



## **Education of fetal movement counting: an effort to increase knowledge and compliance of pregnant women to do self-assessment of fetal wellbeing**

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### **ABSTRAK**

**Latar Belakang:** Penurunan pergerakan janin dapat mengindikasikan penurunan suplai oksigen dan nutrisi pada janin serta meningkatkan risiko janin terganggu, bahkan lahir mati. Pemberian informasi yang akurat mengenai pergerakan janin akan membantu ibu dalam mengambil keputusan yang tepat dalam menghadapi penurunan pergerakan janin. Penelitian ini bertujuan untuk mengetahui pengaruh pendidikan menghitung gerakan janin terhadap pengetahuan dan kepatuhan ibu hamil dalam melakukan penghitungan gerak janin.

**Metode:** Penelitian pra-eksperimental ini mengalokasikan 32 ibu hamil pada usia kehamilan 28-37 minggu untuk berlatih menghitung gerakan janin harian selama 3 minggu. Intervensi berupa paket edukasi dan praktek menghitung gerakan janin selama 3 minggu. Pengetahuan tentang menghitung gerakan janin diukur 4 kali dengan kuesioner yang divalidasi dan kepatuhan diukur di akhir intervensi. Uji Friedman digunakan untuk menganalisis perubahan pengetahuan ibu tentang menghitung gerak janin.

**Hasil:** Hasil penelitian menunjukkan bahwa terjadi peningkatan pengetahuan ibu tentang gerakan janin terhitung dari 52.94% menjadi 86.10% pada akhir intervensi, dengan skor tertinggi pada teknik menghitung gerak janin (93.67%). Perbandingan 4 periode pengukuran menunjukkan perubahan signifikan pada pengetahuan ( $p < 0,000$ ), dengan kecenderungan peningkatan pengetahuan. Kepatuhan dalam menghitung gerakan janin cukup tinggi yaitu sekitar 96%.

**Kesimpulan:** Pendidikan menghitung gerak janin akan meningkatkan pengetahuan tentang gerak janin. Memberikan pendidikan yang sesuai dan tindak lanjut yang berkelanjutan akan meningkatkan kesadaran wanita tentang pentingnya pemantauan gerakan janin dan meningkatkan kepatuhan mereka untuk melakukannya.

**KATA KUNCI :** hitung gerak janin; pendidikan gerak janin; pengetahuan; kepatuhan

### **ABSTRACT**

**Background:** Decreased movements of the fetus can indicate decrease supply of oxygen and nutrients to the fetus and increase the risk of fetal compromised, even stillbirth. Providing accurate information on fetal movements will help mother to make right decision when dealing with decreased fetal movements. This study aims to determine the effect of fetal movement counting education on knowledge and compliance of pregnant women in performing fetal movement counting.

**Method:** This pre-experimental study allocated 32 pregnant women at 28-37 weeks gestation to practice daily fetal movement counting for 3 weeks. The intervention was a package of fetal movement counting education and practice for 3 weeks. Knowledge on fetal movement counting was measured 4 times by a validated questionnaire and compliance was measured in the end of intervention. Friedman test was used to analyze the changes of women knowledge on fetal movement counting.

**Results:** The results showed that there was an increase in women knowledge on fetal movement counting from 52.94% to 86.10% at the end of intervention, by the highest score in the technique for fetal movement counting (93.67%). Comparison of 4 measurement periods showed significant changes in knowledge ( $p < 0.000$ ), with a tendency of rise in knowledge. The compliance in performing fetal movement counting was high about 96%.

**Conclusion:** Education of fetal movement counting will increase the knowledge regarding fetal movement. Providing appropriate education and continuous follow-up will increase women's awareness on the importance of fetal movement monitoring and rise up their compliance to do so.

**KEYWORD :** fetal movement counting; fetal movement education; knowledge; compliance

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## INTRODUCTION

Fetal movement is one of the important indicators of fetal well-being. The fetal movement begins at 9 week's gestation and felt by pregnant women at 20 weeks gestation (1, 2). Fetal movement tends to become stronger and steady as the pregnancy progresses. A decrease of the fetal movement can indicate a decrease in oxygen and nutrition to the fetus and increase the risk of preterm birth, low birth weight, complications, and the incidence of fetal death(3).

The infant mortality rate in Indonesia in the year of 2012 and 2017 based on SDKI surveys was 32/1000 live births and 24/1000 live births respectively, where the group of mothers without an educational background had the highest infant mortality rate by 66/1000 live births (4). At the provincial level, the infant mortality rate in Yogyakarta by the year 2019 was 7.4 / 1000 live births, which decreased from previous years (5). On the other hand, the infant mortality rate in Bantul Regency actually increased by 8.27 / 1000 live births in 2018 and 8.41 / 1000 live births in 2019, respectively and became the district with the highest infant mortality rate in Yogyakarta (5, 6). The incidence of perinatal death and infant mortality can lead a mother to a state of psychological instability, experience acute grief

or chronic sorrow, and finally will disrupt the quality of life of the mother (7).

Several efforts to reduce the incidence of perinatal mortality or infant mortality are antenatal care and continuous monitoring of fetal movements. Fetal movement counting is a self-screening method that can be practiced independently in home without specific equipment. Women who performs fetal movement counting routinely and contacts health care providers if the decrease movement perceived, are proven to reduce maternal anxiety (8-11), positively affect maternal-fetal attachment (12), predicting fetal health(13), avoid unnecessary antenatal visits and may improve pregnancy outcome (9).

Various fetal movement counting methods have been compared scientifically and show that the *Count-to-10* method is preferred by pregnant women over other methods. The *Count-to-10* is easy to use, user-friendly and shows high compliance in routine use (10, 14, 15). This method requires pregnant women to record the time needed to feel 10 fetal movements (16).

Studies found that health care providers are expected to provide complete and supportive information about fetal movements (17, 18). However, at the time of this article written, there has not been found a national guideline regarding

fetal movement monitoring and recommendations for a decrease in fetal movement. Based on the KIA booklet for pregnant women printed in 2018, there is also no specific information that discusses the needs for fetal movements monitoring.

This article is the first of two manuscripts compiled, which aims to determine the effect of fetal movement counting education on 1) knowledge and compliance of pregnant women in performing fetal movement counting, and 2) maternal anxiety when performing fetal movement counting.

## **MATERIALS AND METHODS**

This study used a pre-experimental design to measure the effect of fetal movement counting education on knowledge and compliance of pregnant women in performing fetal movements counting. This study was conducted at Sedayu 2 Public Health Center, Bantul Regency, Yogyakarta between September and November 2020. Purposive sampling was used to determine sample by using inclusion criteria: pregnant women at 28-37 weeks gestation, singleton pregnancy and being able to operate a mobile phone installed with the WhatsApp application. Knowledge of fetal movement counting was assessed with questionnaire which was valid and reliable (Cronbach's Alpha: 0.815). This questionnaire consists of 16 questions which consists of four domains, there are characteristics of fetal movement, fetal movement reduction, technique for fetal movement counting, and decision-making when perceive a decrease fetal movement. Total score for the questionnaire is 0-16 and an increase score indicates that knowledge regarding fetal movement counting is increase. Meanwhile, compliance on performing fetal movement counting was assessed by the number of days in performing fetal movement counting during 3 weeks.

The intervention in this study was a package of fetal movement counting education and fetal movement counting practice for 3 weeks. Fetal movement counting education was consist of animation video and written booklet. The video explained characteristics of fetal movement, fetal movement reduction, technique for fetal movement counting and decision-making when perceive a decrease fetal movement. The booklet contained re-explanation of video content and fetal movement chart. In this study, fetal movement counting practice used a modified *Count-to-ten* method (10, 19, 20).

At the beginning of intervention, 35 pregnant women were recruited. Of them, 32 respondents completed the study with 3 respondents were dropped out. The initial data collection process was carried out by visiting women house to provide informed consent and intervention package. The follow up process was carried out by communicating through WhatsApp application until the data completed for 3 weeks. At the beginning of the intervention, researchers asked women to watch the video and provide an explanation. Then, researchers explained the booklet content to ensure that women understands how to perform fetal movement counting and fills the chart. Thus, fetal movement counting carried out for 3 weeks. Throughout the intervention, women are given a reminder message every 2 days to count fetal movements daily. Questionnaire of knowledge was filled in for four time periods, which was before the intervention, immediately after the intervention (maximum 24 hours) , 2 weeks and 3 weeks after the intervention through the distribution of online questionnaire links. In this study, there were 3 respondents who dropped out because: 1 respondent stated that she had quit the study and 2 respondents had given birth before completing the intervention process due to preterm delivery.

Data were analyzed using the Friedman test to determine the change of women knowledge among measurement periods. A post hoc analysis was performed with the Wilcoxon test to ascertain which measurement periods were significantly different. Meanwhile, Compliance data analyzed after 3 weeks intervention and presented in frequency distribution and percentage.

## RESULTS AND DISCUSSIONS

### Characteristics of Pregnant Women

In this study, 32 pregnant women who completed the study were included in the data analysis. The mean age of women was 31.63 years, with the majority being multigravidas (81.3%). Approximately, 75% of women were housewives with a fairly varied level of education, where there still found 1 (3.1%) respondent who had no formal educational background. The majority of women obtained information about fetal movements from midwives or health care provider by 29 (90.6%). Women demographic characteristics presented in Table 1.

Table 1. Characteristics of pregnant women

	Mean (SD) or n (%)	CI 95%
Age	31,63 (6,025)	29,45-33,80
Gravida		
Primigravida	6 (18,7)	5,19-32,21
Multigravida	26 (81,3)	67,79-94,81
Occupation		
Housewife	24 (75)	60,00-90,00
Employee	6 (18,7)	5,19-32,21
Entrepreneur	2 (6,3)	-2,12-14,72
Educational background		
No formal education	1 (3,1)	-2,91-9,11
Middle school	11(34,4)	26,00-42,80
High School	14 (43,8)	26,61-60,99
Higher education	6 (18,7)	5,19-32,21
Source of FMC information	25 (78,1)	63,77-92,43
Midwives / health care providers	2 (6,3)	-2,12-14,72
Internet		
Never been heard	1 (3,1)	-2,91-9,11
More than one sources	4(12,5)	1,04-23,96

Frequency distribution

### Knowledge of Fetal Movement Counts

Knowledge of fetal movement counting were explained in 4 domains, namely the characteristics of fetal movement, fetal movement reduction, technique for fetal movement counting, and decision-making when perceive a decrease fetal movement. The results of this study indicated that there was an increase in the knowledge of fetal movement counting from 52.94% to 86.10% at 3 weeks intervention, with the highest increase in technique for fetal movement counting (93.67%). However, there was generally rising up in all knowledge domains and measurement periods.

Comparison of four measurement periods showed a significant changes in knowledge ( $p < 0.000$ ), with tendency of rose in knowledge. A post hoc test showed significant change in almost all measurements periods after intervention, except for comparison between 2 weeks and 3 weeks after intervention ( $p = 0.079$ ). This may be due to the knowledge of pregnant women score which was quite high at second week of intervention. Therefore, it was slight change of knowledge in 3 weeks intervention. Statistical analysis of women's knowledge is shown in Table 2.

Friedman test, post hoc analysis: knowledge before intervention vs after intervention  $p=0,000$ ; before intervention vs 2 weeks intervention  $p=0,000$ ; before intervention vs 3 weeks intervention  $p=0,000$ ; immediately after the intervention vs 2 weeks intervention  $p=0,004$ ; immediately after the intervention vs 3 weeks intervention  $p=0,000$ ; 2 weeks intervention vs 3 weeks intervention  $p=0,079$

### Compliance of fetal movement counting

Results showed that the compliance in performing fetal movement counting and filling the chart was high about 96%. There was one woman who only filled out the chart by 38.10%

**Table 2. Knowledge of pregnant women in fetal movement counting**

Domain of fetal movement counting knowledge	fetal movement counting measurement period			
	Before intervention (%)	immediately after intervention (%)	2 weeks intervention (%)	3 weeks intervention (%)
Characteristic of fetal movements	3.56 (50.86)	5.63 (80.83)	5.81 (83)	5.84 (83.40)
Decrease of fetal movements	1.50 (50)	2.00 (66.67)	2.34 (78)	2.59 (86.33)
Technique for fetal movement counting	1.50 (50)	2.56 (85.33)	2.81 (93.67)	2.81 (93.67)
Decision-making when perceive a decrease fetal movement	1.91 (63.67)	2.28 (76)	2.44 (81.33)	2.53 (84.33)
Total score (%)	8.47 (52.94)	12.47 (77.94)	13.4 (83.75)	13.77 (86.10)
Domain comparison	<0,000			

due to limited access to mobile phones, thus the WhatsApp reminders were sent might could not be noticed.

**Table 3. Compliance of pregnant woman in performing fetal movement counting**

	Mean (%) n=32	Median (%)	Minimum-Maximum (%)
Compliance in performing fetal movement counting for 3 weeks (21 days)	20 (96)	100	38.10-100

Frequency distribution

## DISCUSSION

The majority of pregnant women obtained information about fetal movements from midwives / health care provider (90.6%). This shows that pregnant women already have the reference for obtaining information about fetal movements. However, the knowledge score before study intervention was 52.94%. Therefore, health care providers have to provide comprehensive and supportive fetal movement education for pregnant women. The importance role of health care provider related to fetal movement education was also expressed in several previous studies (8, 10, 21). Fetal movement education should be delivered in a clear, effective, and systematic follow-up on each antenatal visit and when the women reported a decrease fetal movement. These efforts could further reduce maternal anxiety regarding the fetal wellbeing (8, 10, 11) and may reduce perinatal mortality (3, 22).

In this study, education of fetal movement counting was significantly increasing knowledge regarding fetal movement counting in all domains. Characteristics of fetal movements domain includes the meaning of active fetal movement, fetal movement near to delivery, the number of fetal movements, and the suggested gestational week to begin movement counting. This knowledge domain was increase in immediately after education until 3 week of intervention. For instance, the right answer on normal number of fetal movements was shown increase before and immediately after education by 25% and 50% respectively. Slightly increase was also found after 3 weeks intervention. Similar results stated by Maputle (23) which showed that only 44% of pregnant women correctly answered the normal number of fetal movements without any intervention. In addition, Bekiou & Gourounti (24) emphasized that counting fetal movement is both focusing on movements' quantity (number) and movements' quality (the density of fetal movements). This recent study has supported previous studies which revealed that education has shaped the knowledge of women and their ability to gain anticipation behavior when experience a decrease in fetal movement (18, 25, 26). In this study, intervention packages were given in the begining both through video and written booklet. This helped women in recalling information about fetal movements during 3 weeks intervention. The preferred of written educational media also revealed in previous studies (17, 25). The women expect fetal movement information

based on scientific evidence(1, 17, 27), in a uniform guidelines(17, 28), and in printed form that can be referenced at any time (17).

The other three domains of knowledge regarding fetal movements counting also showed significant improvement. The highest improvement was found in the technique for fetal movement counting, from 50% to 85.33% immediately after education and 93.67% after 3 weeks intervention respectively. In this study, the continuity of performing movement counting had helped the mother to remember any information regarding fetal movement.

The compliance in performing fetal movement counting was high by 96%. High compliance in this study was consequence of several factors, including the intervention packages were given was attractive enough, WhatsApp reminder was sent every 2 days, and women awareness of the importance of fetal movement monitoring. These study findings have supported previous studies. The high compliance in counting was influenced by women awareness, women confidence in her role in assessing the fetal health, effective communication and clear instructions from health care provider in practicing fetal movement counting (10, 29-31).

This study has several limitations which have to be pointed out. First, the study was limited by a small sample size. Thus, the results may not be generalizable. Second, women skill on counting fetal movement was only assessed after given education. Therefore, their ability on fetal movement counting could not be compared. However, based on the questionnaire fulfilment, could be assumed that the majority of women understand the technique of fetal movement counting right after being given education.

## CONCLUSION AND RECOMMENDATIONS

Education of fetal movement counting has increased the knowledge of pregnant women regarding fetal movement counting. Providing an

effective information and continuous follow up will improve maternal awareness on the importance of fetal movement monitoring. Furthermore, this awareness will influence on women compliance to continuously monitoring fetal movement during pregnancy. Knowledge regarding fetal movement counting improved in all domains in each measurement periods with the highest increase was in the technique for fetal movement counting domain.

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