control Group	85,73	23,48	704,50		30
<b>Anxiety Level</b>					
PROCLASS Group	28,17	5,584	1,019	0,000	30
Control Group	45,70	6,497	1,186		30

Based on the data, it was found that the average knowledge of pregnant women who did PROCLASS was 88.83 (very good knowledge), while pregnant women in the control group (KIA books) had an average knowledge of 85.73 (very good knowledge). Likewise, the results of the mean rank showed that pregnant women who did PROCLASS had a higher average knowledge of 37.53 than pregnant women in the control group (KIA book) of 23.48. Based on statistical tests, it is known that the significance value is 0.002 (p-value <0.05), meaning that there is a difference in knowledge between pregnant women who do PROCLASS and pregnant women from the KIA book (control), with a mean difference of 3.10.

The average anxiety of pregnant women participating in PROCLASS was 28,17 (mild anxiety) with a standard deviation of 5,584, while for pregnant women in the control group (KIA book), the average anxiety was 45,70 (moderate anxiety) with a standard deviation of 6,497. The statistical test results obtained a p-value of 0,000, meaning that at alpha 5% there was a significant difference in the average anxiety between pregnant women who attended PROCLASS and pregnant women who used the KIA book (control).

## DISCUSSION

Pregnancy and childbirth are phases that every married couple looks forward to. Research from Wulandari S.R. et al., (2020) stated that the impact of the COVID-19 pandemic was in the form of psychological responses of pregnant women during the COVID-19 pandemic in the form of stress, anxiety, and some even experienced depression. The impact of anxiety, if not handled properly, will result in stress that can even lead to depression (Wulandari, S. R., et al., 2020). In addition, during pregnancy, there will be physical and psychological changes, so pregnant women need physical and mental preparation (Varney, 2018).

Physical readiness means having sufficient energy and good health, while mental readiness means having sufficient interest and motivation to carry out an activity (Aprilia Y., 2013; Kemenkes RI., 2020b). Access to quality health services for pregnant women can accelerate reduction efforts, one of which is through classes for pregnant women. Research by Ahldén I et al., (2012) shows the effectiveness of maternity classes for pregnant women. In Sweden, classes for pregnant women increase their feelings of security, help prepare them for childbirth, and help them become parents.

The pregnancy online classes (PROCLASS) are a means of learning together about health for pregnant women in the form of face-to-face meetings in groups that aim

to increase the knowledge and skills of mothers regarding pregnancy, childbirth, postpartum, post-partum family planning, the prevention of complications, newborn care, and physical activity or gymnastics for pregnant women online (Kemenkes RI, 2020a). Based on the results of the study, it was found that there were differences in the knowledge of pregnant women before delivery between the intervention group (PROCLASS) and the control group (KIA Book), with the largest mean difference in the PROCLASS group. The average knowledge in the PROCLASS group was almost the same as the increase in knowledge in the control group.

This is because the PROCLASS group and the control group (KIA Book) both received information related to pregnancy so that it could increase the knowledge of pregnant women. The difference is only in the absorption of information and understanding of each pregnant woman. Health education is a promotive and preventive effort through the dissemination of information and increasing the motivation of a person or community to behave healthily, so that people know how to maintain health, prevent things that are detrimental to health, and where to seek help if they experience health problems (Notoatmodjo S, 2014).

The results showed that there were differences in the anxiety of pregnant women before delivery between the intervention group (PROCLASS) and the control group (KIA Book), with the highest mean difference in the PROCLASS group. The PROCLASS group on average decreased the anxiety level of pregnant women before delivery compared to the control group. The anxiety level of pregnant women in the PROCLASS group decreased more because in the online class for pregnant women, after giving the material, there was a discussion session with health workers.

In the discussion session, pregnant women can share their feelings or worries, ask about complaints they feel, ask questions about the information that is not yet known, and so on, so that they get solutions or answers. Research by Nugroho, Rizki Nursofyanto, and Cahyanti, (2017) after conducting a correlation test, obtained a p-value  $<0.001$ , which means that there is a significant relationship between the class participation of pregnant women and the level of anxiety facing childbirth. The same thing was conveyed by Lita et al., (2022) there was an effect of online learning classes for pregnant women on the anxiety level of pregnant women during the COVID-19 pandemic era.

The anxiety pretest scores of the two groups were almost the same, or there was no significant difference (p-value = 0.013). Meanwhile, for the post-test scores in both the experimental and control groups, there was a significant difference (p-value = 0.000). Statistically, if you look at the average difference of (-0.06) or  $p = 0.000$ , which is less than 0.05.

Research by Silva-Jose et al., (2022) found that pregnant women receiving online group exercise classes previously had an average anxiety score of  $32.23 \pm 9.31$ , ranging from low to moderate levels, due to the COVID-19 pandemic situation. They stated that they felt safe and comfortable exercising at home, the time was more flexible, there was increased adherence to the program, and there were other positive behaviors such as healthier eating patterns. When group exercise classes go online, pregnant women feel connected to other pregnant women and get social support, which has a positive impact on their mental health.

Classes for pregnant women are useful in preparing them physically and psychologically for childbirth. Pregnant women will experience physiological and psychological adaptations in the form of body discomfort (difficulty breathing, back

pain, and frequent urination), fear of pain during childbirth, and fear of caring for their baby (Madhavanprabhakaran, Giriya Kalayil et al., 2015; Simbolon, Ganda Agustina Hartati et al., 2021; Soma-Pillay, P. et al., 2016). In Indonesia, class activities for pregnant women increase knowledge about preparation for childbirth (Lucia, Sorongan et al., 2015). Class meetings for pregnant women are usually held 4 (four) times during pregnancy or according to the results of the agreement between the facilitator, participants, and midwives or health workers (Kemenkes RI, 2018).

In general, there are two factors that influence anxiety in pregnant women: internal factors and external factors. Internal factors are divided into two types, namely beliefs about childbirth and feelings before childbirth. In addition to internal factors, external factors are also divided into two types, namely information from health workers and the husband's support (Shodiqoh ER & Syahrul F, 2014).

Advances in technology will provide a variety of mass media that can influence pregnant women's knowledge of innovation or the latest information. As a means of communication, various forms of mass and electronic media such as television, radio, newspapers, magazines, counseling, and social media via WhatsApp, Instagram, YouTube, and others have a major influence on the formation of people's opinions and beliefs (Ilmiyani et al., 2021). During the COVID-19 pandemic, online antenatal education (module application) was widely used by pregnant women. During the COVID-19 pandemic, online antenatal education was well used by pregnant women, with "Pregnancy Care and Fetal Development" courses being the most studied by pregnant women in the early and mid-term, and "Baby Care" courses being the most studied during late pregnancy (Chen et al., 2022).

Implementing online classes for pregnant women as a medium for KIE (Information and Education Communication) is an effort to overcome this problem. Advances in technology in the digital era can be utilized to facilitate access and improve the quality of health services during the COVID-19 pandemic. In India, the online classroom training model has been shown to be effective in increasing knowledge, anxiety reduction skills, and satisfaction with maternal and child health management (Ayun Sriatmi, 2020).

This is supported by research by Wu et al., (2020) showing that online antenatal care can reduce unnecessary hospital visits and limit the potential risk of infection among this vulnerable group during the COVID-19 pandemic. Online antenatal care can be a preferred alternative option because it is beneficial for pregnant women who need basic antenatal care, pregnancy-related information, and mental health consultations. So that it can increase knowledge and overcome mental disorders. In addition, online antenatal care can help provide relatively economical medical services and reduce healthcare inequalities due to its convenience and cost-effectiveness, especially in developing countries or regions.

## **CONCLUSION**

The characteristics of the respondents were the average age of the PROCLASS group at 27.43 years and the control group at 27.83 years, the gestational age of the PROCLASS group was 30.93 weeks and the control group was 31.01 weeks, the parity of the PROCLASS group was 1.83 and the parity of the control group was 1.50. There were differences in pre- and post-test knowledge and anxiety levels in the PROCLASS group with a p-value of 0.000 and a p-value of 0.000, respectively. There was a difference in knowledge between the PROCLASS group and the control group with a p-

value of 0.002 (mean difference: 3.1). There was a difference in anxiety between the PROCLASS group and the control group with a p-value of 0.000 (mean difference: 17.53). In general, it can be concluded that online classes for pregnant women (PROCLASS) are effective in increasing knowledge and reducing anxiety for pregnant women before childbirth during the COVID-19 pandemic.

The online class for pregnant women (PROCLASS) can be used as a medium to increase information in the form of health knowledge or education for pregnant women while at the same time reducing the anxiety of mothers during pregnancy. Apart from that, it can also be used by health workers (midwives, doctors, or other health workers) as a medium to increase knowledge and reduce anxiety for pregnant women before delivery, especially during COVID-19.

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## REFERENCES

- Ahldén I, Ahlehagen S, Dahlgren L, & Josefsson A. (2012). *'Parents' Expectations about Participating in Antenatal Parenthood Education Classes.* J Perinat Educ.
- Aprilia Y. (2013). *Persiapan Batin untuk Proses Persalinan.* <http://www.bidankita.com>.
- Ayun Sriatmi, D. (2020). 'Dapatkah Kelas Ibu Hamil Model Virtual Meningkatkan Praktik Pencegahan Risiko Tinggi Kehamilan? *Media Litbangkes*, 30(1), 1–14. <http://ejournal2.litbang.kemkes.go.id/index.php/mpk/article/view/2985>
- Chen, X. W., Jiang, L. Y., Chen, Y., Guo, L. F., & Zhu, X. H. (2022). Analysis of online antenatal education class use via a mobile terminal app during the COVID-19 pandemic. *BMC Pregnancy and Childbirth*, 22(1), 1–10. <https://doi.org/10.1186/S12884-022-04745-5/FIGURES/7>
- Ilmiyani, S. N., Yusuf, N. N., & Susilamayanti, D. (2021). Pengaruh Kelas Ibu Hamil Terhadap Peningkatan Pengetahuan Ibu Hamil Tentang Kesehatan Kehamilan di UPTD Puskesmas Bagu. *Jurnal Medika Utama*, 2(2), 782–789. <https://jurnalmedikahutama.com/index.php/JMH/article/view/171>
- Kemenkes RI. (2018). *Pedoman Pelaksanaan Kelas Ibu Hamil.*
- Kemenkes RI. (2019). *Profil Kesehatan Indonesia Tahun 2018.* Jakarta. [https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatanindonesia/PROFIL\\_KESEHATAN\\_2018\\_1.pdf](https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatanindonesia/PROFIL_KESEHATAN_2018_1.pdf)
- Kemenkes RI. (2020a). *Pedoman Bagi Ibu Hamil, Ibu Nifas dan Bayi Baru Lahir Selama Social Distancing.* Dirjen Kesga dan Kemas Kemenkes RI.
- Kemenkes RI. (2020b). *Pedoman Pelayanan Antenatal, Persalinan, Nifas dan Bayi*

*Baru Lahir di Era Adaptasi Kebiasaan Baru.* Jakarta.  
[https://covid19.go.id/storage/app/media/Materi Edukasi/2020/Oktober/revisi-2-a5-pedoman-pelayanan-antenatal-persalinan-nifas-dan-bbl-di-era-adaptasi-kebiasaan-baru.pdf](https://covid19.go.id/storage/app/media/Materi_Edukasi/2020/Oktober/revisi-2-a5-pedoman-pelayanan-antenatal-persalinan-nifas-dan-bbl-di-era-adaptasi-kebiasaan-baru.pdf)

- Kristianingsih, A., & Suryanti, E. (2019). Hubungan Keikutsertaan Kelas Ibu Hamil Terhadap Kecemasan Ibu Dalam Menghadapi Persalinan Pada Ibu Hamil Trimester III Di Desa Branti Raya Kecamatan Branti Lampung Selatan Tahun 2019. *Jurnal Kesehatan Masyarakat Mulawarman (JKMM)*, 1(2), 64–72. <https://doi.org/10.30872/jkmm.v1i2.2961>
- Lita, K. V. N., Susilo, Joko, & Estiwidani, D. (2022). *Pengaruh Pembelajaran Daring Kelas Ibu Hamil terhadap Tingkat Kecemasan Ibu Hamil pada Era Pandemi COVID-19 di Puskesmas Cangkringan.* Poltekkes Yogyakarta.
- Lucia, Sorongan, Purwandari, Atik, & Pesak, E. (2015). Pengaruh Pelaksanaan Kelas Ibu Hamil Terhadap Pengetahuan Tentang Persiapan Persalinan. *Jurnal Ilmiah Bidan*, 3(1), 61–65. <https://ejurnal.poltekkesmanado.ac.id/index.php/jidan/article/view/361>
- Madhavanprabhakaran, Girija Kalayil, D’Souza, Melba Sheila, & Nairy, K. S. (2015). Prevalence of pregnancy anxiety and associated factors. *International Journal of Africa Nursing Sciences*, 3, 1–7. <https://doi.org/10.1016/j.ijans.2015.06.002>
- Mayo Clinic. (2017). *Pregnancy Week by Week.* <https://www.mayoclinic.org/healthy-lifestyle/Pregnancy-Week-by-Week/in-Depth/Pregnancy/Art-20046767?P=1>  
<https://www.mayoclinic.org/healthy-lifestyle/pregnancy-week-by-week/in-depth/pregnancy/art-20046767?p=1>
- Notoatmodjo S. (2014). *Promosi Kesehatan, Teori Dan Aplikasi.* Rineka Cipta.
- Nugroho, Rizki Nursofyanto, & Cahyanti, R. D. (2017). Hubungan Partisipasi Kelas Ibu Hamil Terhadap Tingkat Kecemasan Menghadapi Persalinan Pada Ibu Hamil Risiko Tinggi. *Diponegoro Medical Journal (Jurnal Kedokteran Diponegoro)*, 6(2), 1166–1177.
- Shodiqoh ER, & Syahrul F. (2014). Perbedaan Tingkat Kecemasan Dalam Menghadapi Persalinan Antara Primigravida dan Multigravida. *Jurnal Berkala Epidemiologi*, 2(1), 141–150.
- Silva-Jose, C., Nagpal, T. S., Coterón, J., Barakat, R., & Mottola, M. F. (2022). The ‘new normal’ includes online prenatal exercise: exploring pregnant women’s experiences during the pandemic and the role of virtual group fitness on maternal mental health. *BMC Pregnancy and Childbirth*, 22(1), 1–11. <https://doi.org/10.1186/s12884-022-04587-1>
- Simbolon, Ganda Agustina Hartati, Urhuhe Dena Siburian, & Paruhum Tiruon Ritonga. (2021). Pengaruh Kelas Ibu Hamil terhadap Kecemasan Menghadapi Persalinan

pada Ibu Hamil Beresiko. *Jurnal Endurance : Kajian Ilmiah Problema Kesehatan*, 6(1), 180–189. <https://doi.org/https://doi.org/10.22216/jen.v6i2.38>

Soma-Pillay, P, Nelson-Piercy, C., Tolppanen, H, & Mebazaa, A. (2016). Physiological changes in pregnancy. *Cardiovascular Journal of Africa*, 27(2), 89–94. <https://doi.org/http://doi.org/10.5830/CVJA-2016-021>

Varney, H. (2018). *Varney's Midwifery*. Jones & Bartlett Learning.

Weiner EA, Billamay S, Partridge JC, & Martinez AM. (2011). 'Parents' Expectations about Participating in Antenatal Parenthood Education Classes.'. *J Perinatol*, 31(2), 92–97.

Wu, H., Sun, W., Huang, X., Yu, S., Wang, H., Bi, X., Sheng, J., Chen, S., Akinwunmi, B., Zhang, C. J. P., & Ming, W. K. (2020). Online antenatal care during the COVID-19 pandemic: Opportunities and challenges. *Journal of Medical Internet Research*, 22(7), 1–5. <https://doi.org/10.2196/19916>

Wulandari S.R, Melina F, Kuswanti I, Rosyad Y.S, & Rias Y.A. (2020). Respon Psikologi Perempuan Hamil Selama Masa Pandemi COVID-19. *Jurnal Kesehatan*, 11(Spesial HKN).