

# Pregnant Women's Knowledge About Fetal Movement Count

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PREGNANT WOMEN'S KNOWLEDGE ABOUT FETAL MOVEMENT  
COUNT

by

JADE BOWEN

A thesis submitted in partial fulfillment of the requirements  
for the Honors in the Major Program in Nursing  
in the College of Nursing  
and in the Burnett Honors College  
at the University of Central Florida  
Orlando, Florida  
Spring Term, 2018

Thesis Chair: Dr. Joellen Edwards

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## **Abstract**

**BACKGROUND:** Fetal movement count (FMC) is a non-invasive tool used to evaluate fetal well-being and prevent stillbirth. FMC decrease the chances of stillbirth occurrence (Tveit et al., 2009), but in other countries, research shows that women are not taught about the benefits of FMC (Berndl, O'Connell, & Mcload, 2013). The purposes of this study were to discover 1) the knowledge of pregnant women in their third trimester about FMC and 2) sources through which women learn about FMC.

**METHODOLOGY:** The study is a quantitative descriptive design. An original survey consisting of 12 questions was created for the study. Inclusion criteria included women who were in their third trimester (28 weeks of gestation or more), were 18 years old or older, and speak and read English fluently. Consent to take the anonymous survey was implied by completing and returning the survey. Participants were recruited from childbirth and newborn parenting classes.

**RESULTS:** The investigator surveyed 36 women. Eighty-three percent of women (N=30) know what FMC is. All women were seen by a physician, and 50% of them (N=18) were taught about FMC by their providers. In spite of knowing what FMC is, 50% women (15 of the 30) responded incorrectly to specific questions about FMC.

**DISCUSSION:** Women have misconceptions about fetal movement, and about the importance of FMC. This misconception can lead women to less benefit from using FMC tools. Providers need to improve their method of transmitting information about FMC and provide detailed education about fetal movement.

## **Dedications**

To my daughter Sophie Bowen who was a fighter from the first weeks of her life. She made me a mother and taught me what unconditional love is. Thank you for being so strong for mommy and daddy, and growing to be an amazing little girl. I love you.

To Doctor Matthew Phillips who was my OB/GYN and the physician on call the night I had my daughter. Thank you for saving my daughter's life, for being so kind, competent, and fast acting. I will always be grateful for what you did to our family.

To my husband who went and is going through this crazy journey with me. From having a baby in the NICU to handling me through nursing school. Thank you for supporting me in those crazy times. I love you.

To my mother who has always been there for me since I am a little girl. Helped me with my children when school got busy, listened to my crazy calls when I needed to vent my frustrations, made me stronger when I felt like giving up. Thank you for everything. I love you.

## **Acknowledgments**

To Dr. Joellen Edwards who put so much trust in me throughout this process. She allowed me to learn and make my own mistakes while guiding me to improve my work. I appreciate all of your help and your patience. You have been a great mentor in those initial steps into the research world.

To Dr. Susan Quelly for also helping me and allowing my work to be the best possible. For partnering with Dr. Edwards to give me the tools to do this project.

To Winnie Palmer Hospital for Women and Babies, especially Mrs. Martha Lasley for allowing me the opportunity to collect my data at their maternity classes. This chance made of my research reality, so thank you.

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## **Introduction**

Fetal movement count (FMC) is a non-invasive tool used to evaluate fetal well-being and prevent stillbirth. Even though FMC has been known for years, few studies done in the United States (US) can be found within the last ten years. Worldwide studies are clear that FMC, and the awareness of it, decreases the chances of stillbirth occurrence through early recognition of fetal problems (Tveit et al., 2009). Studies also show that even though fetal movement monitoring can improve pregnancy outcomes, women have not been taught about FMC and its benefits (Berndl, O'Connel, & Mcload, 2013).

## **Background**

Reduced fetal movement is associated with poor perinatal outcomes. Awareness of such movements can cause pregnant women to take action, and seek help with enough time to save their baby's life. Researchers found a decrease of 30% in stillbirth occurrence when mothers were educated about FMC, how to detect decreased fetal movement, and what to do on the occasion that there is a decrease in movement (Tveit et al., 2009). The results of this study motivated five women who had experienced stillbirth to create two programs called "Count the Kicks" and "Healthy Birth Day." Those programs focus on spreading awareness and education throughout the community about the importance of FMC and are supported and promoted by Iowa's Department of Public Health. Since this program was created, the fetal death rate in Iowa from 2008-2015 decreased by 26% ("Count the Kicks", 2017). Unfortunately, programs like those in Iowa are not the norm in the country. The US lacks research on the topic of FMC, and it is hard to know how much women know about the technique, and if providers are teaching how to perform FMC in the third trimester.

### **Psychological effects of FMC in women**

Study results differ slightly when considering other aspects of fetal movement awareness, how it affects mothers, and if it can possibly cause anxiety or concern to those women. An Iranian study found that mothers who performed FMC from 28-37 weeks of pregnancy had decreased maternal anxiety according to the Spielberger State-Trait Anxiety Inventory (Delaram & Shams, 2016). In another study, women were separated into two groups: one where they did daily FMC starting at 28 weeks of pregnancy, and another group (control group) that followed Norwegian antenatal care, where they do not encourage fetal movement counting (Saastad, Winje, Israel, & Frøen, 2012). The authors used the Cambridge Worry Scale (Saastad, Winje, Israel, & Frøen, 2012) and reported that women felt less concern when doing FMC when comparing to those in the control group.

A study done by Saastad, Ahlborg, and Frøen (2008), showed that without proper education, and lack of standard teaching method about FMC, increased anxiety is a possibility. The lack of standard teaching resulted in the omission of information like the importance of fetal movement awareness, and what to do if there is a decrease in fetal movement. Another study had a neutral finding, where there was no increase in anxiety or concern related to fetal movement counting among pregnant women (Liston, Bloom, & Zimmer, 1994). When proper education about FMC is given, women will not be affected by the increase in anxiety.

### **FMC tools available to pregnant women**

There are different tools available to women to perform FMC. In this study, the most common tool will be presented and the most preferred identified. These are the Count-to-ten and Mindfetalness tool (Malm et al., 2014). When using the Count-to-ten tool, women are supposed to count the fetal movements and record how long it took to reach ten movements (Malm et al.,

2014). They are instructed to do that daily, so they can learn their baby's movement pattern, and know when there is a change outside of what would be normal for them.

Mindfetalness was created as an adaptation of the Count-to-ten method. When using the Mindfetalness pregnant women lie on their left side for about 15 minutes, and record how many times their baby moved and the quality of the movement (i.e., how strong, and how often) (Malm et al., 2014). The Mindfetalness method was preferred among pregnant women when comparing to the Count-to-ten method, even though Count-to-ten is most widely used by providers and researchers (Malm et al., 2014).

Fetal movement does differ from pregnancy to pregnancy, yet fetal movement is not highly variable within a pregnancy, and it does not typically decrease during the last days of pregnancy (Winje, Røislien, & Frøen, 2012). Even though standard education is a good guide to women as to when to take action, it is important that each woman understands the importance of knowing what is "normal" for her baby.

A systematic review showed that even though there is not a clear evidence of benefit or harm when performing FMC, there is indirect evidence that pregnancy and birth outcomes are improved (Winje et al., 2016). Also, there was not an increase in maternal concern following FMC intervention. Women need to be presented with the significance of fetal movement awareness. Overall, a better way to educate women about FMC needs to be found. (Winje et al., 2016)

**Problem**

Little research has been done in the US investigating how much women know about FMC. If a knowledge gap about FMC exists, as it is shown in international findings (Berndl, O'Connel, & Mcload, 2013), it is important that this issue is addressed through practice changes.

**Research Aims**

The study aims are to describe the: 1) women's knowledge of FMC in their third trimester of pregnancy; and 2) different sources used to educate women about FMC.

## **Methods**

### **Study Design**

The study is a descriptive quantitative design. The research was completed through the Honors in the Major at University of Central Florida (UCF) College of Nursing and supervised by faculty members from the UCF College of Nursing.

### **Sample and Setting**

The setting for the study was a women and baby's hospital in Central Florida at the childbirth preparation classes, infant care classes, and breastfeeding classes offered by the facility. Each childbirth preparation class is available four times a weekend, two weekends a month. Infant classes and breastfeeding classes were available once a week each.

Each childbirth preparation class had a maximum of 8 women participating, and infant and breastfeeding classes had a maximum of 15 women. The total number that was possible to recruit was a total of 124 women per month.

### **Procedure**

The investigator received approval from the Institutional Review Board (IRB) at UCF and the hospital for women and babies. Following the approval, participants were recruited as planned. The recruitment process lasted two weeks from February 2<sup>nd</sup> to February 21<sup>st</sup>. In those two weeks, the investigator recruited pregnant women from a total of seven classes.

The investigator began recruitment by asking pregnant women in one of the hospital-based classes if they were 28 weeks' gestation or more, at least 18 years old, and reads English fluently, to ensure that they met the inclusion criteria. Followed by a confirmation, the

investigator introduced herself to participants and briefly explained about the study and survey (See script on Appendix C)

The survey was completely voluntary, and to maintain anonymity, a signature was not required. Participants were informed that consent was implied by completing and returning the survey.

There were no difficulties in recruiting women, and all of the women who met the inclusion criteria agreed to participate in the research. Women who agreed to participate received a written explanation of the study, data collection tool, explanation that completing the survey implies consent, an introduction of the investigator and faculty member supervising the research, any risks or benefits that might occur when taking the survey, and what to do in case risks do occur.

Immediately after the completion of the survey participants kept the hard copy of the letter of introduction, and handed the survey to the investigator who then placed the survey into a drop box. Following the placement of the survey in the drop off box, the investigator handed participants, and non-participants from the class an educational brochure about FMC from the program Count the Kicks (Count the Kicks, 2017). No monetary compensation was given.

### **Instrument**

To find out women's knowledge about FMC, the investigator developed a 12 question self-administered paper survey (Appendix B) based on the findings from the literature encountered. The survey was handed to N=36 women. Five survey questions asked participants about age, level of education, gestational age, if high-risk pregnancy or not, and type of healthcare provider being used (physician or midwife). Seven other questions asked about their

specific knowledge of FMC. The last question asked women if they knew the importance of FMC, and if they responded yes, to briefly explain.

### **Data Analyses**

Data were analyzed using IBM SPSS version 24. Descriptive statistics (means, percentages) were used to explain the data and describe the sample characteristics. The investigator separated the free-form responses on question 12 into categories and coded the categories into numbers so it could be quantitatively analyzed.



## Results

The investigator invited 124 women to participate in the study. Of those invited, 36 women met inclusion criteria. All of those who met the inclusion criteria completed the survey.

There were no women under the age of 25, or above the age of 39 participating in the research. Twenty-eight percent of women (N=10) were between 25 and 29 years old, 64% (N=23) were between 30 and 34, and only 8% (N=3) were between 35 and 39 years old.

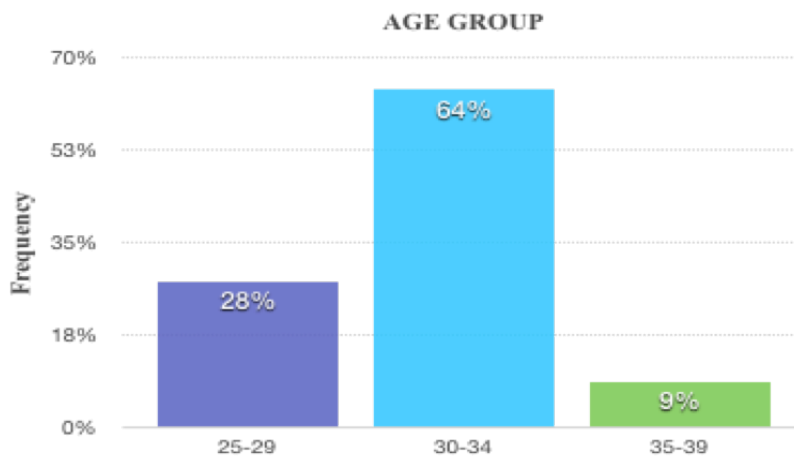


Figure 1

Every woman who participated was above 28 weeks of gestation. Out of all participants, 22% (N=8) of women were between 28 and 30 weeks of gestation, 61% of women (N=22) were between 31-35 weeks of gestation, and the remaining 17% of women (N=6) between 36-40 weeks of gestation.

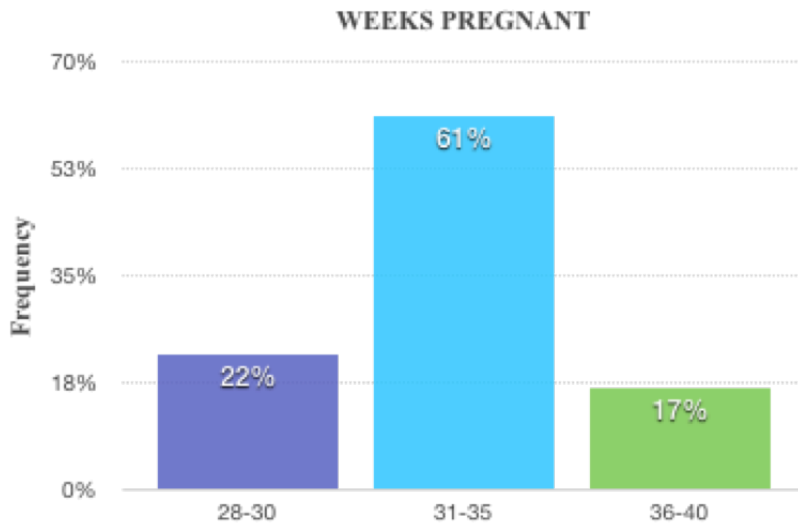


Figure 2

All women (N=36) had at least some college. Eleven percent of women (N=4) had some college but had not completed a degree, 44% (N=16) had a Bachelor's degree, 36% (N=13) had a Master's degree, 8% (N=3) had an advanced graduate or PhD.

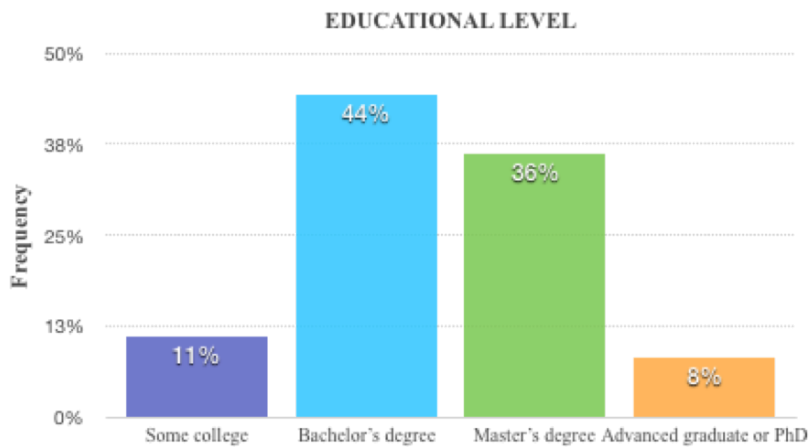


Figure 3

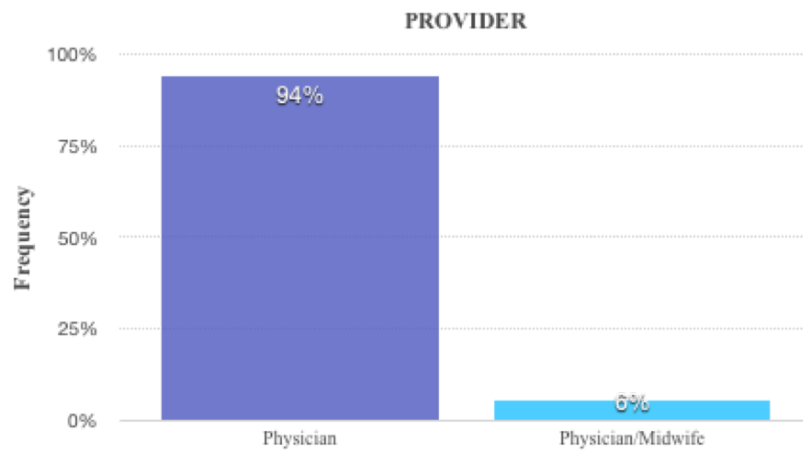


Figure 4  
 One-hundred percent of women (N=36) used a physician as their provider, with only 5.6% (N=2) using both physician and midwife. Out of those 36 women, 19.4% (N=7) were high-risk pregnancy, and 81% (N=29) were low-risk pregnancy.

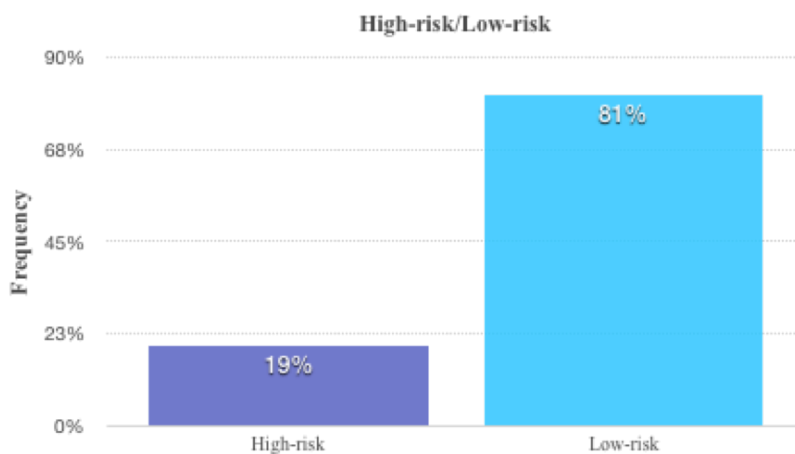


Figure 5

**Research Aim 1: Women’s knowledge of FMC in their third trimester of pregnancy**

Thirty women, or 83.3%, responded “definitely yes” to “I know what FMC is”, six percent of women (N=2) responded “definitely no”, and 11% women (N=4) responded “not sure”.

In the question about the importance of fetal movement count, of the 30 women who said

that they knew what FMC is, 60% of women (N=18) responded “Yes, it reflects a change in the baby’s health” which was the correct answer. Seventeen percent of women (N=5) responded incorrectly to the importance of FMC and seven percent of women (N=2) responded that they did not know the importance of FMC.

When questioned as to whether fetal movement decreases closer to the due date, 28% of women (N=10) responded “definitely yes”, 22% of women (N=8) responded “might or might not”, 47% of women (N=17) responded “definitely no”, and three percent of woman (N=1) responded “not sure”. Overall, of the 30 women who responded “yes” to “I know what FMC is”, 53% of them (N=16) responded incorrectly (“definitely yes” or “might or might not”) to “Fetal movement count decreases closer to the due date”.

Of the remaining 14 women that responded correctly to “does fetal movement count decreases closer to the due date”, 29% (N=4) do not perform fetal movement count, or only does fetal movement count when they feel a difference. In the question “Fetal movement should be felt every day”, 97% of women (N=35) responded “definitely yes”, three percent woman (N=1) responded “might or might not”, and no women responded “definitely no” or “not sure”.

**Research Aim 2: Different sources used to educate women about FMC.**

To determine the sources used to educate pregnant women about FMC the survey included questions about how they learned about FMC, and how their provider taught them about FMC. The main source of education about FMC was “provider taught me” with 50% of women (N=18) choosing this option. Six percent of women (N=2) responded “family/friends”, 17% of women (N=6) were “self-taught”, 14% women (N=5) “have not learned about FMC”,

and 14% women (N=5) were taught by both provider/self-taught or provider/family/friends.

When referring to how providers taught women about fetal movement count, 69% of women (N=25) responded that they learned through discussion. Of those 25 women, three were not taught by their provider, and were either self-taught or taught by family and friends. The remaining 6% (N=2) learned through handouts. Twenty-five percent of women (N=9) either did not report providers teaching them, or that they did not learn about FMC from any other source.

## **Discussion**

### **Research Aim 1: Women's knowledge of FMC in their third trimester of pregnancy**

The results of the study showed that most women are being taught (or are teaching themselves) about FMC. However, it is essential to analyze if women have the correct knowledge about FMC and fetal movement for the tool to be truly effective and successful.

According to Winje, Røislien, & Frøen, (2012) fetal movement does not decrease closer to the due date. The results of the study showed that over half of the women have a misconception that fetal movement will, or might decrease closer to the due date. This misunderstanding may lead women to ignore signs of fetal distress like a decrease in fetal movement, or a decrease in the strength of movements.

The majority were able to explain the importance of FMC. However, some women could not tell the significance, or did not have complete knowledge. Even though “to count baby’s movement” and “to know if the baby is alive” are purposes of FMC, counting the baby’s movement is not the greatest importance of FMC. Also, even though FMC does tell you if the baby is alive, it is important for women should understand that FMC can reveal if there is a change in baby’s health, not merely if there was a fetal demise or not.

### **Research Aim 2: Different sources used to educate women about FMC.**

The majority of women received their FMC information through discussion with their provider, but discussion alone is not necessarily sufficient to assure women have a full understanding of FMC. Adding other methods of education should be considered so various types of learning styles can be reached. To achieve that providers could give mothers

information about electronic access to FMC tools, or even give hard-copy for those that do not have internet access, and give references of websites and books for women to read.

Providers could also give handouts and brochures, with more detailed information and resources to learn more about FMC and fetal movement. A variety of sources would allow women to be more informed, and review the information given by the provider in between the prenatal care visits.

## **Limitations**

One of the limitations of this survey was the lack of variety of participants. There were some obstacles that prevented a more heterogeneous sample. Those obstacles included a fewer number of potential participants in each class than expected, some women participating in more than one class, and women who did not fall into the inclusion criteria. There were no participants under the age of 25 in the study, most participants were between the age of 30 and 34.

All women had at least some college, with nearly half with Bachelor's and more than a third with a Master's degree. Those women may have more access to education in general, have a higher interest in learning, or at a minimum more time to do research. They may also have better access to information and know where to find resources.

Women had to pay between \$40-\$100 to participate in the class unless their insurance covered the expense. This could mean that most participants were in a comfortable financial position. Therefore, they may have had different access to health care and educational material than women in a lower socioeconomic position.

### **Recommendation for future research**

A second study could be done in a location where there is a larger variety of pregnant women. Those locations could include physician offices, community clinics, health departments, and maybe hospital triaging (outpatient and inpatient). A more diverse sample could have possibly yielded different results and should be pursued in a future study.



## **Nursing Implications**

Nurses involvement in the health promotion of women during pregnancy is essential. Nurses are often the ones who spend the most time with patients and are also one of the most trusted healthcare professionals. At various prenatal care appointments, nurses should make sure women understand the importance of performing FMC, take the time to go over about important details (i.e., like fetal movement does not decrease closer to the due date), and very specifically demonstrate/return demonstrate how to perform FMC.

Physicians and midwives should also be introducing women to FMC and the tools available to complete it. This introduction could be done in the second trimester, and information could be reiterated many times throughout the second and third trimester. However, it is important for providers to explain to women why they should perform FMC. Physicians and nurses should explain about fetal movement patterns, and how fetal movement does not decrease closer the due date. Women should understand what actions should be taken in case there is a change in fetal movement, receive explanations about the quality of the fetal movement and how that should be taken into consideration when performing FMC.

By finding that half of the women are not receiving education from providers it shows that there is a need for improvement in the instruction given to women at prenatal visits. More providers should talk about FMC and explain to women about its importance. There is also a need for providers to be more detailed when educating women about FMC and include education about fetal movement and the quality of it, and what to do if there is a difference in fetal movement.

## APPENDIX A: Explanation of Research



### EXPLANATION OF RESEARCH

#### Pregnant Women's Knowledge about Fetal Movement Count

Principal Investigator: Dr. Joellen Edwards, PhD, RN, FAAN

Co-Investigator: Jade Bowen, SN

Faculty Supervisor: Dr. Joellen Edwards, PhD, RN, FAAN

You are being invited to take part in a research study. Whether you take part is up to you; if you decide to participate you can stop at any time.

The purpose of the study is to learn what expectant mothers in their third trimester of pregnancy know about counting the baby's movements (fetal movement count) and to discover what kinds of things are related to the education the expectant mother receives about fetal movement count.

If you decide to participate, you will be asked to do the following:

- Listen to the researcher's brief presentation on the study and instructions for completing the survey.
- Complete a short, confidential survey handed to you by the researcher.
- Place the survey inside of a drop box located on a table.

The study will take place at Winnie Palmer Hospital for Women and Babies at child birth classes, infant care classes, and breastfeeding classes, but the survey is entirely separate from your classes here. No names or information that could identify you personally will be collected. We expect it will take you approximately 10-20 minutes to listen to the instructions and complete the survey.

We expect that you will be in this research study for approximately 10-30 minutes (including verbal explanation of the research). This will be a one time participation, with no need for future sessions.

In order to participate, you must be 18 years of age or older, able to read English fluently, and be in the third trimester of your pregnancy (28 weeks or more).

Risks and Rewards:

- Risks of participation are very minimal, although it is possible you might feel somewhat stressed by answering questions related to baby movements.
- As a "thank you" for completing the survey you will receive a brochure briefly explaining about fetal movement count.

**Study contact for questions about the study or to report a problem:** If you have questions, concerns, or complaints contact: Jade Bowen, Student Nurse, Bachelor of Science in Nursing Program, College of Nursing – UCF, (334)430-5750 or Dr. Joellen Edwards PhD, RN, FAAN, Faculty Supervisor, College of Nursing – UCF (407)823-5440; or email at [jadehanna@knights.ucf.edu](mailto:jadehanna@knights.ucf.edu).

**IRB contact about your rights in the study or to report a complaint:** Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

## APPENDIX B: Data Collection Tool

### US Pregnant women's knowledge about Fetal Movement Count

**Q1 What is your age? \_\_\_\_\_ years old**

**Q2 How many weeks pregnant are you?**

- 27-30 weeks
- 31-35 weeks
- 36-40 weeks
- 41+ weeks

**Q3 What is the highest level of education you completed?**

- Did not complete High School
- High School/GED
- Some College
- Bachelor's Degree
- Master's Degree
- Advanced Graduate work or PhD

**Q4 Who is providing your healthcare during your pregnancy?**

- Doctor
- Midwife

**Q5 Are you high-risk or low-risk pregnancy?**

- High-risk (pregnancy complicated by chronic or pregnancy-related illness)
- Low-risk (uncomplicated pregnancy)

**Q6 Fetal movement decreases closer to the due date**

- Definitely yes
- Might or might not
- Definitely not
- Not sure

**Q7 Fetal movement should be felt every day**

- Definitely yes
- Might or might not
- Definitely no
- Not sure

**Q8 I know what fetal movement count is.**

- Definitely yes
- Definitely no
- Not sure

**Q9 How did you learn about fetal movement count? (Select all that apply)**

- Provider taught me (doctor/nurse/midwife)
- My friends/family taught me
- I taught myself
- I have not learned about fetal movement count

**Q10 How did the doctor/midwife/nurse taught you about fetal movement count? (Select all that apply)**

- Discussion (we talked about it)
- Education (demonstrated how to do it)
- Handout (pamphlets, brochures, charts, etc...)
- Doctor/midwife/nurse did not teach me about fetal movement count
- I have not learned about fetal movement count

**Q11 How often do you do fetal movement count?**

- Every day
- 1-5 times/week
- 1-4 times/month
- Only if I feel a difference in fetal movement
- I do not do fetal movement count

**Q12 Do you know the importance of fetal movement count?**

- Yes. Please explain:

---

- No

Thank you for taking the survey.

## **APPENDIX C: Introduction Letter**

Hi, first of all, congratulation on your pregnancy. My name is Jade Bowen, and I am a UCF student at the College of Nursing. I am doing a survey about "Pregnant women's knowledge about fetal movement count." It is a short survey that takes an average of 5 minutes to complete. The explanation of the research is in this package, and it explains the minimal risks included in the research, also my information and the information of my supervisor in case you have any questions. This research is completely anonymous and if you complete the survey it implies that you agree to participate in it, since I do not require any signature, names, or personal information. At the completion of the research you will receive a brochure as a thank you.

## APPENDIX D: IRB Approval Letter



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### Determination of Exempt Human Research

From: **UCF Institutional Review Board #1  
FWA00000351, IRB00001138**

To: **Joellen Edwards and Co-PIs Jade Hanna R Bowen and Susan B Quelly**

Date: **December 11, 2017**

Dear Researcher:

On 12/11/2017, the IRB reviewed the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination, Category 2  
Project Title: Pregnant women's knowledge about fetal movement count  
Investigator: Joellen Edwards  
IRB Number: SBE-17-13647  
Funding Agency:  
Grant Title:  
Research ID: N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

This letter is signed by:

A handwritten signature in cursive script that reads "Renea Carver".

Signature applied by Renea C Carver on 12/11/2017 10:06:00 AM EST

Designated Reviewer

## References

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