8-1-2002

The Relationship Between Urinary Tract Infections And Mental Status Changes In Elders

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MATERNAL KNOWLEDGE OF DANGER SIGNS OF PREGNANCY

by

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A Thesis
Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Nursing
in the Division of Nursing
Mississippi University for Women

COLUMBUS, MISSISSIPPI

August 2002

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Abstract

Of the 130 million women that give birth annually approximately forty-two percent experience some complication of pregnancy. Minimal knowledge exists regarding maternal knowledge of the danger signs of pregnancy. The purpose of this study was to explore pregnant women's knowledge of the danger signs of pregnancy, as well as the normal discomforts of pregnancy and those symptoms of pregnancy that could be treated in a primary care clinic. Pender's Health Care Promotion Model was selected as the theoretical framework. This model was selected because the research is directed toward increasing the level of well being and self-actualization of a given group. A quantitative descriptive design was used. All pregnant women 18 years of age and older, that were receiving prenatal care at selected OB/GYN physicians offices in a large metropolitan city in a SE state, and that did agree to participate, completed the Humphrey Demographic Survey and the Humphrey Pregnancy Questionnaire. The instrument was hand scored with a total possible score of 100. Descriptive statistics, including measures of central tendency such as frequencies, mean, median, and mode, were utilized to analyze the data. Subjects were deemed knowledgeable if they score at least 80% or better in each category. The final sample consisted of 43 women of whom 22 were African American, 20 White, and one Asian American. The mean age was 30.2 years. The findings indicated that women were not knowledgeable of danger signs of pregnancy or those signs and symptoms that should be treated in an office. However, women were

knowledgeable about normal discomforts of pregnancy. The following recommendations were made for future nursing research: Replication of the study in a rural location, replication of the study involving a larger more culturally diverse sample, conduction of a research study to ascertain health care provider's perception of pregnancy, conduction of a study questioning pregnant teens on the danger signs of pregnancy.

Acknowledgments

I would like to thank my advisor and committee chair, Dr. Lynn Chilton, for encouraging and believing in me when I thought all hope was lost. I would also like to thank the members of my research committee, Ms. Terri Hamill and Dr. Anne Kelley, for their input and support. I would like to extend a special thank-you to Dr. Sullivan and Dr. Curtis for their compassion, understanding and guidance. Thank-you for keeping me in your prayers.

I would also like to thank Dr. Joseph Dewane and Dr. Frederick Sanders for allowing me to conduct my research in their office. A special thanks to the office staff for their assistance in collecting my research data.

I would like to thank my best friends Carla McKinley and Camellia Jackson for allowing me to cry on their shoulders and having enough sense to tell me to stop feeling sorry for myself and keep on moving. I love you girls.

I would like to thank my mother, Leatha Humphrey, and my two sisters Lisa and Erica Humphrey. I did it ladies.

Finally, I dedicate this to my father, the late Hallie Humphrey. I knew you were here with me the entire time.

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Chapter I

Maternal Knowledge of Danger Signs of Pregnancy

Approximately forty-two percent of the 130 million women that give birth annually experience some complication of pregnancy. Many women are not aware of the danger signs of pregnancy. Emergency rooms receive pregnant women with complaints of normal discomforts of pregnancy as well as complaints that could be handled at an office visit. Pregnant women not only put themselves at risk but also their unborn child because they do not understand what constitutes a true danger sign of pregnancy. Every minute there is at least one woman who dies from complications of pregnancy and childbirth (Bayer, 2001). Educating pregnant women on the danger signs of pregnancy can change behaviors and can save lives. Minimal research exists regarding maternal knowledge of the danger signs of pregnancy. The purpose of this study was to explore pregnant women's knowledge of the danger signs of pregnancy, as well as the normal discomforts of pregnancy and those symptoms of pregnancy that could be treated in a primary care clinic.

Establishment of the Problem

Danger signs of pregnancy and complications of pregnancy are interchangeable in the literature. The complications that may occur during pregnancy include hemorrhagic conditions of pregnancy, hyperemesis gravidarum, and hypertensive disorders of

pregnancy (Reeder, Martin, &. Koniak, 1992). Danger signs of pregnancy include but are not limited to vaginal spotting or bleeding, leakage of fluid from the vagina, abdominal pain or cramping, severe or continuous headaches, change in vision, swelling of the fingers or face, chills or fever over 100 degrees, and marked changes in the intensity or frequency of fetal movement (Kochenour, 1997; University of Iowa Healthcare, 2001). Additional danger signs of pregnancy that have been identified include severe nausea and vomiting, and contractions that feel regular or strong before the expected date of confinement (University of Iowa Health Care, 2001). Some of these danger signs have been detailed. For example, severe pelvic pain or abdominal pain in late pregnancy could be a sign of the afterbirth separating from the womb; fever over 100 degrees Fahrenheit could be a sign of infection or illness that may trigger early labor. Toxemia might occur late in pregnancy and include signs of severe headache, swollen or puffy eyes and face, blurred vision or flashing lights, and pain under the right rib cage or upper back. Additional examples found are severe nausea and vomiting which could lead to dehydration and cause early labor, and a gush or leak of fluid from the vagina two weeks or more from the due date could be a sign of early labor. Muscle cramps or convulsions are also danger signs of pregnancy (Cohen, Kenner, & Hollingsworth, 1991).

Danger signs of pregnancy should be reported immediately because of their potential for a negative pregnancy outcome. In a preterm labor study conducted by Freston, Young, Calhoun, Fredericksen, Salinger, Malchodi & Eagan (1997) between 26% and 35% pregnant women selected wrong responses to preterm labor symptoms that would have delayed treatment and possibly led to preterm labor and birth. Patterson, Douglas, Patterson & Bradle (1992) found that 52 nulliparous and 48 multiparous women

with a diagnosis of preterm labor had a mean time interval between onset of symptoms and presentation for medical evaluation of 166.9 ± 185 hours and 159.1 ± 215.11 respectively. Most perinatal deaths are due to prematurity (Reeder, Martin, & Koniak, 1992). Preterm labor is responsible for >85% of all perinatal mortality and morbidity (Kimble and Young, 2001). Swelling of the hands or face and severe headache may indicate pregnancy-induced hypertension. Hypertensive disease causes ten to twenty percent of stillbirths and neonatal deaths in pregnancy and is responsible for 17% of maternal deaths in the United States. Spotting or bleeding from the vagina may indicate a hemorrhage or placental disorder. Placental disorders cause bleeding and possible hemorrhage and may jeopardize fetal and maternal health. Aruptio placentae is responsible for 15% of perinatal mortality and up to 5% of maternal deaths (Reeder, Martin, &. Koniak, 1992). Obstetric infection is responsible for 8% of maternal mortality.

Pregnant women visit the emergency room or their healthcare providers for normal signs of pregnancy. In contrast, women may not have been aware of signs that would warrant a visit to the emergency room. A research study conducted by Rautava & Sillanpaa (1989) found that nulliparous pregnant women have a reasonably good knowledge of pregnancy and childbirth but was more familiar with normal signs rather than danger signs of an abnormal pregnancy.

Minimal knowledge exists regarding maternal knowledge of the danger signs of pregnancy. By discovering knowledge levels of pregnant women, health care providers can provide awareness and effective education to expectant mothers. The purpose of this study was to explore the comprehension of pregnant women on the danger signs of

pregnancy as well as the normal signs of pregnancy and those symptoms that could be treated in a primary care clinic.

Significance to Nursing

This study was significant to nursing in several areas. Three specific areas of nursing have been identified in which this study could be applied include practice, education, and research.

Areas of application of the current study to practice include use of the researcher developed Humphrey Pregnancy Questionnaire. Health care providers could utilize the questionnaire upon the initial prenatal visit to determine the patient's knowledge of the danger signs of pregnancy, normal discomforts of pregnancy, and those signs and symptoms that should be treated in a practitioner's office. Once the knowledge level is obtained, the practitioner could implement an individualized teaching plan for the patient. The knowledge gained can assist pregnant women in minimizing the risk of maternal and infant morbidity and mortality. Information gathered in this study could be used to aid in changing behaviors and saving lives.

Patient education ascertaining the knowledge levels of pregnant women regarding the danger signs of pregnancy is important in decreasing mortality and morbidity in the pregnant population. The nurse practitioner is in an ideal position to educate pregnant women on when to seek emergency medical help, have a regular office visit, or do nothing because of the normalcy of pregnancy. Results from this study should be incorporated into graduate nursing programs to provide additional screening assessments of pregnant women on the danger signs of pregnancy, normal discomforts of pregnancy, and symptoms that should be treated in a primary care clinic.

This study also contributed to nursing research. A paucity of nursing research exists regarding maternal knowledge of danger signs of pregnancy. Most research has been directed toward maternal perception of preterm labor. This study provides a foundation for future research related to maternal knowledge of the danger signs of pregnancy as well as the normal discomforts of pregnancy and those signs and symptoms of pregnancy that should be treated in a primary care clinic.

Theoretical Framework

The theoretical framework that guided this study was Nola Pender's Health Promotion Model (HPM). Health promotion is directed at increasing the level of well being and self-actualization of a given individual. The Health Promotion Model has seven cognitive factors for activities related to health promotion. The seven factors are importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of health-promoting behaviors, and perceived barriers to health-promoting behaviors (Pender, 1996). Three of the factors identified in the Nola Pender's Health Promotion Model directly relate to maternal knowledge of the danger signs of pregnancy. These three factors are perceived self-efficacy, definition of health, and perceived health status.

Self-efficacy, the first factor, is a central construct for the HPM and refers to a judgment of one's ability to carry out a particular course of action. Perceptions of self-efficacy can develop through, vicarious learning, mastery experiences, verbal persuasion, and somatic responses to difference situations. (Pender, 1996) Since this researcher questioned which action mothers would seek when experiencing what they perceive to be danger signs of pregnancy, self-efficacy was an important concept in the current study.

The second factor, definition of health, refers to what health means to the individual. The definition of health ranges from absence of disease to a high level of well being and can influence what behavior changes an individual will attempt. (Tomey & Allgood, 1998). This researcher explored the signs and symptoms considered normal, signs that should be treated in a primary care office, and those signs that warrant emergency treatment with pregnant women. Therefore, definition of health was applied to the current research.

The third factor, perceived health status, states that feeling well or feeling ill can determine the likelihood that health-promoting behaviors will be initiated. (Tomey & Allgood, 1998). The current study under investigation queried participants concerning their perceived health status as it relates to pregnancy. When experiencing danger signs of pregnancy health promoting behaviors are initiated; however, the action in seeking help may not be appropriate. Nola Pender's health belief model provided an appropriate theoretical framework for this research.

Statement of the Problem

Every minute there is at least one woman that dies from complications or pregnancy and childbirth (Bayer, 2001). Researchers have suggested that proper medical monitoring and education might be effective in decreasing mortality and morbidity in the pregnant woman. The reason why mortality and morbidity continues to flourish in the pregnant population despite prenatal care is unclear. Thus, the problem for this study was to determine knowledge of the danger signs of pregnancy in the pregnant woman as well as to ascertain pregnant women's knowledge about normal discomforts of pregnancy, and signs and symptoms of pregnancy that could be treated in a primary care setting.

Research Questions

Three research questions were generated for this study. The research questions developed were as follows: Are pregnant women knowledgeable of the danger signs of pregnancy? Are pregnant women knowledgeable of the discomforts of pregnancy? Are pregnant women knowledgeable of the signs and symptoms of pregnancy that should be treated in a primary care clinic?

Definition of Terms

For the purpose of this study, the following terms were defined:

1. *Pregnant Women*

Theoretical: Pregnant women is defined as females who are with child (Webster's New World College Dictionary, 2001).

Operational: For the purposes of this study, pregnant women are females with child who are 18 years of age or older.

2. *Knowledgeable*

Theoretical: Knowledgeable is defined as having or showing intelligence. Having information (Webster's New World College Dictionary, 2001).

Operational: For this study, knowledgeable was defined as showing intelligence by a score of 80% or better in each section on the Humphrey Pregnancy Questionnaire.

3. *Danger signs of pregnancy*

Theoretical: Danger signs of pregnancy are factors associated with gravid women such as vaginal spotting or bleeding, leakage of fluid from the vagina, abdominal pain or cramping, severe or continuous headaches, change in vision, swelling of the fingers or face, oliguria, persistent vomiting, chills or fever, dysuria, and marked changes in the

intensity or frequency of fetal movement that would require immediate assessment (Applied Therapeutics, 2001)

Operational: For the purposes of this study, danger signs of pregnancy were those factors that would send a pregnant woman to the Emergency room for immediate evaluation as identified on the Humphrey Pregnancy Questionnaire.

4. *Normal Discomforts of Pregnancy*

Theoretical: Ordinary signs of pregnancy that include frequent urination, nausea, cramps, vaginal discharge, and fatigue that would not require evaluation at the OB/GYN's office (Maternity Nursing, 1992).

Operational: For the purposes of this study, normal discomforts of pregnancy were ordinary signs of pregnancy that include colorless, odorless discharge, constipation, feeling tired, tenderness and fullness of breast, and needing to urinate frequently that are identified on the Humphrey Pregnancy Questionnaire that could be treated at home.

5. *Abnormal symptoms of pregnancy*

Theoretical: Any signs or symptoms of pregnancy that deviate from the norm (Webster's New World College Dictionary, 2001).

Operational: For the purposes of this study, abnormal symptoms of pregnancy are any signs or symptoms that include severe nausea and vomiting, stuffy head and cough, foul smelling discharge, painful and difficulty in urination, headaches, swelling in hands, feet, face, and negative feelings about the pregnancy that are identified on the Humphrey Pregnancy Questionnaire.

Assumptions

For the purpose of the proposed study, the following assumptions were made:

1. Maternal knowledge of danger signs of pregnancy can be measured.
2. The pregnant woman's health belief can influence behaviors of seeking treatment.

Summary

Establishment of the problem was presented. Danger signs of pregnancy were defined in the literature as being hemorrhagic conditions of pregnancy, hyperemesis gravidarum, and hypertensive disorders of pregnancy. Additional danger signs of pregnancy included temperature over 100 degrees Fahrenheit, preterm labor, and decreased fetal movement.

The findings from this study are significant to nursing in several areas. The research findings could be implemented into school curricula to assist future healthcare workers' in screening pregnant women on their knowledge of danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms that should be treated at a primary care office. Danger signs of pregnancy are life threatening medical emergencies and educating pregnant women on the danger signs of pregnancy could change behaviors and decrease morbidity and mortality of the pregnant patient.

Additionally, Nola Pender's Health Promotion Model, which guided this study, was presented. The statement of the problem, research question, definition of terms and assumptions also were included.

Chapter II

Review of Literature

A review of literature for this study revealed several references to maternal perceptions of preterm labor; however, there were no research studies found that examined maternal knowledge of danger signs of pregnancy in its entirety. Research was found related to women's knowledge about pregnancy, preterm labor and maternal perceptions of decreased fetal movement. However no research was found pertaining to pregnant women and their knowledge of danger signs of pregnancy, or normal discomforts and those symptoms of pregnancy that could be treated in a primary care clinic.

The incidence of inappropriate visits to the emergency room and other healthcare providers by the pregnant population has been escalating. Pregnant women are visiting the emergency room or their healthcare providers for normal signs of pregnancy. In contrast, women have not been aware of signs that would warrant a visit to the emergency room. Preterm labor, regular or strong contractions before thirty-seven weeks, is a danger sign of pregnancy. However, according to Freston, Young, Calhoun, Fredericksen, Salinger, Malchodi, and Egan (1997) minimal research has been conducted on groups of healthy pregnant women's knowledge of preterm labor.

The purpose of the Freston et al study was to examine the knowledge of appropriate actions to take in response of hypothetical symptoms of preterm labor in low

risk pregnant women. Orem's Self-Care Model guided this descriptive, correlational study which examined the responses of pregnant women to potential preterm labor symptoms that were hypothetically encountered at 24 weeks of gestation. Freston et al. did not define preterm labor.

The criteria for study admission included that study participants be healthy pregnant women 20-32 weeks gestation confirmed by their last menstrual period and or by ultrasound, who obtained care from a private practitioner, and read and spoke English. A convenience sample was obtained from the private practices of obstetricians and nurse midwives in central Connecticut. Three hundred twenty eight pregnant women participated and questionnaires from two hundred sixty nine women were deemed appropriate for analysis.

Each subject received packets in the waiting room. Research assistants were responsible for distributing the instruments and a letter of information about the study. The Healthy Pregnancy Questionnaire (HPQ) was the instrument used to gather data and consisted of questions about usual discomforts of pregnancy, symptoms of illness, and items related to symptoms of preterm labor. Participants completed the HPQ and demographic information. The participants were asked to answer questions on the HPQ with six possible actions and check a single response to which action they would take in each situation. If a response was not listed, participants had the opportunity to write in their action. The questionnaire and demographic information took approximately fifteen minutes to complete. Data were analyzed using chi-square analysis.

The majority (86%) of the sample were White, between 20-32 weeks of gestation, (100%) married and aged thirty years or older (99%). Eight percent (n=22) of the women had experienced a preterm birth and 33% (n=88) were nulliparous.

Freston et al. identified that menstrual-like cramping was thought to be normal by 9% of the respondents and that 26% of the sample indicated that a watery or mucous discharge was a normal finding in pregnancy. Fifty women (19%) thought that lower back pain was a normal occurrence for pregnancy and only 42 (16%) would mention it at their next scheduled prenatal visit. Freston et al. found that the subjects picked the best response to 4 of the 13 questions. For example, the majority would call right away if they thought they were in labor or had 4-5 contractions an hour for two hours. On the other hand, vaginal heaviness and pressure were the preterm labor symptoms for which the least number of women selected the best response. There was a positive correlation between having had a prior preterm birth and selecting the best response in regards to a change in vaginal discharge (p=. 001) and having 4-5 contractions in an hour (p=0.4). Increased maternal age showed a positive correlation to experiencing contractions (p=. 0001), having abdominal cramps similar to gas pains (p=. 0001), and having a change in vaginal discharge (p=. 005).

Freston et al. acknowledged that the most important finding in this study was that the majority of women involved in the study demonstrated the knowledge of selecting the best action or an action that would bring them in for care. However, fewer respondents selected best responses when the hypothetical symptoms were similar to normal symptoms or situations of pregnancy. The Asian, Hispanic, and African American population would go directly to the hospital if they thought that they were in preterm

labor rather than calling their health care provider first. Also, the ethnic minority women would call their health care provider immediately when having menstrual like cramps rather that waiting to see if the symptoms resolved. The authors further concluded that between 26% and 35% of women selected responses that would have delayed treatment and possibly lead to preterm labor and birth. Freston et al. recommended future research to include different settings and with different populations. Freston et al. stated that replication involving minority sampling should be examined.

The current study and the Freston et al. study were similar in that both examined maternal actions when experiencing danger signs of pregnancy in regards to preterm labor. The current research expanded the Freston et al study to include not only danger signs of preterm labor but also the danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that should be treated in a primary care office.

Rautava and Sillanpaa (1989) conducted a stratified-randomized cluster sampling to determine the knowledge level of nulliparous pregnant women about pregnancy and childbirth. The criteria for study admission included nulliparous women from a Finnish providence. Of the 1713 nullparious pregnant women in the providence, 1443 took part in the study. One hundred and thirty one women were not informed of the study and 139 refused to participate.

Each subject received a packet at the maternity health care clinic. The women completed and returned the knowledge level questionnaire in the office and were then given another test asking for information on their socioeconomic background. This

questionnaire was completed at home and brought back to the clinic. Special briefing meetings were held to give the staff advanced information about the study.

The questionnaire consisted of 28 question sets totaling 118 questions. The questions asked about normal pregnancy and delivery, abnormal pregnancy and delivery, health behaviors during pregnancy and lactation, and psychomotor development of the infant.

The mothers were divided into two groups according to their level of knowledge, with the median as the cut-off point. Mothers whose knowledge level, based on correct answers, was below median or at the median point were placed in the low knowledge group. Mothers whose knowledge level, based on the number of correct answers, was over the median were placed in the high level group. Data were analyzed using Pearson's R and the chi-square test. The differences between the correct answers were tested using a *t*-test.

The majority of the subjects were married (53%), had completed 9 years or more of primary school (99%), and had a median age of 25.4. Rautava & Sillanpaa (1989) identified that average proportion of correct answers for normal pregnancy and deliver was 75.1%. The difference between number of correct answers in the knowledge groups was significant ($p<0.0001$). Abnormal pregnancy and delivery mean proportion was 68.4%. The difference in correct answers between knowledge groups also was significant (($p<0.0001$). The health behavior during pregnancy and lactation questions showed a significant difference between the two knowledge groups ($p<0.001$) with the mean correct answers being 66.7%. The psychomotor development of the infant questions showed the mean correct answers was 67.8% with the difference between the

knowledge groups being significant ($p<0.0001$). The mothers in the high level of knowledge group outscored the mothers in the low level of knowledge group.

Rautava and Sillanpaa concluded nulliparous pregnant women have a reasonably good knowledge of pregnancy and childbirth, but were more familiar with normal than abnormal pregnancy. Questions regarding behavior during pregnancy and lactation showed a lack of knowledge in both high level and low level knowledge groups. These researchers concluded that differences still exist among knowledge levels for pregnant nulliparous mothers, guidance and care are needed for others that have low level of basic education, and that special attention should be paid to health education during pregnancy.

The study performed by Rautava and Sillanpaa was germane to the current study because they identified that pregnant women were more familiar with normal signs of pregnancy than with abnormal signs of pregnancy. The studies were alike as they identified what pregnant women identified as normal or abnormal signs of pregnancy. The studies differed in that Rautava and Sillanpaa included questions about lactation and psychomotor development of the infant, while the current study focused on pregnancy. In addition the current research attempted to ascertain if pregnant women could differentiate between normal discomforts of pregnancy, symptoms of pregnancy that should be treated in a primary care office, and danger signs of pregnancy.

Another research study was the perinatal effects of a wellness program in the workplace (Walden, C., Still, A., Zinn, B., & Larsen, P. 1996). There were three phases to this study. The first part of the study included a pretest/posttest design to assess effects of the pregnancy program on prenatal knowledge. The second part of the study compared outcomes of pregnancy wellness program participants with those groups of non-

employees, and the third part of the study compared insurance claim costs between those women that participated in the program as compared to non-participants. Chi-square analysis was used. The purpose of this research study was to explore on-the-job prenatal education and the benefits it has for the employers, mothers and babies.

The participants were all married, insured, with the majority White (92%), and a median age of 30.1 years and a median education level of 15.25 years. The criteria for inclusion in part one of the study included attendance at the pregnancy wellness class during the study period, completion of 75 percent of the pregnancy wellness classes, and completion of the Knowledge Survey at the first and last pregnancy wellness class. The criteria for inclusion in part two included employment at the hospital where the study was conducted, completion of 75 percent of the pregnancy wellness classes, completion of the Babytrac questionnaires, and delivery at the hospital during the study period. For part three, maternal cost comparisons were done on all Blue-Cross/Blue Shield covered employees that delivered between May 1, 1993 and April 30, 1994.

Walden et al. found a significant difference emerged between maternal knowledge in the pretest and posttest ($p=.007$) for the first part of the study. Under the chi-square analysis knowledge of maternal actions for preterm labor ($p=.007$), nipple soreness ($p=.03$), and postpartum bleeding ($p=.004$) improved significantly between the pre-test and post-test scores. Part two results showed that more than half of the participants (55%) and a third of the non-participants (35) had an antepartum complication. The complication associated with maternal and neonatal mortality and morbidity included preterm labor, diabetes, infections, hypertension, premature rupture of

membranes, and placenta previa. For part three the researcher concluded that an average cost claim for participants was 37 percent less than that of non-participants.

Walden et al. concluded that the limitations to this study were a small sample size and the study was conducted in a high-risk tertiary care center. A third limitation was the lack of randomization with no attempt to control variables. Walden et al. concluded education during the prenatal period could significantly increase knowledge concerning the reduction of perinatal morbidity and mortality.

The Walden et al study was germane to the current study in that they both sought to determine maternal knowledge of pregnancy. The current study tested participants on all danger signs of pregnancy, which included preterm labor, abruption, maternal infection, preeclampsia, and decreased fetal movement. However, Walden et al also questioned participants on their knowledge of preterm labor in regards to abnormal pregnancy. Additionally, the current research sought to determine if pregnant women would know normal discomforts of pregnancy, signs and symptoms of pregnancy that should be treated in a primary clinic, and danger signs of pregnancy that should be treated in an emergency room.

Fetal movement is one of the first signs of life and normal fetal activity. Observed objectively or subjectively fetal activity is indicative of fetal health and the absence or reduction in fetal movement may indicate fetal death or impending death. Whitty, Garfinkel, and Divon (1991) conducted a study to evaluate maternal perception of decreased fetal movement as an indication for antepartum testing in a low-risk pregnant population. The purpose of this study was to evaluate a low-risk pregnant population with the of incidence of abnormal fetal test results that require immediate

intervention, long term follow-up of fetuses when there is a normal initial evaluation, and the percentage of patients with incidental ultrasonographic findings.

The study group consisted of all low-risk patients with complaints of decreased fetal movement that presented at Maternal-Fetal Testing Center of Weiler Hospital of the Albert Einstein College of Medicine during the study period. The researchers asked all patients registered for delivery to monitor fetal movement daily and report any decreased fetal movement to their obstetrician. The control group consisted of six hundred twenty three consecutive low-risk nontested patents that delivered at Weiler Hospital during the same time as the control population.

Each patient was instructed to monitor fetal movement daily and to report any decreased movement their obstetrician. The patients that presented to the Maternal Fetal Testing Center with a complaint of decreased fetal movement were evaluated by an obstetrical nurse that monitored blood pressures, performed urine screens for glucose and protein, and performed non-stress test (NST).

The study patients were a racially mixed middle to upper class socioeconomic background. Fifty percent of the patients were nulliparous having a mean age of 28. Seventy-six patients (26%) were <36 weeks gestational age and 17(5.8%) were>41 weeks' gestational age. The neonatal birth weights mean was 3550±431 grams.

All patients with the perception of decreased fetal movement underwent initial antepartum testing. Of the 292 patients 230(78.8%) had normal initial examinations, 62(21%) had some abnormality on initial examination that required intervention or follow-up. Five (1.7%) of the 62 patients were diagnosed with fetal death on initial evaluation. Preeclampsia, oligohydramnios, biophysical profile score of <6, or abnormal

fetal heart rate was diagnosed in 13 (4.42%) of patients. Seventeen (5.8%) patients had non-reactive NST's or variable decelerations that required follow-up appointments. Twenty-seven (9.2%) patients had incidental ultrasonographic findings

Of the control population forty-three percent were nulliparous with a mean age of 27. The mean gestational age was 38.6 weeks and the neonatal birth weight was 3410 ± 570 grams. Fifty-two percent of the patients had decreased fetal movement with normal results upon initial evaluation underwent additional testing. Whitty et al., found that there were no significant differences in the outcomes of the patients who underwent additional testing and the low risk non-tested control group.

Whitty et al. concluded that there was no evidence of increased fetal compromise in patients who presented with a complaint of decreased fetal movement and had a normal initial examination as compared to a low-risk non-tested population. Whitty et al. also stated that it is prudent to evaluate low-risk patients who present with a complaint of decreased fetal movement and in addition perform ultasonograhic examinations.

Because of the inability to assess the reliability of individual perception of decreased fetal movement it would be justified to have follow-up examinations of those patients who continue to complain of decreased fetal movement. Whittey et al. also concluded that low-risk patients with normal initial results and no further complaints of decreased fetal movement probably did not need further testing. The conclusions of this study were limited because of the small sample size and the inability to measure how many patients in the low-risk population who actually monitored fetal movement as instructed.

This study is germane to the current study because it explores maternal perception of decreased fetal movement, which is a danger sign of pregnancy. Although both studies questioned maternal recognition of decreased fetal movement, the current study asked what action to take in the event of decreased fetal movement, and also questioned subjects about their knowledge concerning other danger signs or pregnancy, as well as normal discomforts of pregnancy, and signs and symptoms that should be treated in a primary care clinic. Whitty et al suggest that the patient call their physician when experiencing decreased fetal movement.

Another study performed by Freda, Damus, and Merkatz (1990) examined pre and post intervention knowledge related to preventing preterm labor. Two-hundred and eleven women approximately 20-24 weeks gestation were chosen and randomly asked by a bilingual program assistant to answer 10 multiple choice questions while waiting on their prenatal appointment. The registered nurses and certified nurse midwives working in the clinic evaluated the questionnaire for content and validity. Test-retest reliability was established with a pilot group of pregnant patients (r=0.95). The women were given as much time as needed to complete the test.

The majority of the patients were Hispanic, (48%, n=102), 18-25 years of age (40%, n=85), nulliparous (57%, n=170), high school graduates, (41%, n=86) and (54%, n=114) unwed. Freda et al indicated that 42% (88) of the patients did not know the number of weeks in a full term pregnancy and 29% (61) did not know the number of weeks in a preterm pregnancy. Seven percent (14) could not correctly answer the question "If you think you might be in preterm labor and you go to the hospital, what should you do?" This question was designed to assess if pregnant women understood

fully the importance of treating their preterm labor symptoms. Most importantly, 25% (53) of the patients could not recognize a symptom of preterm labor despite posters that hung on the walls of the waiting room where the test was conducted listing the symptoms.

The findings of this study showed that a large number of women that were enrolled in that particular inner-city clinic had serious deficits in the basic knowledge about pregnancy and the concept of preventing preterm birth.

Freda et al concluded that pregnant women had deficits in the basic knowledge of preterm labor and that education on preventing preterm labor should be incorporated into prenatal visits based upon the nurses understanding of the patients' basic knowledge of preterm labor. This recommendation gives support to having performed the current study that investigated maternal knowledge of danger signs of pregnancy which included preterm labor symptoms. While the Freda et al study concentrated more on pretem labor knowledge, the current study examined normal as well as abnormal signs of pregnancy.

Another study found in the review of literature was performed by Patterson, Douglas, Patterson, and Bradle (1992). The researchers discussed the symptoms of preterm labor and self-diagnostic confusion in the pregnant patient. The purpose of this research was to learn how women with a first experience of preterm labor come to the realization that a health deviation exists. Social and psychological thinking processes were also examined to identify what factors constitute care seeking during preterm labor.

The candidates for study admission were identified by monitoring admission of women in preterm labor to hospitals and delivery units and from referrals from nursing staff in neonatal intensive care unit. The candidates were approached by the principal

investigator or graduate research assistant and asked to participate. Willing participants were interviewed in a private hospital room, the investigators office or an obstetrician office. The meetings lasted from 30-60 minutes and were taped.

The sample consisted of 28 women, 26 of which had received prenatal care. Their ages ranged from 17 to 39 years (M=27.4). The majority of the women were white (57%; n=16), high school graduates (46%; n=13), and 75% of the sample (n=21) were married. The length of gestation ranged from 20-35 weeks (M=29.7).

Patterson et al. discovered the nature of preterm labor symptoms contributed to confusion. The pregnant women had a difficult time differentiating normal pregnancy related body symptoms from symptoms of a health deviation. The participants also struggled to find a matching label for their symptoms. No patterns emerged from the data regarding situations in which symptoms were first perceived. Patterson et al. concluded that ambiguous symptoms, absence of a meaningful label to attach symptoms, and the context of pregnancy with its expected discomforts come together to create a state of diagnostic confusion.

The only limitation acknowledged by the researcher was recall due to the considerable stress and unpleasant side effects of the tocolytics the patients received. The researchers suggested that reconsideration of professional sensitivity to diagnostic confusion, system obstacles to expedient care, and prenatal education should be taken into account.

The study conducted by Patterson et al was found significant to the current study as it identified the study participants' difficulty in differentiating between normal pregnancy symptoms and those symptoms that deviated from the norm. The current

research ascertained maternal knowledge of normal and abnormal signs of pregnancy and what actions to take when facing certain symptoms.

The review of literature revealed that further research is needed to assess maternal knowledge of danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms that should be treated in a practitioner's office. The majority of the studies found in the literature examined maternal perception of preterm labor. The Freston et al study examined the knowledge of appropriate actions to take when experiencing hypothetical preterm labor symptoms. Freda et al examined pretest and posttest intervention knowledge related to preterm labor and Patterson et al study examined maternal perception of preterm labor.

All research studies found in the literature recommended further research on maternal knowledge of pregnancy. However, no studies were found that assessed maternal knowledge of danger signs of pregnancy, normal discomforts of pregnancy, and those signs or symptoms that should be treated in a practitioner's office.

Chapter III

The Method

The purpose of this study was to explore maternal knowledge of the danger signs of pregnancy as well as the normal discomforts of pregnancy and those symptoms of pregnancy that could be treated in a primary care office. A review of literature revealed references to women's perception of preterm labor, knowledge about pregnancy and labor, and fetal movement. However, no research was found in regards to maternal knowledge of the danger signs of pregnancy, nor any studies found on the normal discomforts of pregnancy and those symptoms that should be treated in a primary care clinic.

Design of the Study

A quantitative descriptive design was used to answer the following questions:

1. Are pregnant women knowledgeable of danger signs of pregnancy?
2. Are pregnant women knowledgeable about pregnancy symptoms that should be treated in a primary care setting?
3. Are pregnant women knowledgeable about the normal discomforts of pregnancy?

A descriptive design allows the researcher to accurately portray the characteristics of persons, situations, or groups and/or the frequency with which certain phenomena occur (Polit and Hungler, 1999). This researcher sought to ascertain the knowledge of pregnant women therefore a descriptive design was deemed appropriate for this study

Limitations

Limitations of this research study included a small sample population and the willingness of participants to partake in the study. Only two OB/GYN offices in a metropolitan area were used for this study. A further limitation was the limited time to collect the research data. Data was collected over a three week period.

Setting, Population, and Sample

The study setting was a private OB/GYN physician's primary care office in a large metropolitan city in a southeast state. Pregnant women 18 years of age and older who received care at the selected OB/GYN sites were the targeted population. The sample consisted of subjects who met the study criteria and agreed to participate in the study and complete the Humphrey Pregnancy Questionnaire and the Humphrey Demographic Survey. A target sample of 100 women had been determined.

Instrumentation

Two instruments were utilized to collect data for the research. The first instrument was a demographic survey developed by the researcher. The demographic survey consisted of items that addressed maternal age, race, number pregnancy, trimester, weeks pregnant, and the highest education completed.

The second instrument was a questionnaire also designed by the researcher. The Humphrey Pregnancy Questionnaire was developed based on reviews of literature and the researcher's previous experience as a healthcare provider in high-risk obstetrics. The Humphrey Pregnancy Questionnaire was tested on a panel of OB/GYN physicians for consistency of answers. Therefore, face validity was assumed for the questions within the confines of this study. The Humphrey Pregnancy Questionnaire consisted of twenty

questions that addressed pregnant women's knowledge of the danger signs of pregnancy, symptoms that could be treated in a primary care setting, and normal discomforts of pregnancy. There were eight questions concerning true danger signs of pregnancy that were addressed on the questionnaire. The items included bright red bleeding from the vagina, blurred vision or seeing spots, gush of fluid from the vagina before 37 weeks, hard firm tummy with pain, decline in baby's movement or no movement, regular or strong contractions before 37 weeks, blackouts or seizures, and a temperature greater than 101. There were five questions addressing normal discomforts of pregnancy. The items included colorless odorless discharge, constipation, feeling tired, tenderness and fullness of breast, and needing to urinate frequently. Severe nausea and vomiting, stuffy head and cough, foul smelling discharge, negative feelings about the pregnancy, swelling of the hands, feet, face, painful and difficulty in urination, and headaches were addressed in seven questions that concerned signs and symptoms that could be treated in a primary care setting. Subjects were deemed knowledgeable if they scored 80% in each area.

Data Collection Procedures

Prior to implementation of this study, permission was obtained from the Mississippi University for Women Committee on the Use of Human Subjects in Experimentation (Appendix A). The researcher obtained written permission from the physicians at the designated offices (Appendix B). Permission and assistance from the OB/GYN nurses in the distribution and collection of research materials also was obtained (Appendix C). Nurse volunteers were given information regarding the study. The selected nurse volunteers asked potential participants if they would like to participate in the study. The nurse volunteers informed the participants that participating in the study

was purely voluntary and that their choice to participate or not participate in the study would not affect their care in any way. The nurse volunteers also informed the willing participants that they were free to withdraw from the study at any time prior to the data analysis and that confidentiality would be upheld at all times. Participants were asked to sign an informed consent prior to their participation (Appendix D). The data collection instruments chosen for this study were the researcher designed Humphrey Demographic Survey (Appendix E) and the Humphrey Pregnancy Questionnaire (Appendix F). Both instruments took approximately 5-10 minutes to complete. The Humphrey Pregnancy Questionnaire used a simple check response while the Humphrey Demographic Survey used a write in response method. The volunteer nurses collected the signed consent forms and the completed questionnaires and placed them in a locked box. The researcher collected the completed forms.

Data Analysis

Descriptive statistics were used to analyze demographics such as age group, race, number of times pregnant, trimester, and weeks pregnant. Descriptive statistics including measures of central tendency such as frequencies, mean, median, and mode were utilized to analyze the Humphrey Demographic Survey. Additionally, the Humphrey Pregnancy Questionnaire was scored to determine percentages of correct answers. If participants scored 80% or better in each category, it was determined that they had an understanding of the danger signs of pregnancy, the normal discomforts of pregnancy and were aware of those symptoms that could be treated in a primary care clinic.

Summary

It is important that pregnant women are aware of the danger signs of pregnancy. Knowledge of the danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms that could be treated in primary care settings can reduce inappropriate visits and prevent adverse birth outcomes. Design of the study, limitations, setting, population and sample were discussed. Instrumentation was explained as well as data collection procedures. In addition, methods of data collection and data analysis were described.

Chapter IV

The Findings

The purpose of this study was to determine maternal knowledge of danger signs of pregnancy. The sample consisted of pregnant women 18 years of age and older that received prenatal care at two OB/GYN physician's office in a large metropolitan city in Tennessee. Data was collected using a demographic questionnaire and the Humphrey Pregnancy Questionnaire. Data was analyzed utilizing descriptive statistics of frequency and percentage and the measures of central tendency including mean, median, and mode for the surveys. Rank order was used for responses to items on the Humphrey Pregnancy Questionnaire.

Description of the Sample

Forty-three women participated in the study. Their ages ranged from 19 to 40 years with a mean age of 30.2 years, median age of 32 years, and mode of 34 years. The majority of the patients stated their ethnicity was African American (n=22; 51.2 %). The remainder of the sample were White (n=20; 46.5%) and Asian (n=1; 2.3%) The education level of the largest number of women in the sample was some college (n=21; 48.8 %). More than half of the patients surveyed were in their third trimester (n=23; 53.5 %) and 33 weeks pregnant (n=4; 9.3 %). For most of the patients this was their second pregnancy (n=17; 39.5 %). The demographic survey results for education age, ethnicity, pregnancy, trimester, weeks, and education level are illustrated in Table 1.

Table 1

Demographics of Age, Race, Pregnancy, Trimester, Weeks, and Highest Education Level by Frequency and Percentage

Demographic variable	*f*	%
Age (years)		
18-22	5	11.6
23-28	10	23.3
29-34	22	51.2
35-40	6	13.9
Race		
African American	22	51.2
Asian/Pacific	1	2.3
White	20	46.5
Pregnancy		
1st	14	32.6
2nd	17	39.5
3rd	7	16.3
4th	3	6.9
5th	2	4.7

(table continues)

Table 1 (continued)

Demographic variable	*f*	%
Trimester		
First	3	7
Second	17	39.5
Third	23	53.5
Weeks Pregnant		
1-12 weeks	3	7
13-27 weeks	17	39.5
28-40 weeks	23	53.5
Highest Education Completed		
Some High School (9-11)	1	2.3
High School Graduate/GED	8	18.6
Some College	21	48.8
College Graduate	7	16.3
Completed Graduate School	5	11.6
PhD	1	2.3

N= 43

Results of Data Analysis

The purpose of this research was to answer the following questions: Are pregnant women knowledgeable of the danger signs of pregnancy? Are pregnant women knowledgeable of the discomforts of pregnancy? Are pregnant women knowledgeable of the signs and symptoms of pregnancy that should be treated in a primary care clinic? In addition to answering the demographic survey, study participants also completed the Humphrey Pregnancy Questionnaire in an effort to answer the research questions. The Humphrey Pregnancy Questionnaire consisted of 20 questions. Data were analyzed using descriptive statistics of frequency and percentage.

To determine if pregnant women were indeed knowledgeable of the danger signs of pregnancy versus normal discomforts of pregnancy and those signs and symptoms of pregnancy that should be treated at an office, they were asked 20 questions of what actions to take for possible signs and symptoms of pregnancy. The suggested actions in the survey entailed going to the ER, the office, or indicating that this was a normal discomfort of pregnancy. The questions were analyzed and scored according to which action they chose. A correct response of "Go to ER" determined the subjects' knowledge of true danger signs of pregnancy while a response of "Clinic Visit" determined the subjects' knowledge of signs and symptoms that should be treated in a primary care setting. Finally, if subjects selected "Normal Discomfort" for a sign/symptom of pregnancy this elicited no action.

There were seven questions on the Humphrey Pregnancy Questionnaire that were related to danger signs of pregnancy. Five respondents scored 80% or higher on items related to true danger signs of pregnancy (n=5; 12%) and were deemed knowledgeable in

this area. It had been predetermined that 80% of the respondents must score 80% or more in order for women to be knowledgeable about the danger signs of pregnancy. Only twelve percent of the sample scored 80% or higher on questions related to danger signs of pregnancy, therefore, in answer to research question one, women were not deemed knowledgeable about the danger signs of pregnancy. Findings related to true danger signs of pregnancy responses are listed in rank order according to correct responses in Table 2.

Table 2

Knowledge of True Danger Signs of Pregnancy in Rank Order of Correct Responses by Frequency and Percentage

Rank	Variable	*f*	%
1	Gush of fluid from the vagina before 37 weeks	36	83.7
1	Blackouts or seizures	36	83.7
2	Bright red bleeding from the vagina	32	74.4
3	Regular/strong contractions before 37 weeks	30	69.8
4	Temperature greater than 101	22	51.2
5	Decline in baby's movement or no movement	13	30.2
6	Hard, firm tummy with pain	9	20.9
7	Blurred vision or seeing spots	8	18.6

N= 43

The second research question was as follows: Are pregnant women knowledgeable of signs and symptoms that could be treated at a clinic? There were seven forced responses questions on the Humphrey Pregnancy Questionnaire related to signs and symptoms of pregnancy that should be treated in a clinic. Two respondents scored 80% or higher when asked which signs or symptoms warranted a clinic visit (n=2; 5 %). It had been predetermined that 80% of the respondents must score 80% or more in order for women to be knowledgeable about the signs and symptoms that warrant a clinic visit. Only 12% of the sample scored 80% or higher on questions related to signs and symptoms that warranted a clinic visit. Therefore, in answer to research question two, women were not deemed knowledgeable about the signs and symptoms warranting a clinic visit. Findings related to signs and symptoms that could be treated at a clinic visit are listed in rank order in Table 3.

Table 3

Knowledge of Signs and Symptoms that Should Be Treated at a Clinic Visit in Rank Order of Correct Responses by Frequency and Percentage

Rank	Variable	*f*	%
1	Painful and difficulty in urination	40	93.0
2	Foul smelling discharge	33	76.7
3	Severe nausea and vomiting	16	37.2

(table continues)

Table 3 (continued)

Rank	Variable	*f*	%
4	Stuffy head and cough	14	32.6
5	Swelling of hands feet and face	11	25.6
5	Negative feeling about your pregnancy	11	25.6
6	Headaches	10	23.3

N= 43

The third research question was as follows: Are pregnant women knowledgeable about the normal discomforts of pregnancy? There were five forced response questions on the Humphrey Pregnancy Questionnaire related to normal discomforts of pregnancy. All respondents scored 80% or higher when asked to choose which response was a normal discomforts of pregnancy (n=43; 100 %). It had been predetermined that 80% of the respondents must score 80% or more in order for women to be knowledgeable about normal discomforts of pregnancy. Since 100% of the women scored 80% or higher on the question related to normal discomforts of pregnancy, women were deemed knowledgeable about normal discomfort of pregnancy. Findings related to normal discomforts of pregnancy responses are listed in rank order in Table 4.

Table 4

Knowledge of Normal Discomforts of Pregnancy in Rank Order of Correct Responses by Frequency and Percentage

Rank	Variable	*f*	%
1	Feeling tired	42	97.7
1	Tenderness and fullness of breast	42	97.7
1	Needing to urinate frequently	42	97.7
2	Constipation	40	93.0
3	Colorless, odorless discharge	27	62.8

N= 43

Additional Findings

In the area of knowledge of true danger signs of pregnancy, women were most aware of a gush of fluid from the vagina before 37 weeks as a danger sign of pregnancy. They were least aware of blurred vision or seeing spots as a danger sign.

In the area of signs and symptoms that could be treated at a clinic visit, women were most aware of seeking care at an office when experiencing painful and difficulty in urination; however they were less aware of seeking care at an office when experiencing a headache. The majority of the subjects (n=33; 39%) who responded that negative feelings about their pregnancy should not be treated at an office visit but was a normal discomfort of pregnancy were pregnant for the second time.

In the area of normal discomforts of pregnancy subjects were equally knowledgeable about feeling tired, needing to urinate frequently, and tenderness and fullness of breast and less aware that colorless, odorless discharge was considered a normal discomfort of pregnancy. However, subjects were aware that painful and difficulty in urination warranted an office visit.

Summary of the Findings

Data gained from this study indicated that although study participants were aware of normal discomforts of pregnancy (100%) they were less knowledgeable about danger signs of pregnancy (12%). Subjects were also less aware of those signs and symptoms that should be treated at an office visit (5%).

Chapter V

The Outcome

The purpose of this descriptive study was to explore pregnant women's knowledge of danger signs of pregnancy, as well normal discomforts of pregnancy and those symptoms of pregnancy that could be treated in a primary care clinic. A convenience sample of 43 pregnant women, 18 years of age and older was obtained over one month from two private OB/GYN offices from a Southeastern state. The theoretical framework that guided this study was Pender's Health Care Promotion Model. The subjects completed a demographic questionnaire and the Humphrey Pregnancy Questionnaire. Data were analyzed utilizing descriptive statistics of frequency and percentage and the measures of central tendency including mean, median, and mode for the surveys. Rank order was used for responses to items on the Humphrey Pregnancy Questionnaire.

In this chapter the researcher will discuss the meanings of findings as it relates to the research questions. Implications for nursing including education, practice, administration, theory, and research will also be discussed. Recommendations for further studies are presented.

Summary of Findings

Demographic data revealed the majority of the sample were African American (n=22; 51.2 %) and between the ages of 19 to 40 years ($\underline{M}$ = 32). The education level of

the largest number of women in the sample was some college (n=21; 48.8 %). More than half of the patients surveyed were in their third trimester (n=23; 53.5 %) and 33 weeks pregnant (n=4; 9.3 %). For most of the patients this was their second pregnancy (n=17; 39.5 %).

Analysis of the Humphrey Pregnancy Questionnaire revealed that subjects were not knowledgeable of the danger signs of pregnancy (n=43; 12%). The overall lack of knowledge of these pregnant women concerning the danger signs of pregnancy is astounding and has serious implications. If women do not perceive certain signs and symptoms as significant, their health or that of their unborn child will suffer. Lack of overall knowledge concerning danger signs of pregnancy may be due to lack of reinforcement. In the offices where the studies were performed, women were educated on danger signs of pregnancy upon their first visit. The lack of knowledge of the danger signs of pregnancy could be due to the provider not reinforcing teaching of the danger signs of pregnancy after the initial teaching session. Another finding indicated that women who were pregnant for the first time were less knowledgeable than women who were pregnant 2 or more times. This may have been because women who were experiencing pregnancy for the first time were not aware of the danger signs since they had not encountered any to date.

Responses to individual items pertaining to danger signs of pregnancy also were relevant. One of the danger signs of pregnancy, the decline in fetal movement or no movement at all, could be indicative of fetal health and the absence of such movement may indicate fetal death or impending fetal death. Only 13 of the 43 women surveyed chose this as a danger sign of pregnancy. More than half of the women surveyed (n=28;

65.1%) identified a decline in fetal movement or no movement at all as a sign that should be treated at a physicians office while two women (4.7%) perceived this question as a normal discomfort of pregnancy. Here again, media and lack of reinforcement of teaching of the danger signs of pregnancy may indicate why women did not chose this as a danger sign of pregnancy. However, women were knowledgeable that a gush of fluid from the vagina before 37 weeks gestation is considered a danger sign of pregnancy indicating preterm labor. Women may have been knowledgeable regarding a gush of fluid from the vagina before 37 weeks because this may have been taught to them by their mothers. Also, media has a great impact as well. Such a traumatic event when portrayed in the media would likely be remembered. The current findings are consistent with the study performed by Freston et al. (1997) who concluded that pregnant women demonstrated knowledge of selecting the best action or an action that would bring them in for care in regards to preterm labor.

Data collected revealed that women correctly identified that painful and difficulty in urination was a sign or symptom that could be treated at a primary care office (n=43; 93%). However, anyone with this symptom, pregnant or not, would likely proceed to a primary care office, so they may have been knowledgeable about this health problem before they became pregnant. Conversely, women were not knowledgeable of impending signs of preeclampsia such as headaches (23.3 %) and swelling of the hands, feet, and face (25.6%) being a sign or symptom that should be treated at a clinic. Preeclampsia also known as a hypertensive disorders of pregnancy causes 10 to 20 percent of stillbirths and neonatal deaths of pregnancy and is responsible for 17% of maternal deaths if not treated promptly (Reeder, Martin, &. Koniak, 1992). Women may view these signs as normal

because weight gain is to be expected in pregnancy. Additionally, the women may have had a history of hypertension or relatives with the disease and did not consider this a serious sign or symptom that needed to be treated.

Another sign and symptom that less than 80% of the sample was able to identify as needing to be treated in a clinic related to feeling about pregnancy. Subjects identified negative feelings about their pregnancy as normal. (n=43, 74.4%). The greatest number of women who indicated that negative feelings were a normal response were pregnant for the second time (n=33; 39.4%). According to Jack Guida M.D. (2000), although it may be difficult for some women to admit to negative feelings about pregnancy, it is important to be honest about those feelings and to discuss them openly with a doctor. Women who thought negative feelings about their pregnancy were normal may have had an unplanned pregnancy or may have had a miscarriage with their first pregnancy.

Study participants scored greater than 90% in four out of five questions regarding the normal signs of pregnancy. This sample of women tended to score all signs and symptoms of pregnancy as normal, and therefore may have inflated scores in this area. This may be because women were not aware of what is normal or abnormal. These women may have had an optimistic view of pregnancy, and preferred not to focus on potentially abnormal symptoms. Similar findings reported by Rautava and Sillanpaa (1989) identified that pregnant women were more familiar with the normal signs of pregnancy than with the abnormal signs of pregnancy.

Conclusions

The first research question of this study was: Are pregnant women knowledgeable of the danger signs of pregnancy? The findings were conclusive. Pregnant women are

not knowledgeable of the danger signs of pregnancy. Data revealed that neither education nor ethnicity had any bearing on pregnant women's perception of the danger signs of pregnancy. The number of times pregnant also had no impact on pregnant women's knowledge of the danger signs of pregnancy.

The second research question asked: Are pregnant women knowledgeable of the signs and symptoms of pregnancy that should be treated in a primary care clinic? Data revealed that women were not knowledgeable of signs and symptoms that should be treated at a primary care office. Study participants scored greater than 80% collectively on only one question which asked the participant to choose which action to take when experiencing painful and difficulty in urination.

The final research question was: Are pregnant women knowledgeable of the discomforts of pregnancy? Subjects were aware of normal discomforts of pregnancy. Forty-two of forty-three subjects correctly identified that feeling tired; tenderness and fullness of breast, the need to urinate frequently and constipation were all normal discomforts of pregnancy.

Implications for Nursing

This research is significant to nursing in the areas of education, practice, theory, and research. The findings of this study can be applied to the area of education by providing the schools of nursing, at the undergraduate level, with data that can be incorporated into school concerning maternal knowledge of danger signs of pregnancy, signs and symptoms that should be treated in a primary care office, as well as normal signs of pregnancy. The results from this study indicate that women are not knowledgeable concerning danger signs of pregnancy or signs and symptoms that should

be treated in a primary care office. Student nurses should be taught the results of this study and use this information to teach danger signs of pregnancy, signs and symptoms that should be treated in an office, and normal discomforts of pregnancy. Educating Nurse Practitioners about danger signs of pregnancy, signs and symptoms that should be treated in an office, and normal discomforts of pregnancy, will increase the likelihood that they will educate their clients. Perhaps Nurse Practitioner students could be taught to create fact sheets related to this information or identify teaching material that could be handed out to patients.

The findings in this research study may be applied to Nurse Practitioners practice by making them aware that women are not knowledgeable of the danger signs of pregnancy. Nurse practitioners should include more teaching when educating patients on this subject. The findings of this study can be used to help Nurse Practitioners develop teaching programs and campaigns for healthier pregnancies. The Nurse Practitioner could use teaching guides to educate patients on the danger signs of pregnancy, thereby, decreasing maternal and fetal morbidity and mortality. Nurse Practitioners could apply the information found in this study to prepare pre and post test for clients to establish their knowledge of pregnancy upon their first visit. Nurse Practitioners should utilize cues to action in their practice related to pregnancy. They should display posters listing danger signs of pregnancy and those signs and symptoms that need to be treated in a clinic. Brochures and teaching pamphlets about all aspects of pregnancy should be left in waiting areas for pregnant women to read.

Nola Pender's Health Promotion Model (HPM) guided this study. The framework included self-efficacy, definition of health, and perceived health status.

Pregnant women chose specific actions when experiencing danger signs of pregnancy. This supports Pender's self-efficacy construct. The subjects defined health by choosing responses that are considered normal signs of pregnancy to those that are considered danger signs of pregnancy. Pender's suggestion for use of cues to action could help increase knowledge about the danger signs of pregnancy and those signs and symptoms that should be treated at a clinic. The client must be educated about their own health therefore supporting Pender's self-efficacy construct.

This study could be used as a baseline for further research on maternal knowledge of danger signs of pregnancy. There were few studies found on signs and symptoms that should be treated at a clinic visit and no studies found that investigated danger signs of pregnancy, signs and symptoms that should be treated at a clinic, and those normal discomforts of pregnancy. Therefore, this makes a significant contribution to nursing science.

Recommendations for Further Study

The following recommendations for future research are made as a result of the study:

1. Replication of the study in a rural location.
2. Replication of the study involving a larger more culturally diverse sample.
3. Conduction of a research study to ascertain health care provider's perception of danger signs of pregnancy.
4. Conduction of a study questioning pregnant teens on danger signs of pregnancy

5. Conduction of a quasi-experimental study on which subjects are tested on knowledge of pregnancy before and after an educational session.

6. Conduction of a comparative study in which different educational methods of teaching normal and danger signs of pregnancy are contrasted.

7. Publication of the study to aid health care providers in teaching danger signs of pregnancy to expectant mothers.

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APPENDIX A

APPROVAL OF MISSISSIPPI UNIVERSITY FOR WOMEN'S COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION

MISSISSIPPI UNIVERSITY FOR WOMEN

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December 19, 2001

Ms. Yvette L. Humphrey
c/o Graduate Nursing Program
P. O. Box W-910
Campus

Dear Ms. Humphrey:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research with the requirement that you add a statement to the consent form indicating how the principal investigator should be contacted.

The committee reminds you that the results of any questionnaire or survey must be kept under lock and key to ensure confidentiality and be kept for a sufficient length of time to protect the participant and the researcher.

I wish you much success in your research.

Sincerely,

Vagn K. Hansen, Ph.D.
Provost and Vice President
for Academic Affairs

VH:wr

cc: Mr. Jim Davidson
Dr. Lynn Chilton
Dr. Sheila Adams

APPENDIX B

PHYSICIAN CONSENT

Dr. Sanders
6005 Park
Memphis, TN. 38119

Dear Dr. Sanders:

My name is Yvette Humphrey. I am currently a graduate student at Mississippi University for Women enrolled in the Family Nurse Practitioner Program. I am doing research to fulfill the requirements for my thesis: Maternal Knowledge of Danger Signs of Pregnancy. The purpose of this research is to explore the comprehension of pregnant women regarding the danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that could be treated in a primary care clinic. I have worked in the Labor and Delivery ER and have noticed that many women come into the ER with complaints of normal discomforts of pregnancy and complaints that could have been handled at an office visit. I also have seen women who have put themselves and their unborn child at risk because they did not understand a true danger sign of pregnancy. Educating pregnant women on the danger signs of pregnancy could change behaviors and could save lives. I am planning to conduct the study in the Spring of 2002. The Mississippi University for Women Committee on the Use of Human Subjects in Research has approved the study to ensure protection of human rights of the subjects.

My study subjects will be pregnant women 18 years old and older that are receiving prenatal care in an OB/GYN office setting. My target sample will be 100 subjects. Patients will be informed that non-participation in the questionnaire will in no way affect their care and they will be informed that confidentiality will be upheld. They will be asked to sign a letter of consent and complete a questionnaire that includes demographic information and survey to determine knowledge about danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that could be treated in a primary care clinic. I will be asking for a nurse volunteer from your office to explain the study, to obtain informed consent, and to collect the completed surveys from the patients in your waiting room. I am including a copy of the questionnaire and a copy of the patient consent form. I am requesting your permission to conduct this survey in the waiting room of your clinical setting. I thank you for your time.
Sincerely,

Yvette Humphrey RN, BSN

I agree to have Yvette Humphrey, RN, BSN conduct the research as explained concerning maternal knowledge of the danger signs of pregnancy.

Signature Gwendolyn Sanders Date 5-13-02
office Manager

919 HAWTHORNE
MEMPHIS, TENNESSEE 38107

Dr. Joseph DeWane
6246 Poplar Avenue
Memphis, Tennessee 38119

Dear Dr. DeWane:

My name is Yvette Humphrey. I am currently a graduate student at Mississippi University for Women enrolled in the Family Nurse Practitioner Program. I am doing research to fulfill the requirements for my thesis: Maternal Knowledge of Danger Signs of Pregnancy. The purpose of this research is to explore the comprehension of pregnant women regarding the danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that could be treated in a primary care clinic. I have worked in the Labor and Delivery ER and have noticed that many women come into the ER with complaints of normal discomforts of pregnancy and complaints that could have been handled at an office visit. I also have seen women who have put themselves and their unborn child at risk because they did not understand a true danger sign of pregnancy. Educating pregnant women on the danger signs of pregnancy could change behaviors and could save lives. I am planning to conduct the study in the Spring of 2002. The Mississippi University for Women Committee on the Use of Human Subjects in Research has approved the study to ensure protection of human rights of the subjects.

My study subjects will be pregnant women 18 years old and older that are receiving prenatal care in an OB/GYN office setting. My target sample will be 100 subjects. Patients will be informed that non-participation in the questionnaire will in no way affect their care and they will be informed that confidentiality will be upheld. They will be asked to sign a letter of consent and complete a questionnaire that includes demographic information and survey to determine knowledge about danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that could be treated in a primary care clinic. I will be asking for a nurse volunteer from your office to explain the study, to obtain informed consent, and to collect the completed surveys from the patients in your waiting room. I am including a copy of the questionnaire and a copy of the patient consent form. I am requesting your permission to conduct this survey in the waiting room of your clinical setting. I thank you for your time.
Sincerely,

Yvette Humphrey RN, BSN

I agree to have Yvette Humphrey, RN, BSN conduct the research as explained concerning maternal knowledge of the danger signs of pregnancy.

Signature J. DeWane Date 5-17-02

919 HAWTHORNE
MEMPHIS, TENNESSEE 38107

APPENDIC C

OB/GYN NURSE CONSENT

Dr. Sanders
6005 Park
Memphis. TN 38119

Dear OB/GYN Nurse:

My name is Yvette Humphrey. I am currently a graduate student at Mississippi University for Women enrolled in the Family Nurse Practitioner Program. I am doing research to maternal knowledge of danger signs of pregnancy. The purpose of this research is to explore the comprehension of pregnant women's regarding the danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that could be treated in a primary care clinic. I have worked in the Labor and Delivery ER and have noticed that many women come into the ER with complaints of normal discomforts of pregnancy and complaints that could have been handled at an office visit. I also have seen women who have put themselves and their unborn child at risk because they did not understand a true danger sign of pregnancy. Educating pregnant women on the danger signs of pregnancy could change behaviors and could save lives. I am planning to conduct the study in the Spring of 2002. The Mississippi University for Women Committee on the Use of Human Subjects in Research has approved the study to ensure protection of human rights of the subjects.

My study subjects will be pregnant women 18 years old or older that are receiving prenatal care in an OB/GYN office setting. My target sample will be 100 subjects. Patients will be informed that non-participation in the questionnaire will in no way affect their care and they will be informed that confidentiality will be upheld. They will be asked to sign a letter of consent and a questionnaire that includes demographic information. I am including a copy of the questionnaire and a copy of the patient consent form. I have obtained permission from your OB/GYN physician in this office to conduct the study. I am requesting that you volunteer to explain the study and answer questions of the pregnant women in the waiting room. I am also asking that you obtain informed consent and the completed surveys from the patients and place them in a designated secure location. I thank you for your help in this study.
Sincerely,

Yvette Humphrey RN, BSN

I agree to assist Yvette Humphrey, RN, BSN in the distribution and collection of research materials concerning maternal knowledge of the danger signs of pregnancy.

Signature CSO Date 3/14/02

919 HAWTHORNE
MEMPHIS, TENNESSEE 38107

Dr. Sanders
6005 Park
Memphis. TN 38119

Dear OB/GYN Nurse:

My name is Yvette Humphrey. I am currently a graduate student at Mississippi University for Women enrolled in the Family Nurse Practitioner Program. I am doing research to maternal knowledge of danger signs of pregnancy. The purpose of this research is to explore the comprehension of pregnant women's regarding the danger signs of pregnancy, normal discomforts of pregnancy, and those symptoms of pregnancy that could be treated in a primary care clinic. I have worked in the Labor and Delivery ER and have noticed that many women come into the ER with complaints of normal discomforts of pregnancy and complaints that could have been handled at an office visit. I also have seen women who have put themselves and their unborn child at risk because they did not understand a true danger sign of pregnancy. Educating pregnant women on the danger signs of pregnancy could change behaviors and could save lives. I am planning to conduct the study in the Spring of 2002. The Mississippi University for Women Committee on the Use of Human Subjects in Research has approved the study to ensure protection of human rights of the subjects.

My study subjects will be pregnant women 18 years old or older that are receiving prenatal care in an OB/GYN office setting. My target sample will be 100 subjects. Patients will be informed that non-participation in the questionnaire will in no way affect their care and they will be informed that confidentiality will be upheld. They will be asked to sign a letter of consent and a questionnaire that includes demographic information. I am including a copy of the questionnaire and a copy of the patient consent form. I have obtained permission from your OB/GYN physician in this office to conduct the study. I am requesting that you volunteer to explain the study and answer questions of the pregnant women in the waiting room. I am also asking that you obtain informed consent and the completed surveys from the patients and place them in a designated secure location. I thank you for your help in this study.
Sincerely,

Yvette Humphrey RN, BSN

I agree to assist Yvette Humphrey, RN, BSN in the distribution and collection of research materials concerning maternal knowledge of the danger signs of pregnancy.

Signature Jonia Hill Date 5-14-2002

919 HAWTHORNE
MEMPHIS, TENNESSEE 38107

APPENDIX D

PARTICIPANT CONSENT

Dear Mother-to-be,

My name is Yvette Humphrey. I am a Registered Nurse and a graduate student at Mississippi University for Women. I am doing research on pregnant women's knowledge of danger signs of pregnancy.

I am asking you to volunteer for this study. Please understand that you are not required to do so and that your care will not be affected in any manner if you choose to participate or not to participate in this study. You are free to withdraw from the study at any time before data analysis. Please understand that confidentiality will be upheld at all times. Your signed consent form will be separated from the questionnaire. Grouped analysis will be done on the questionnaires and your individual answers will in no way be identified.

If you do choose to participate, you will be given a questionnaire that will be completed in the waiting room and given back to the office nurse. It should take approximately 5-10 minutes to fill this form completely out. The results of this study will help healthcare workers in understanding pregnant women's perception of danger signs of pregnancy. I thank-you for your time.

Sincerely,

Yvette Humphrey RN, BSN

I give Yvette Humphrey permission to include me in her study.

Signature_____ Date_____

APPENDIX E

HUMPHREY DEMOGRAPHIC SURVEY

Humphrey Demographic Survey

1. What is your age? _____

2. What is your race?(please check) African American _____

   Asian/Pacific _____

   Hispanic _____

   Native American _____

   White _____

   Other _____

3. What pregnancy is this for you? _____

4. What trimester are you in? _____

5. How many weeks pregnant are you? _____

6. What is the highest grade of education completed? _____

APPENDIX F

HUMPHREY PREGNANCY QUESTIONNAIRE

Humphrey Pregnancy Questionnaire

Please read each question and choose which action should be taken.
Select the best answer, **checking only one answer for each question**.

	Go to the ER	Clinic visit	Normal discomfort
1. Bright red bleeding from vagina	☐	☐	☐
2. Colorless, odorless discharge	☐	☐	☐
3. Constipation	☐	☐	☐
4. Blurred vision or seeing spots	☐	☐	☐
5. Gush of fluid from vagina before 37 weeks.	☐	☐	☐
6. Severe nausea and vomiting	☐	☐	☐
7. Stuffy head and cough	☐	☐	☐
8. Painful and difficulty in urination	☐	☐	☐
9. Swelling of hands, feet, face	☐	☐	☐
10. Hard, firm tummy with pain	☐	☐	☐
11. Foul smelling discharge	☐	☐	☐
12. Decline in baby's movement or no movement	☐	☐	☐
13. Feeling tired	☐	☐	☐
14. Tenderness and fullness of breast	☐	☐	☐
15. Needing to urinate frequently	☐	☐	☐
16. Regular /strong contractions before 37 weeks	☐	☐	☐
17. Negative feelings about your pregnancy	☐	☐	☐
18. Blackouts or seizures	☐	☐	☐
19. Headaches	☐	☐	☐
20. Temperature greater that 101	☐	☐	☐