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Mental Health Education for Pregnant Women during the COVID-19 Pandemic in Surakarta, Indonesia

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Abstract

The main factors increasing the risk of depression are pregnant women's lack of knowledge about recognizing signs and symptoms, early detection, and prevention efforts. The purpose of this study is to examine the impact of mental health education on pregnant Indonesian women's knowledge and self-efficacy during the COVID-19 pandemic. A quasi-experimental study was conducted. Pregnant women in four Surakarta primary health care facilities received antenatal care using Basic Emergency Obstetric Neonatal Care. The inclusion criteria for the sample were 127 pregnant women with a gestational age of 24-36 weeks, no family history of mental disorders, a singleton pregnancy, and participation in the intervention from beginning to end. The study excluded pregnant women who experienced complications during their pregnancy. Sample sizes for the intervention and control groups were 67 and 60 pregnant women, respectively. Personal psychoeducation intervention was provided by trained midwives during antenatal care. During the intervention, materials were presented in modules, and videos were shared through WhatsApp groups and discussions. The Edinburgh Postpartum Depression Scale was used to assess depressive symptoms. The data were analyzed using the paired t-test and independent t-test. Following the intervention, the mean score for knowledge and self-efficacy increased. Depressive symptom scores decreased following the intervention and were significantly different from the control group. Mental health education interventions for pregnant women using modules and videos can improve pregnant women's knowledge and self-efficacy in preventing antenatal and postnatal depression.

Introduction

In the world, people have experienced changes in life since the COVID-19 pandemic in the Chinese city of Wuhan in December 2019. Fear and worry about the transmission of COVID-19 add to stressors in society and affect mental health problems, especially in women. Along with confirmed cases of COVID-19 increasing during the pandemic, the prevalence of perinatal depression is increased (Sun et al., 2020). Most of the transmission of COVID-19 occurs in the third trimester of pregnancy (Centers for Disease Control and Prevention, 2020). Fear of accessing antenatal care (ANC) services during the pandemic has resulted in limited time for further ANC visits for healthy pregnancies(Almeida et al., 2020).

Mental disorders, particularly depression, affect approximately 10% of pregnant women and 13% of postpartum women worldwide. In developing countries the figure is even higher, with 15.6% pregnant and 19.8% postpartum (WHO, 2017). This condition has worsened since the COVID-19 pandemic. During the

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COVID-19 pandemic, depression was prevalent in 31% of pregnant women, and postpartum depression was prevalent in 22%. (Yan, Ding, & Guo, 2020). During the COVID-19 pandemic, the prevalence of crisis and depression in pregnant women in Turkey reached 64.5% and 56.3%, respectively (Kahyaoglu Sut & Kucukkaya, 2020).

The lack of knowledge of pregnant women to identify signs and symptoms of depression causes them to be unable to carry out early detection and prevention. Medical risks in pregnancy are higher among pregnant women during the COVID-19 pandemic. High levels of stress and depression are mental health problems due to the COVID-19 pandemic and are even worse in late pregnancy (Medina-Jimenez et al., 2020).

During pregnancy, women experience physical changes, and hormonal functions that result in psychological conditions. However, pregnant women do not aware of the condition well, especially their mood during pregnancy. During antenatal care (ANC), midwives often convey physical changes and possible complaints. Adaptation failure to pregnancy conditions provides their own experiences of pressure, loss, and even depression during pregnancy(The Experience of Psychological Distress, Depression, and Anxiety during Pregnancy: A Meta-Synthesis of Qualitative Research, 2015). Changes in the psychological condition of pregnant women that are less implemented can interfere with the physical health of the mother and her fetus (Firouzan, et.al, 2020; Rotheram-Borus, Tomlinson, Roux, & Stein, 2015; A. Staneva, Bogossian, Pritchard, & Wittkowski, 2015; Stein et al., 2014). A history of mental disorders and domestic violence are risk factors for perinatal depression (Tsai et al., 2016). Life pressure and incidence have a significant relationship with maternal depression during the antenatal and postpartum periods (Flach et al., 2011). Maternal age is very young, low socioeconomic status and lack of social support increase the risk of maternal depression (Vigod et al., 2016).

Pregnant women were anxious and worried about contracting the covid disease. It could increase the risk of pregnant women have mental health disorders, such as anxiety and depression. Limited social activities and access to health services during the pandemic, caused anxiety and depressive symptoms to go undetected. Lack of knowledge about mental health disorders in the perinatal period encourages the need for mental health education, symptoms, screening, and management during pregnancy to prevent more severe conditions (Fairbrother et al., 2015). High-risk groups for mental health issues during the pandemic include women who are pregnant, postpartum, have suffered partner abuse, have had a miscarriage, or all of the above. It is possible to actively reach out to these group of women to prevent, detect, and provide early intervention (Almeida et al., 2020). Therefore, the purpose of this study is to evaluate the efficiency of interventions in mental health education in raising pregnant women's knowledge and self-efficacy in preventing depression.

Methods

This quasi - experimental study used the non - equivalent control group design. Pregnant women who received ANC in four primary health care (PHC) settings in Surakarta, a province in central Indonesia with Basic Emergency Obstetric and Neonatal Care (BEONC), were included in this study, with Sibela and Gajahan PHCs serving as intervention sites and Banyuanyar and Pajang PHCs serving as control sites. Random assignment of the selected PHCs into the intervention and control groups was carried out. The sample was 127 pregnant women with inclusion criteria: those who did ANC at the BEONC health center, gestational age 24-36 weeks, pregnant women who were willing to follow the intervention from the beginning to the end of the study, had no family history of mental disorders, and singleton pregnancy. The exclusion criteria were pregnant women who experienced pregnancy complications, confirmed with COVID-19 and did not complete the intervention process. Participants who did not complete the data and were unable to clarify the data were included in the dropout criteria. The number of samples in the intervention and control groups were 67 and 60 people, respectively. Figure 1 shows a flowchart of the subject recruitment process.

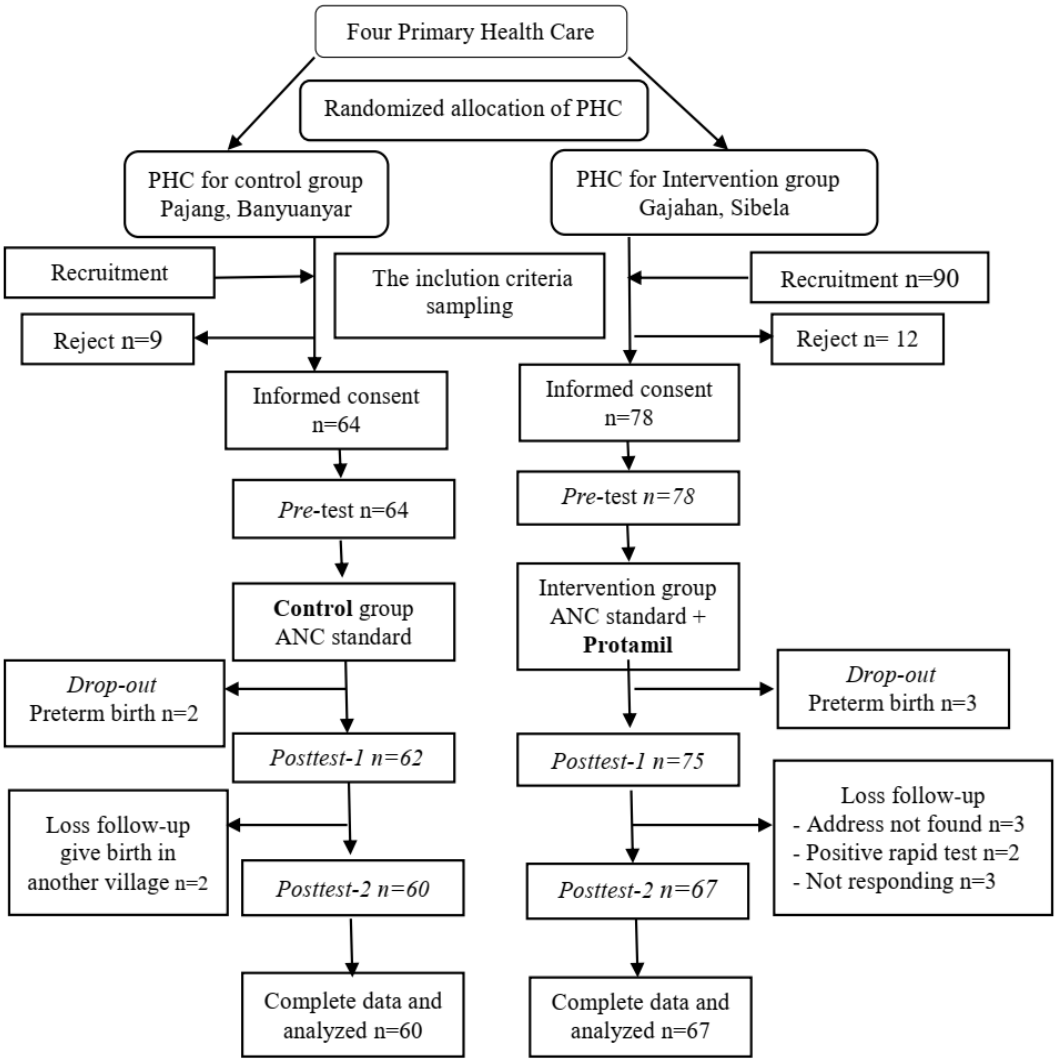

FIGURE 1. Flow chart of the recruitment process

The data collected using a mental health knowledge questionnaire and a self-efficacy questionnaire made by the researchers. The questionnaires comprised demographic questions such as age, education level, employment status, and economic status. The knowledge instrument consisted of 20 questions designed as 'correct' and 'wrong' answer choices. The results of the validity test of the knowledge questionnaire used point-biserial correlation. 20 of the 23 items were declared valid (p-value < 0.05). Three invalid items were dropped. The Kuder-Richardson 20 (KR-20) method was used to assess reliability with a value of 0.717. Therefore, the reliability of the knowledge questionnaire was confirmed (Kusumawati et al., 2021).

The self-efficacy questionnaire consisted of 26 questions designed as answer choices assessed based on a Likert scale (inappropriate=1, somewhat inappropriate=2, somewhat appropriate=3, and appropriate=4). Questions were assessed by a total score of answers. The validity test of the self-efficacy questionnaire used Pearson's product-moment correlation with a coefficient correlation of $r > 0.163$ (p-value < 0.05) on 26 items, and 4 invalid items were deleted. The reliability test used the Cronbach alpha method with a value of 0.71, and the self-efficacy questionnaire was confirmed to be reliable. Depressive symptoms were measured by EPDS(Cox et al., 1987; Hutauruk, 2011).

In this study, mental health education

for pregnant women is called Protamil. The Protamil education intervention took time after entering the new normal period of the COVID-19 pandemic. Pregnant women who agreed to be respondents signed an informed consent after receiving an explanation. Furthermore, the participant filled out the pretest questionnaire. Protamil was carried out in personal psychoeducation by trained midwives when pregnant women perform antenatal care (ANC) at the PHC. Protamil education uses health protocols, namely maintaining physical distance, wearing masks and personal protective equipment (PPE). After a physical examination of pregnancy during ANC, midwifes educate each pregnant woman face-to-face personally for 10-20 minutes.

Educational materials were also provided through media modules, can be brought home and read again with her husband. Protamil video media were displayed on smartphones and distributed to participants' smartphones to be watched back at home. The researchers created a WhatsApp group (WAG) for participants and midwives to facilitate a question-and-answer discussion after the Protamil education process. The posttest was measured two weeks after the next ANC intervention. The baseline conditions, as measured by the mean pretest score of knowledge, self-efficacy, and EPDS, revealed no significant difference between the intervention and control groups (p-value> 0.05), indicating that the two groups were comparable. For categorical data, descriptive analysis displayed the mean score, standard deviation, median, range of data, and proportions. The chi-square, paired t-test, and independent t-test, were used in the analysis, with a significance level of 0.05.

Result and Discussion

The characteristics of pregnant women in the Protamil and control groups are shown in Table 1. Most pregnant women are of reproductive age (20-35 years). There were pregnant women in both the intervention and control groups, with 9% and 3.3%, respectively, who were under the age of 20. Pregnant women in the intervention and control groups were 16 and 19 years old, respectively. In the intervention and control groups, the mean standard deviation (SD) of pregnant women age was 28.2 6.3 and 28.8 4.8, respectively. Pregnant women in the intervention group (44.8%) and the control group (60.0%) had the highest level of education. According to basic education standards, half of the intervention group (43.2%) was a primary and junior high school graduate, while most of the control group (90%) was a high school and university graduate. Most of the pregnant women were housewives. 70.0% were in the intervention group and 56.7% were in the control group. The characteristics of respondents in the intervention and control groups are similar, except for differences in educational level (p 0.05).

Table 2 shows the mean pretest knowledge score in the intervention group of 12.57 3.17 and the control group of 13.27 2.42. The intervention group's mean knowledge score increased to 13.97 2.94 after two weeks of the Protamil (maternal mental health promotion) intervention. The paired t-test comparing mean knowledge scores revealed a statistically significant difference between mean knowledge scores before and after the Protamil intervention (p-value = 0.000). In the control group, the mean pretest and post-test scores after the intervention were nearly identical, or there was no significant increase. The paired t-test results showed no significant difference between the pretest and post-test (p-value > 0.05).

Table 2 indicates that the mean initial self-efficacy score in the intervention group (75.27 ± 8.34) and the control group (76.58 ± 10.14) was not significantly different (p > 0.162). In contrast, in the intervention group, there was a significant increase in the mean self-efficacy score of 2.07 (p-value = 0.043) after two weeks of the Protamil intervention. Unfortunately, in the control group, there was a slight decrease in mean self-efficacy scores after the intervention. Based on the results of the paired t-test, there was no significant difference in the mean score of self-efficacy between the pretest and posttest scores (p-value = 0.483). We found a significant effect of Protamil education on the mental health knowledge of pregnant women with a moderate effect size (0.47) and on the self-efficacy of pregnant women in preventing depression with a small effect size (0.34). The

paired t-test results concluded that there was a significant difference in the mean score of depression before and after the intervention (p-value = 0.045). In addition, after two weeks of Protamil intervention, the mean EPDS score decreased by 0.84.

TABLE 1. The Characteristics of Pregnant Women in the Intervention and Control Groups

Characteristics	Groups				p-value
	Intervention		Control		
	n=67	(%)	n=60	(%)	
Age (year)					
< 20	6	9.0	2	3.3	0.189
20-35	51	76.1	53	88.3	
>35	10	14.9	5	8.3	
Education level					
Basic education (basic – primary school)	29	43.2	8	10.0	**0.0004**
Intermediate (high school-university)	38	56.8	52	90.0	
Employment					0.232
Housewife	48	70.0	36	56.7	
Employee	19	30.0	24	43.3	
Gravida					
Primigravida	26	38.8	26	43.3	0.736
Multigravida	41	53.2	34	54.3	
Parity					
Nullipara dan primipara	48	71.6	48	80.0	0.372
Multypara	19	28.4	12	20.0	
planned/wanted pregnancy					
Yes	50	74.6	46	76.7	0.952
No	17	25.4	14	23.3	
Poor Obstetric History					
Miscarriage	6	0.09	5	8.33	0.819
Low birth weight	1	0.01	2	3.33	
Stillbirth	1	0.01	0	0.00	
No	9	88.1	53	88.4	
EPDS (antenatal)					
≥ 13 (Depression)	14	20.9	11	18.381.7	0.889
< 13 (Normally)	53	79.1	49		

[a] *Chi-square test*

Source: Primary Data, 2022

TABEL 2. The Results of the Mean Score of Knowledge and Self-Efficacy in the Intervention and (n = 67) and Control Groups (n = 60)

Variable	Pretest Mean±SD	Posttest Mean±SD	p-value	Delta mean Post-pre	Mean difference	SD pooled	Effect size
Knowledge							
Intervention	12.57±3.17	13.97±2.94	**0.000**[a]	1.40±2.9	1.236	2.61	0.47
control	13.27±2.42	13.43±2.81	0.582[a]	0.17±2.3			
p-value[b]	0.162[b]			**0.010**			
Self-Efficacy							
Intervention	75.27±8.34	77.34±9.37	**0.043**[a]	2.07±8.2	2.791	8.05	0.34
control	76.58±10.14	75.87±9.33	0.483[a]	-0.72±7.9			
p-value[b]	0.425[b]			**0.053**			
Score EPDS							
Intervention	10.06±3.93	9.22±4.17	**0.045**[a]	-0.84 ± 3.3	-0.602	3.06	0.19
Control	9.23±3.48	9.00±3.84	0.527[a]	-0.23 ± 2.8			
p-value[b]	0.211[b]			0.279[a]			

[a]*Paired t-test,* [b]*Independent t test*

Source: Primary Data, 2022

Surakarta's health services for pregnant women have never included education or mental health counseling. There is no data on the prevalence of mental health disorders in pregnant women, but in a preliminary study conducted before the COVID-19 pandemic, 13.3% experienced depression (EPDS>=13). The prevalence of antenatal depression increased to 24.5% during the COVID-19 pandemic. This finding is consistent with the findings of a systematic review, which found an increased prevalence of depression and anxiety in pregnant women in Asian and Western countries during the COVID-19 pandemic (Rahimi et al., 2020). The pandemic of COVID-19 raises the risk of depression and anxiety in pregnant and perinatal women (Hessami et al., 2020; Rahimi et al., 2020). Lockdown and social isolation have a significant impact on depression scores. A lower level of social support was linked to a higher prevalence rate (Rahimi et al., 2020).

The current study indicates that Protamil (maternal mental health promotion) education can improve maternal mental health knowledge scores two weeks after the intervention. The WhatsApp Group (WAG) was created as a means to discuss the material presented because the time for educational interventions at PHC during the pandemic is very limited, and it also aims to reduce the risk of COVID-19 transmission. We recorded the results of consultations for pregnant women in the intervention group. The response of midwives to WAG in the control group was also recorded by the researchers.

The mean knowledge score increased two weeks after the Protamil intervention. In summary, the Protamil intervention was effective in increasing pregnant women's mental health knowledge. This study's findings are consistent with the findings of Park et al's systematic review, which found that psycho-educational interventions have an impact on improving maternal mental health, albeit with a small effect size (Park et al., 2020). In this study, the effect size of the intervention on knowledge was found to be moderate, probably due to differences in the education level of the participants. The education level of pregnant women may have influenced the outcome of the intervention. The level of education is related to the ease or difficulty of accessing information, receiving, and understanding the information. Women with higher education are better in independently try to access needed information. On the other hand, women with less education depend more on health service providers for health information. In line with previous research in Australia, low education and income are associated with low mental health literacy (Reavley & Jorm, 2011). The higher education level of the control group participants made them more active and independent in seeking mental health information.

The increase in mental health knowledge occurred because of the Protamil education that was delivered by midwives. This improvement can also occur because pregnant women are actively reading the modules provided. According to recommendations, the educational and counseling interventions that midwives provide when providing ANC services can prevent perinatal depression(Curry et al., 2019). However, during the COVID-19 pandemic, the ANC service time at the PHC was shorter. The ANC services provided are shorter, so pregnant women may not fully understand the Protamil education delivered. Providing modules with photo illustrations helps pregnant women to better understand. The video media shared via smartphones also supports increasing knowledge of pregnant women. Smartphones are currently an attractive audiovisual media choice for delivering psycho-educational material to participants in the form of text and images(Luxton et al., 2011).

Based on unstructured interviews in the intervention group, pregnant women had mental health knowledge, pregnancy depression disorder, and their effects after watching videos. Videos with illustrated stories make materials easy to understand. We had never received any mental health information during pregnancy, especially pregnancy depression, its impact on the baby, and how to prevent and treat it. It is in line with the findings of research in Australia that the level of general public knowledge about postnatal mental health is higher than during the prenatal period. Surprisingly, only about a quarter (25%) of respondents could show the negative impact of prenatal anxiety/ depression

on fetal development(Kingston et al., 2014). This shows that the public's attention to mental health is more during the postpartum period than during pregnancy.

Protamil intervention can increase literacy and provide better mental health knowledge. Protamil and ANC standard education differed statistically in the increase in knowledge scores up to the puerperium period. There is a difference in the mean delta value of 0.082 between the intervention and control groups. Protamil is important to be implemented continuously in MCH services to detect changes in physical and mental health conditions during pregnancy. It means that pregnant women will find it easier to find solutions and overcome problems if they understand them correctly.

Protamil seeks to improve the mental health literacy of pregnant women. Based on the previous findings, the materials presented during the intervention were about recognizing pregnant women with depressive disorders, identifying causes, risk factors, and how to deal with depression independently, asking for family support, and finding appropriate help according to the needs and expectations of pregnant women (Guy, Sterling, Walker, & Harrison, 2014; Jorm & Kelly, 2007; Reavley & Jorm, 2011).

Videos help deliver attractive and accessible mental health education materials. Video content that matches the needs and desires of users becomes the foundation for changing health behavior. Video content can have a long-term impact on the message given, although it depends on the ability of the recipient to identify the content presented(Adam et al., 2019). Based on the research results, the provision of information or educational materials using video media can be recommended for use in ANC services at the primary health care to increase the understanding of pregnant women and their families about mental health. The provision of psychoeducation is carried out by trained personnel and is supported by modules and videos that are easy to understand and in accordance with the respondent's needs. The module provided can accompany the Handbook on Maternal and Child Health (MCH) to guide the importance of mental health during pregnancy and childbirth.

Improved mental health knowledge was seen in the intervention group, followed by increased self-efficacy after two weeks of intervention and follow-up during the puerperium. At baseline, the intervention group had lower self-efficacy. It is very likely to be affected by the COVID-19 pandemic, which causes pregnant women to lack confidence in dealing with pregnancy problems.

After two weeks of the Protamil intervention, there was an increase in the self-efficacy of pregnant women. This study is in line with the results of research in Turkey, where antenatal education, in general, can increase self-efficacy in dealing with childbirth, perceived support, and social control in childbirth(Gökçe İsbir et al., 2016). Self-efficacy shows confidence in their ability to cope with everything that affects their life(Bandura, 2006; Eaton, 2008). We argue that self-efficacy can reduce stress and an individual's susceptibility to depression. According to Bandura, individuals with low self-efficacy tend to experience higher levels of stress and depression (Snyder, 2012). In this study, self-efficacy was effective in overcoming depressive symptoms during pregnancy and preventing postpartum depression, as evidenced by their good emotional and mood control. Pregnant women argue that they can confidently deal with physical complaints, especially pain, go through labor smoothly, ask for help and support from their husbands/families, and seek help if they experience problems.

Protamil provides Support and Self-Confidence modules delivered by midwives. An illustration of self-confidence is also shown in the video, so Protamil is expected to increase the self-efficacy of pregnant women after the intervention. At the end of treatment, there was a significant difference in self-efficacy scores between the intervention and control groups in favor of intervention group. Clinically, the Protamil intervention impacted self-efficacy with a small effect size.

Research conducted by Francis et al. found that less educated adults with depressive symptoms who received literacy education programs showed an increase in self-efficacy and a decrease in depressive symptoms(Fakunle

et al., 2014). Thus, to improve self-efficacy, continuous education is needed. After a two-week Protamil intervention, there was an increase in the self-efficacy of pregnant women. The results of this study are in line with the results of research in Turkey, where antenatal education, in general, can increase self-efficacy in dealing with childbirth, enhance perceptions of social support, and improve control of labour(Gökçe İsbir et al., 2016).

In the control group, pregnant women's self-efficacy scores decreased slightly after the intervention. In the posttest, the control group entered the COVID-19 pandemic period. Pandemic conditions cause anxiety and fear, so confidence to solve problems and face childbirth decreases. Also, it is possible to obtain outside information or share experiences with peers and family, sometimes reducing the confidence of the mother to go through labor, especially to deal with the pain and fear of having surgical childbirth.

Higher education makes pregnant women more confident about getting better delivery services. Women with higher education have better self-efficacy in coping and adapting. However, this study is not in line with previous research in Australia which concluded that there is an inconsistent relationship between education level and self-efficacy (Schwartz et al., 2015). Adequate psychosocial adaptation is associated with high self-efficacy scores (Sieber et al., 2006). Thus, research with a more intensive method is needed to provide Protamil education during ANC by involving peers so that it can increase self-efficacy in pregnant women. High self-efficacy in overcoming problems, dealing with childbirth, caring for children, and seeking help can prevent depression during pregnancy and puerperium.

The mean depression score in pregnant women who followed the intervention at baseline was higher than the control group. However, the difference was not statistically significant. Based on the research in China, after the announcement of the COVID-19 pandemic, pregnant women were judged to have a statistically higher level of depressive symptoms than before the COVID-19 pandemic(Wu et al., 2020). Similarly, the COVID-19 pandemic conditions add to the stressor of pregnant women, increase fears and worries about childbirth, and the fear of transmitting COVID-19 to mothers and their babies(Preis et al., 2020).

Protamil education can reduce depression scores in the intervention group. However, the decline was not a definite consequence of Protamil's education. For women with unwanted/unplanned pregnancies in the intervention group, the reduction in depressive symptom scores was not significant. Unwanted pregnancies increase the risk of depression because they are not ready to give birth (Ayano et al., 2019; Getinet et al., 2018), coupled with stressors due to anxiety and fear of COVID-19 transmission(King et al., 2019; Lebel et al., 2020). This decrease can occur naturally due to the decrease in the hormone estradiol after childbirth. However, the drastic decline from very high status to hypo gonad during the early postpartum period may be associated with decreased mood. Concerning the etiology/causes of depression, this condition is associated with increased levels of serotonin transfer which can result in decreased serotonin levels(Brummelte & Galea, 2016).

The obstacle to Protamil education during the pandemic was the limited space for discussion due to physical distance. The shorter ANC service time resulted in limited time for intervention and discussion. Facilitator responses during the discussion forums through WhatsApp Group (WAG) were recorded, only a few received responses from facilitators. However, researchers always ask about the news and condition of pregnant women every three days. Discussion group members also raise questions or make complaints. In this context, pregnant women feel more care and support.

The implications of the Protamil must be given continuously to affect decreasing the mean EPDS score. By the results of previous studies, midwives' repeated brief counseling interventions can reduce depression scores in women who have experienced childbirth trauma. Brief counseling interventions by midwives emphasize the social support approach and overcome limitations in special psychological and psychiatric services in PHC(Asadzadeh et al., 2020).

Conclusion

The Protamil mental health education intervention can help decrease the risk of depression symptoms in women during pregnancy. Statistically, there was an increase in knowledge and self-efficacy, but it was not statistically significant. Clinically, we report no incidence of antenatal depression following the Protamil intervention.

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