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A Non-Randomized Controlled Trial of Prevention Guidance of Common Physiological Symptoms in Pregnancy for Self-Efficacy in Pregnant Women

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ABSTRACT

Low self-efficiency causes twice the risk of experiencing discomfort due to pregnancy complaints. Providing prenatal education reduces it, but no studies using animated videos on the CPSP prevention guidance against self-efficacy were found. This study aimed to ascertain the impact of Common Pregnancy Symptoms in Pregnancy (CPSP) prevention guidance on pregnant women's self-efficacy. The design of this research is a non-randomized controlled trial in one of the independent health centres of midwifery in Banyuwangi, Indonesia. This study was conducted from July to September 2023 on 60 pregnant women with purposive sampling, so two groups of 30 were allocated to the control and experimental groups. After the intervention, a significant difference was observed in the average self-efficacy scores between the control and experimental groups (p = 0.000). Before and after the intervention, the average self-efficacy scores in the experimental group were 22.73±4.51 and 28.58±4.26, respectively, demonstrating a statistically significant difference (p = 0.000). This study encourages health professionals, midwives, and antenatal service providers to use the prevention guidance of CPSP in the first contact of antenatal care to remain relevant and timely with pregnancy information amid the administrative bustle.

Keywords: complaints in pregnancy, prevention guidance, self-efficacy.

ABSTRAK

Efikasi diri yang rendah menyebabkan dua kali risiko mengalami ketidaknyamanan akibat keluhan kehamilan. Pemberian pendidikan prenatal dapat menguranginya, tetapi belum ada penelitian yang menggunakan video animasi tentang pedoman pencegahan keluhan umum kehamilan terhadap efikasi diri. Penelitian ini bertujuan untuk memastikan dampak pedoman pencegahan keluhan umum terhadap efikasi diri pada ibu hamil. Desain penelitian ini adalah uji coba terkontrol non-acak di salah satu Praktik Mandiri di Banyuwangi, Indonesia. Penelitian ini dilakukan pada bulan Juli hingga September 2023 terhadap 60 ibu hamil dengan purposive sampling, sehingga dialokasikan dua kelompok yang berjumlah 30 orang untuk masing-masing kelompok kontrol dan eksperimen. Setelah intervensi, terdapat perbedaan rata-rata skor efikasi diri yang signifikan antara kelompok kontrol dan kelompok eksperimen (p = 0,000). Sebelum dan sesudah intervensi, rata-rata skor efikasi diri pada kelompok eksperimen masing-masing adalah 22,73±4,51 dan 28,58±4,26 yang menunjukkan perbedaan signifikan secara statistik (p = 0,000). Studi ini mendorong profesional kesehatan, bidan, dan penyedia layanan antenatal untuk menggunakan pedoman pencegahan keluhan umum kehamilan sejak kontak pertama antenatal care agar pemberian komunikasi, informasi, dan edukasi kehamilan tetap relevan dan tepat waktu di tengah kesibukan tugas administrasi.

Kata kunci: keluhan kehamilan, pedoman pencegahan, efikasi diri.

INTRODUCTION

The woman's body undergoes major changes during pregnancy, caused by hormonal and mechanical changes in response to the physiological stimuli triggered by the fetus and placenta, beginning immediately after conception and continuing throughout pregnancy (F. Gary Cunningham, Kenneth J. Leveno, Steven L. Bloom, Catherine Y. Spong, Jodi S. Dashe, Barbara L. Hoffman, Brian M. Casey, 2018). These changes can trigger various common physiological symptoms in pregnancy (Tan & Tan, 2013). Globally, nausea and vomiting are experienced by approximately 70% of pregnant women, typically in the first trimester (Einarson et al., 2013). However, about 20% of pregnant women complain of nausea and vomiting at the age of more than 20 weeks (Matthews et al., 2015). Complaints of lower back and pelvic pain are experienced by approximately 50% of pregnant women and mostly occur in the second trimester (Carvalho et al., 2017). Heartburn symptoms occur in 17–45% of pregnancies and can occur in all pregnancy trimesters. Constipation, a disorder of the gastrointestinal system, is complained about by approximately 11–38% of pregnant women and can be aggravated by haemorrhoids (Vazquez, 2010). Other complaints that are common during pregnancy are leg cramps, oedema, carpal tunnel syndrome, restleg syndrome, pruritus, pica, fatigue, bleeding, gums bleeding, insomnia or sleep disorders, and other complaints (Ertmann et al., 2023; Nazik & Eryilmaz, 2014).

Common physiological symptoms in pregnancy (CPSP) are not related to complications or external pregnancies (Ertmann et al., 2023), but CPSP can cause discomfort, decrease productivity (care for children, household care, work, and social interaction), affect rest and sleep patterns, increase greater use of health resources, and lower quality of life (Lagadec et al., 2018). The qualitative study results by Nazik et al. indicate that most pregnant mothers do nothing to cope with CPSP (Nazik & Eryilmaz, 2014). In addition, health professionals still feel that CPSP is not a priority condition for treatment (Einarson et al., 2013). Nevertheless, the World Health Organization (WHO), in its recommendation (WHO Recommendations on antenatal care for a Positive Pregnancy Experience, 2016), states that intervention and provision of preventive CPSP information given in time is one of the indicators for achieving a positive pregnancy experience for mothers.

Information about CPSP is something that pregnant mothers want to know with the motivation to reduce their concerns about pregnancy complaints or problems (Javanmardi et al., 2021) (Javanmardi et al., 2022). The motivation for searching for such information suggests that health professionals, midwives, and antenatal service providers should be aware that information about CPSP should be provided and evidence-based to the pregnant mother when needed (Vogels-Broeke et al., 2022). Related to the information sources about CPSP, pregnant women place their trust in midwives (91.5%), family and friends (75.3%), websites (77.9%), and digital applications (61%). The data indicate that pregnant mothers are more confident when the midwives provide information, and not a few also use websites and digital apps to digest information about the CPSP (Javanmardi et al., 2019).

A study showed that self-efficacy is crucial during the perinatal phase, when the pregnant mother is experiencing significant physical and mental changes (Shorey et al., 2015). Limited self-efficacy can cause fear and prevent recovery from a problem experienced (Martinez-Calderon et al., 2018). In addition, low self-efficacy causes twice the risk of experiencing discomfort due to pregnancy complaints (Chunmei et al., 2023). Anxiety in relation to body image, self-worry, baby worries, pregnancy acceptance, attitudes toward medical personnel and birthing, and avoidance was predicted by maternal self-efficacy (Brunton et al., 2020). Giving prenatal education helps to decrease CPSP and enhance the quality of life for expectant mothers (Yikar & Nazik, 2019). However, the survey found no studies about prenatal education that were given before CPSP and no studies using animated videos on the CPSP prevention guidance against self-efficacy. Therefore, this study aimed to ascertain the impact of animation video guidance on preventing CPSP on pregnant women's self-efficacy.

METHOD

Participant characteristics and research design

The research design was a non-randomized controlled trial or quasi-experimental study with a control group to determine self-efficacy before and after using the prevention guidance of common physiological symptoms in pregnancy (CPSP) on pregnant women. Before gathering the data, the "informed consent," "confidentiality and protection of confidentiality," and "respect to autonomy" principles were adhered to by informing the pregnant women of the study's purpose, assuring them that the data would be kept private, and including anyone who voluntarily wanted to take part.

Sampling procedures

This study was conducted from July to September 2023 on 60 pregnant women in one of the independent health centres of midwifery in Banyuwangi, Indonesia. Through purposive sampling, two groups of 30 pregnant women each were formed and designated as the control and

experimental groups, respectively. The criteria for inclusion are 1) pregnant women at the beginning of trimester I, II, or III; 2) pregnant mothers with CPSP; and 3) pregnant mothers willing to be the subject of the study. The exclusion criteria are: (1) having a history of pre-pregnancy illness or substance or drug abuse; (2) having a history of conditions such as fetal death and/or severe fetal malformation; and (3) multiple pregnancies. To avoid any spread of the intervention's contents between the control and experimental groups, we sampled the two groups individually. We mainly conducted participant recruitment and conducted the experimental group's intervention. Then, we selected participants for the control group and gathered information from them at various intervals.

Sample size, power, and precision

The sample size was determined based on Mina Nezamnia et al. (Nezamnia et al., 2020). The calculations used a two-way hypothesis with a 95% confidence interval ($Z\alpha = 1.96$) and a power test of 90% ($Z\beta = 1.28$). The combined standard deviation was set at 3.4, and the effect size was defined as 3.5. The formula for calculating the sample size for two groups with independent numerical data:

$$n_2 = n_2 = 2\left[\frac{(Z_\alpha + Z_\beta)S}{\chi_1 - \chi_2}\right]^2$$

The sample size was 60, accounting for a 10% loss, of which 30 individuals were allocated to the experimental group and another thirty were assigned to the control group.

Measures and covariates

In this study, we used the Chinese version of the General Self-Efficacy Scale (GSES) to collect data about self-efficacy (Ma et al., 2021), developed by Schwarzer (Schwarzer, 1993) is utilized to assess the confidence levels of pregnant women in managing the common physiological symptoms in pregnancy (CPSP) through an interview (or phone call if participants could not physically visit the independent health centre of midwifery). This scale has ten objects on it, each with a Likert scale of one ("***I can do nothing to protect myself from CPSP without confidence***") to four ("***I can do a lot to protect myself from CPSP with total confidence***"). The overall General Self-Efficacy Scale (GSES) score, ranging from 10 to 40, is computed by adding the scores of each item. A higher final score was indicative of more self-efficacy. The instrument is valid and reliable (Cheung & Sun, 1999).

The researcher conducted the intervention. The pregnant women in the experimental group received an educational program about prevention guidance of CPSP consisting of three sessions, offline and online. The contents of the prevention guidance for CPSP were based on a literature review by the researcher. The prevention guidance of CPSP was given as an animated video based on the results of surveys carried out by the researchers when writing the research proposal.

First session

The first session (day one) was initiated by explaining the study's objective to obtain informed consent from the participants. A demographic questionnaire and GSES were used to collect demographic characteristics and self-efficacy data. After that, the researcher explained the prevention guidance of CPSP with an animation video. During this session, the researchers explained that respondents can contact the researcher if there are advanced questions when using this prevention guidance.

Second session

The second session has been done online. Respondents accessed an animated video about the prevention guidance of CPSP via a smartphone (WhatsApp group) during the second to the 20th

day. Every day, researchers will remind respondents to access and can also apply the prevention guidelines.

Third session

The third session (21st day) has been done offline or online. In this session, the researchers reviewed the prevention guidance of CPSP. To enhance the attraction and interest of respondents, researchers provided additional education on other pregnancy education, such as perineal rupture prevention, breastfeeding preparation, and labour preparation. After that, the researchers collected post-test data using GSES.

Data analysis

Data analysis was conducted using SPSS software (version 25). The Shapiro-Wilk test was employed to ascertain if the quantitative data followed a normal distribution, and it was found that all the data were normally distributed. The characteristics of the two groups were compared using the Mann-Whitney U test and the chi-square test. The t-test and paired t-test were employed to examine the self-efficacy of expectant mothers between groups. A p-value greater than 0.05 was established as the benchmark for statistical significance.

RESULTS AND DISCUSSION

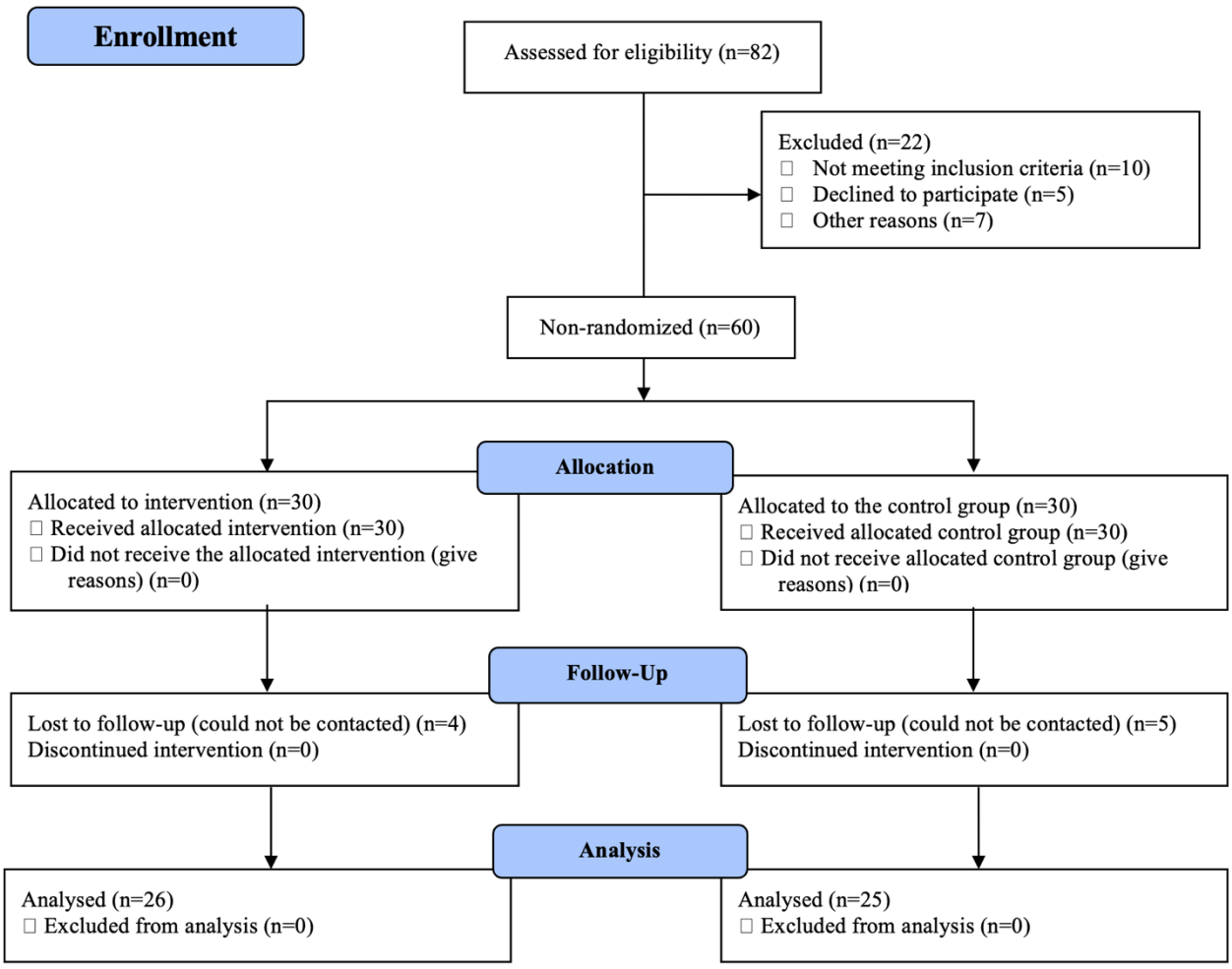

Figure 1. Participants Flowchart

In this research, 82 individuals were evaluated for eligibility; 22 were excluded because 10 did not meet the criteria for inclusion, five declined participation, and seven other reasons. The study

included 60 pregnant women; 30 (50%) were in the intervention group, and 30 (50%) were in the control group. However, four participants in the intervention group still needed to receive follow-up (they could not be contacted). Five in the control group (Fig. 1). Data analysis was done on 24 participants in the intervention group and 25 in the control group.

Characteristics	Intervention, (n=26) n (%)	Control, (n=25) n (%)	*p-value*
Age (in years)			
<20	0 (0)	1 (4)	0,332[b]
20-35	24 (92,3)	23 (92)	
>35	2 (7,7)	1 (4)	
Education			
Elementary school to junior high school	8 (30,8)	6 (24)	0,045[a]
High school	16 (61,5)	10 (40)	
College	2 (7,7)	9 (36)	
Job			
Employed	4 (15,4)	7 (28)	0,324[a]
Unemployed	22 (84,6)	18 (72)	
Trimester of pregnancy			
Early in the trimester I	2 (7,7)	7 (28)	0,346[b]
Early in the trimester II	17 (65,4)	11 (44)	
Early in the trimester III	7 (26,9)	7 (28)	
Parity			
1	11 (42,3)	14 (56)	0,074[a]
2	6 (23,1)	9 (36)	
3	9 (34,6)	2 (8)	
Ethnic			
Jawa	20 (76,9)	18 (72)	0,755[a]
Other (Osing, Madura, Sasak, Bajar)	6 (23,1)	7 (28)	
Common physiological symptoms			
Nause	6 (23,1)	8 (32)	
Nausea and vomiting	17 (65,4)	16 (64)	
Constipation	12 (46,1)	8 (32)	
Carpal tunnel syndrome	5 (19,2)	7 (28)	
Leg cramps	3 (11,5)	6 (24)	
Pruritus	4 (15,4)	2 (8)	
Back pain	18 (69,2)	15 (60)	
Pelvic pain	5 (19,2)	1 (4)	
Gingivitis	1 (3,8)	2 (8)	
Heartburn	5 (19,2)	5 (20)	
Leg oedema	1 (3,8)	2 (8)	

Table 1. *Characteristics of Participants in Both Groups*
Notes. [a]Chi-Square, [b]Mann-Whitney U

As shown in Table 1, both groups were homogeneous ($p > 0.05$) in terms of demographic variables (age, education level, job, trimester of pregnancy, parity, and ethnicity). Table 2 shows no significant difference between the self-efficacy mean score in the controls and the intervention group before the intervention ($p = 0.744$). After the intervention, there was a significant difference in the mean self-efficacy scores between the control and experimental groups ($p = 0.000$). The mean self-efficacy scores in the control group before and after the intervention were not statistically different ($p = 0.960$). However, the mean self-efficacy scores in the intervention group were 22.73±4.51 and 28.58±4.26, respectively, with a statistically significant difference ($p = 0.000$) before and after the intervention.

Self-efficacy groups	Control	Intervention	Difference of means	95% CI	*p*-value
Before the intervention	23.13±3.91	22.73±4.51	0.4	-2.77,1.99	0.744[a]
After the intervention	22.96±4.54	28.58±4.26	-5.62	3.13,8.09	0.000[a]
Means difference	-0.17	5.85			
p-value	0.960[b]	0.000[b]			

Table 2. Comparison of the Mean of Self-Efficacy Before and After the Intervention in Both Groups
Notes. [a]*t-test*; *paired t-test*

In this study, pregnant women in the intervention group and control group were seen to experience nausea, nausea and vomiting, constipation, carpal tunnel syndrome, leg cramps, pruritus, back pain, pelvic pain, gingivitis, heartburn, and leg oedema. The results of this study showed that the prevention guidance of common physiological symptoms in pregnancy (CPSP) for 21 days improved the self-efficacy of pregnant women to manage their CPSP. The difference between the average self-effectiveness scores in the control group before and after intervention was not statistically significant. After intervention, the mother's self-efficiency scores increased in the intervention group. Various studies indicate that educational and counselling interventions improve self-efficiency (Çankaya & Şimşek, 2021; Shafaei et al., 2020; You et al., 2020). Self-efficacy plays a crucial role when a pregnant woman is experiencing significant physical and mental changes in the perinatal period (Shorey et al., 2015). Limited self-efficacy can cause fear, prevent recovery from a problem experienced, and cause twice the risk of CPSP (Chunmei et al., 2023; Martinez-Calderon et al., 2018).

You H et al. found that an individual education program improved the mother's self-efficiency in breastfeeding her baby. Based on the results of her research, the breastfeeding self-efficacy score was significantly higher in the intervention group than in the control group. As a result, the rate of exclusive breastfeeding and any milk is higher in the intervention group upon leaving the hospital up to 6 months after childbirth (You et al., 2020). Furthermore, according to Çankaya S et al., pregnant women who were given prenatal education for two sessions of 2 hours (240 minutes) twice a week over four weeks experienced reduced fear of childbirth, depression, anxiety, and stress symptoms. Additionally, they demonstrated enhanced self-efficacy during labour compared to the control group. Those in the prenatal educational group had much lower fears, depression, and postpartum stress symptoms than those under control (Çankaya & Şimşek, 2021). The results of both of these studies are consistent with our research. In this research intervention group, researchers taught pregnant mothers how to prevent CPSP using animated video. It is a solution to the limitations of health care in providing education and counselling. Every pregnant mother can access the precautionary guidelines of CPSP anytime and anywhere. In addition, This study revealed that the self-efficacy of pregnant women had an upward trend in the intervention group and a decreasing trend in the control groups after 21 days. So, we concluded that the prevention program of CPSP using animated video could prevent a decrease in self-efficacy among expectant mothers.

LIMITATION OF THE STUDY

This study has strengths to mention. To the best of our knowledge, it is the inaugural study to evaluate self-efficacy concerning the benefits of prevention guidance for common physiological symptoms in pregnancy. Research has been carried out on the benefits of education to lessen complaints and enhance the quality of life for expectant mothers. In addition, the research has used technology in line with the current era of 4.0 and 5.0, which are the prevention guidance for CPSP, using animated or digital video media. However, there are some limitations associated with this research. First, because the type of CPSP has 10 complaints, respondents may become more demanding in practising preventive measures. This allows pregnant mothers not to be able to focus on one preventive step. Secondly, we provide only animated video prevention guidelines, so pregnant mothers who may prefer booklet media are not satisfied with this prevention. Third, The

sample size for this study was limited, and all participants were sourced from a single location, which may not accurately reflect the broader population.

CONCLUSIONS AND SUGGESTIONS

The study focuses on the benefits of the prevention guidance of CPSP to improve self-efficacy for mothers in pregnancy. The study results indicated that pregnant women who used and practised the prevention guidance of CPSP increased their self-efficacy statistically significantly compared to pregnant women in the control group, especially in preventing and treating CPSP. The findings also relate to Yikar, et al (2019) that prenatal education can reduce CPSP. Furthermore, this study encourages health professionals, midwives, and antenatal service providers to use the prevention guidance of CPSP in the first contact with antenatal care. An animated video about the prevention guidance of CPSP helps health professionals, midwives, and antenatal service providers remain relevant and timely with pregnancy information amid the administrative bustle. Further research by researchers is to develop an antenatal care model using prevention guidance of CPSP with more diverse media according to the characteristics of pregnant women.

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ETHICAL CONSIDERATIONS

Before starting the study, the ethics board of STIKES Banyuwangi, formal authorization from the institutions where it would be carried out, and participant consent were all received (115/02/KEPK-STIKESBWI/VII/2023).

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Conflict of Interest Statement

The authors affirm no conflict of interest in this study.

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