**Title**
Factors influencing the nurse's decision to use or not to use the external fetal monitor



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# FACTORS INFLUENCING THE NURSE'S DECISION TO USE OR NOT TO USE THE EXTERNAL FETAL MONITOR

by

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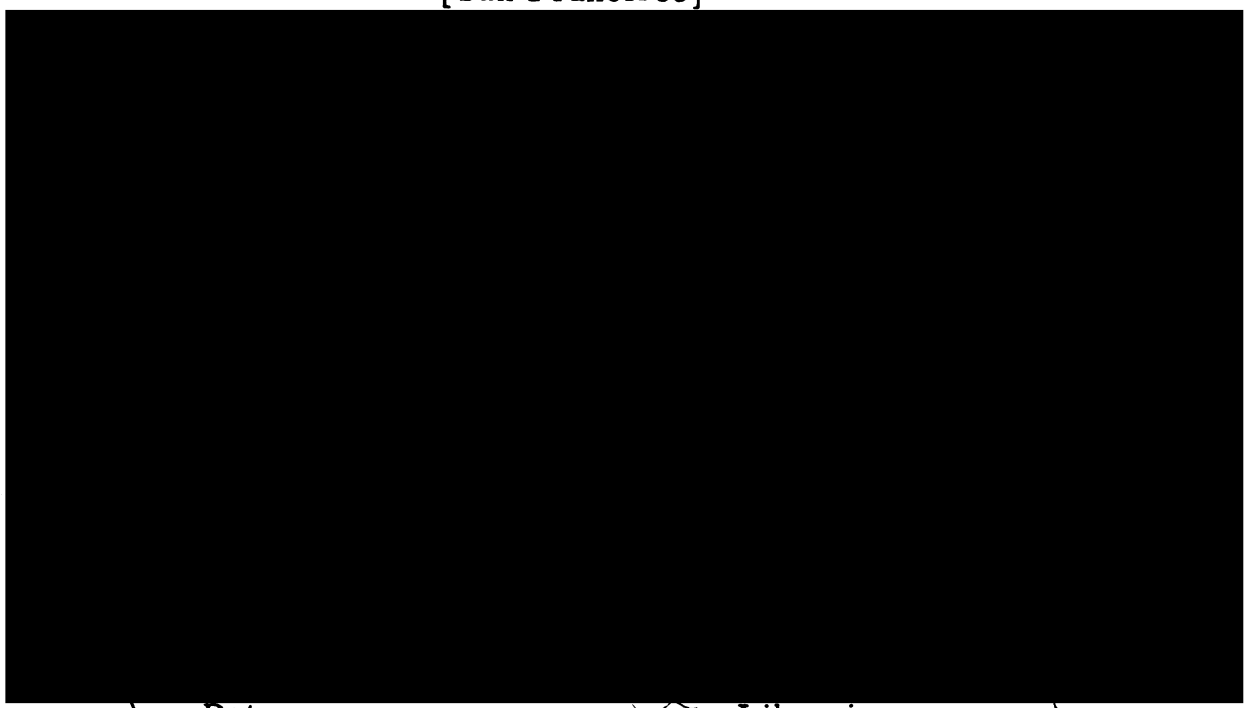

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# FACTORS INFLUENCING THE NURSE'S DECISION TO USE OR NOT TO USE THE EXTERNAL FETAL MONITOR

## Chapter One

## Research Problem, Significance, and Theoretical Framework

### Introduction

Quality patient care is the goal of health care providers. The United States has not met this goal in perinatal care as evidenced by the estimated 6,000 to 12,000 fetal deaths annually, during the intrapartum period within the hospital environment. An additional 30,000 to 44,000 infants are born each year with some degree of mental retardation (Quilligan and Paul, 1975). Lilien (1970) noted that one out of every three stillbirths occurred after the mother had been admitted to the hospital with fetal heart tones present. Asphyxia of the fetus during the stress of labor and contractions is the major cause of morbidity and mortality (Parer and Butler, 1976). The fetal heart rate decreases during these stress periods. The use of the fetal stethoscope does not provide the information necessary to assess this change in the fetal heart rate. The external fetal monitor is a tool which has been designed to provide this needed information. "The use of continuous fetal heart rate monitoring intuitively appears to be the tool which will enable us to recognize in all labors the fetus destined for morbidity and help us to either correct the cause of it or circumvent its course" (Parer and Butler, 1976). Quilligan and Paul stated that routine fetal heart rate monitoring could reduce the mortality and morbidity statistics by half (1975).

Nurses are exposed daily to equipment which can assist them in providing quality patient care. Often, it is left to the nurse's discretion to use or not to use this equipment. The nurse must consider the outcomes and consequences and make a decision. The decision to use or not to use the external fetal monitor is an example of such a situation. Although both methods are available, only the external fetal monitor can provide information as to fetal well being. Still, many nurses use the fetal stethoscope even when the fetal monitor is available. Several authors noted that the fetal stethoscope is still the method of heart rate detection used by most nurses during the intrapartum period (Russin, O'Gureck, and Roux, 1974; Rice 1972). Thus, even though equipment is available to provide quality patient care, nurses do not consistently use it.

This chapter discusses the problem of inconsistent use of available hospital equipment. Irving Janis's work on predecisional conflict is the bases for the theoretical framework. The nurse and those in her environment supply the information necessary to solve the predecisional conflict.

## Research Problem and Question

The problem addressed in this research is the inconsistent use of available hospital equipment by nurses, specifically the external fetal monitor. Barden (1974) stated "they (monitors) are in routine use only in relatively few obstetric units". Many nurses still use the fetal stethoscope which cannot assess fetal well being. The external fetal monitor can assess fetal status. Schifrin and Dame (1972) noted that babies with low apgar scores at five minutes were anticipated with 83% accuracy by use of the fetal monitor. Nurses have the choice of deciding

which equipment to use, the external fetal monitor or fetal stethoscope. Why do nurses decide to use one method instead of the other? The following research question provides the focus for this investigation: What are the factors that influence a nurse's decision to use or not to use the external fetal monitor?

Significance

Determining the factors that influence the nurse's decision regarding the use of hospital equipment will have a significant impact on nursing care. This significance can be viewed from two perspectives: 1) the nurse's decision making process pertaining to equipment usage in general and 2) the decision process related specifically to the external fetal monitor.

Hospitals spend millions of dollars each year on equipment; a similar amount is spent investigating the effectiveness of this equipment. However, when available equipment that has been shown to be effective is not used, it is of little benefit to the patient. This applies, for example, to such equipment as EKG monitors for the cardiac patient, Harvard Pumps for the patient receiving intravenous infusions, and IPPB machines for the respiratory patient. Unless these tools are used effectively they are of little use to the patient. This study will determine the factors which influence the nurse in a decision regarding equipment utilization. The factors strongly influencing the nurse's decision towards proper equipment utilization can then be emphasized. If for example, the nurse's perception of hospital's policy and attitude is the primary factor in her decision, then the organizational structure would need to be emphasized when introducing new equipment to a unit. If knowledge is the primary factor in the

nurse's decision to utilize equipment then education would be emphasized. Insight into the factors which influence a nurse's decision would lead to more effective use of hospital equipment and subsequently to a higher quality of patient care.

The second perspective in terms of significance is based on decisions related to the use of the external fetal monitor. Several studies support the concept that fetal monitoring can reduce fetal mortality and morbidity. St. Boniface General Hospital published their obstetrical statistics for the year 1974, separating the data for the monitored and unmonitored patients. They reported a 7.9 perinatal mortality in the monitored group as compared to 9.3 for the unmonitored group. This is especially significant since the monitored group consisted of patients classified as high risk (Stevens, Parker and Peddle, 1976). At Booth Memorial Medical Center in New York, 88 percent of the patients were monitored during labor.
Their results show a decrease in intrapartum stillbirths from 1.2/1000 to 0.5/1000 (Shenker, Post and Seiler, 1975). Shenker noted "that fetal monitoring during labor helps deliver less damaged newborns who will do better in the nursery" (Shenker, Post and Seiler, 1975). Quilligan and Paul (1975) further state "it is assumed that routine intrapartum monitoring would reduce mortality and morbidity to one-half the current expected incidence".

Once the factors used by the nurse in making the decision to use or not to use the monitor are determined, by controlling or intervening in these factors, patients who would benefit from its use would receive improved care. Thus, with proper fetal monitor usage, life and the quality of life can be improved.

Theoretical Framework

Decision making theory provides the theoretical framework for this study. A decision is "any verbal or overt action which is socially defined as a commitment to carry out a specified task or to adhere to a particular course of action in the future" (Janis, 1959). Most of the literature divides decision making into two processes, the pre-decision component and the post-decision component. "The predecision process must be largely concerned with the impartial accumulation and consideration of information about all the alternatives" (Davidson, 1964). In the predecision period "the person pays equal amounts of attention to both alternatives, and his evaluation of information about each alternative is equally objective" (Festinger, 1964). Once the decision has been made, the postdecisional period begins and the individual starts the dissonance-reduction process. At this time the individual selects information that supports his decision and is no longer objective. In determining the factors influencing the nurse's decision the predecisional period is the component of decision making to be focused on.

The pre-decision period is characterized by conflict and it's resolution. Festinger (1964) states that "the pre-decision situation is generally regarded as one in which the person experiences conflict. The conflict exists, presumably because of simultaneous presence of at least two mutually incompatible response tendencies". Irving Janis proposed four types of considerations which may determine the outcome of a decisional conflict. They are: 1) anticipated utilitarian gain or loss for self, 2) anticipated utilitarian gain or loss for significant others, 3) anticipated approval or disapproval from significant others and 4) anticipated approval or disapproval from self (Janis, 1968).

Utilitarian gain or loss can refer to money, position, and/or power. Nurses are faced with decisions of which equipment to use. To resolve this decisional conflict the nurse must gather information about the alternatives and consider the outcome of each decision. Utilizing Janis's framework for the outcome of a decisional conflict the nurse would gain this information from herself and significant others. The sifnificant others in the nurse's environment are the hospital organization (physicians), her peers, and the patient. To resolve the conflict of which piece of equipment to use the nurse would thus need to consider the information gained from these sources, and consider the consequences of her decision based on this information.

Knowledge

Two components of self that the nurse can use in resolving the decisional conflict are knowledge and attitude. Webster (1958) defines knowledge as "that which is gained and preserved by knowing, enlightenment; learning, also, broadly the sum of information conserved by civilization, - often personified". Hans Neisser (1965) expands this definition in his theory of knowledge. He states that knowledge is comprised of two components - 1) an historical component, and 2) a scientific component. Historical knowledge involves one's experience and exposure to situations or objects. One must have experience and exposure to a given object in order to have some knowledge of it. The nurse must have had some exposure to both the external fetal monitor and the fetal stethoscope in order to make a decision as to which piece of equipment to use. A nurse who has used the fetal stethoscope for a long time and has experienced primarily healthy infants born may chose the fetal stethoscope instead of the

external fetal monitor because of her "historical" knowledge. Her past experience might lead her to conclude she is using the right equipment and thus promote self approval as discussed by Janis.

Scientific knowledge involves facts. In deciding what equipment to use a nurse must know what information is gained from her alternatives and what nursing measures are needed based on these data. In this framework, scientific knowledge would include knowing the physiological facts involved in the birth process, the principles involved in interpreting the fetal monitor or data obtained by use of the fetal stethoscope, and knowing how to alter physiological problems with appropriate nursing interventions. The nurse who knows that the fetal heart rate may decrease during the stress of contractions, and that the fetal monitor is able to assess this condition whereas the fetal stethoscope is not, would be more prone to use the external fetal monitor based on scientific knowledge. The consequence of the nurse's decision, utilizing Janis's framework, would be utilitarian gain or loss for the significant other, the patient. The external fetal monitor would provide the scientific knowledge to promote quality care to the mother and child. The nurse who knows the fetal monitor provides this needed information, would conclude she is using the right method and thus gain self approval.

Attitude

The second variable is the nurse's attitude regarding the external fetal monitor and fetal stethoscope. "An attitude is a mental and neural state of readiness, organized through experience, exerting a direct or dynamic influence upon the individual's response to all objects and situations with which it is related" (Allport, 1967).

with congnitive conflict" (Cartwright and Zander, 1968). The nurse who sees the positive features of the external fetal monitor when her peers verbalize the negative features would be faced with such a conflict. Utilizing Janis's framework, the nurse would need to consider disapproval of her peers if she chose the fetal monitor in this situation. If she chose the fetal stethoscope to comply with her peers' attitude, self disapproval might result.

Perception of the Patient's Attitude

The patient's attitude is another important variable in the nurse's decision to use or not to use the external fetal monitor. Advances in health care technology and consumer demands have put the nurse in a dilemma. Quality health care demands that health professionals give current, safe care to all patients. Consumers of health care, especially in the obstetrical area, are moving towards a "natural" course including natural childbirth. Although these are not always separate entities the nurse may find herself in conflict when the situation warrants the monitor to provide quality care but the patient wants a "normal" course of labor. The nurse must consider the patient's attitude and the physical needs of both the mother and infant in solving this conflict. If she chose the external fetal monitor disapproval of the patient would occur. If she chose the fetal stethoscope possible loss of mother and infant, a utilitarian loss as described by Janis, could occur.

Perception of Hospital Organization's Attitude and Policy

The hospital organization and its policies and attitudes regarding equipment is the last variable in considering the outcome of the decisional conflict. All hospitals, regardless of size, have

Attitudes are an interrelation of cognition, feeling and action tendencies. A change in one component will affect the others. Cognition can be defined as the beliefs an individual has about an object. Does the nurse see the equipment as good or bad, helpful or a waste of time? In this study, does the nurse see the external fetal monitor as good and the fetal stethoscope as bad, or vice versa. Feelings are the emotions an individual has about an object. Does the nurse like or dislike the external fetal monitor or fetal stethoscope? Action tendency includes the behavioral readiness associated with the attitude (Krech, Crutchfield and Ballschey, 1962). The nurse who views equipment to be helpful and likes it would also have a greater tendency to use it. Self approval or disapproval is a major consequence of the nurse's decision based on attitude. The nurse who has a positive attitude regarding the external fetal monitor, but uses the fetal stethoscope for other reasons, would risk self disapproval.

Perception of Peers' Attitude

Many attitudes are developed through the influence of others. Therefore it is important to know how nurses perceive their peers' attitude. "Many of the attitudes of the individual have their source and their support in the groups to which the individual gives his allegiance. His attitudes tend to reflect the beliefs, values, and norms of his group" (Krech, Crutchfield, and Ballschey, 1962). Conflict can arise when there is a discrepancy between an individual's attitude and his peers' attitudes. "Whenever a collection of people are exposed to the same environment they will be inclined to assume that there is only one 'correct' description of the situation. If a person finds that he sees the environment differently from others, he is faced

certain basic characteristics. The hospital organization is a human grouping which seeks a specific goal, quality patient care. Organizations are characterized by 1) division of labor, 2) one or more power centers, and 3) substitution of personnel (Etzioni, 1964).

The decision making process of most organizations is based on a hierarchial structure. "Decision making itself is divided in a way that makes the higher-in-rank set the wider policy lines while the lower-echelon administrators break the policy down into more detailed decisions" (Etzioni, 1964). The hospital administration may make the initial decision to purchase equipment. Physicians, next in the hierarchial order, may request the administration purchase equipment or decide the conditions under which it is to be used. It is then the nurse who must assess the patient and decide if conditions specified for equipment use exist.

In reaching the organization's goals the hospital has certain expectations of its employees which are referred to as the nomethetic dimension. Employees of the organization have certain needs which are referred to as the idiographic dimension (Getzel, 1963). One behavior, or as applied in this framework, decision, must be reached and the nomethetic (hospital organization) and idiographic (nurse) dimensions may conflict in reaching this goal. This decisional conflict would develop if the nurse assessed the patient and felt she should use another method. The nurse would need to consider therefore, the hospital organization's policy and attitudes regarding equipment when making her decision. If the nurse used the external fetal monitor to gather data she believes necessary on a patient who does not fulfill the hospital's expectations, or if she does not use the fetal monitor

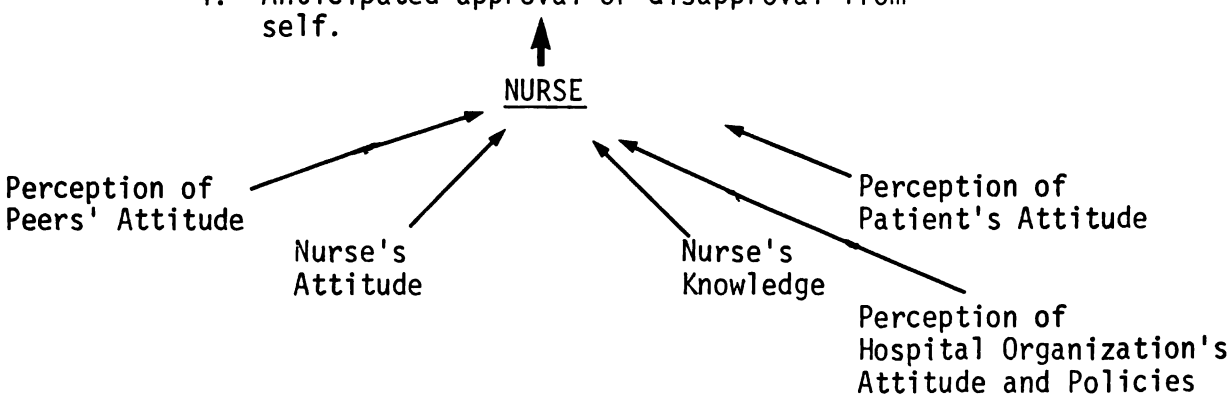
because she does not like it on a patient that meets the hospital's expectations, she might experience utilitarian loss for self and disapproval from significant others. The utilitarian loss would be characterized by a loss or change in position and the disapproval would stem from the conflict with physicians and hospital policy.

These five variables - knowledge, attitude, perception of peers' attitude, perception of patient's attitude, and perception of the hospital organization's attitude and policies feed into Janis's pre-decisional conflict theory. Any one or combination of the above factors could influence the nurses's decision to use or not to use the external fetal monitor. Diagram 1 shows the interrelation between these variable and Janis's framework.

Diagram 1

Janis's Framework
Outcomes of a Decisional Conflict

1. Anticipated utilitarian gain or loss for self.
2. Anticipated utilitarian gain or loss for significant others.
3. Anticipated approval or disapproval from Significant others.
4. Anticipated approval or disapproval from self.



Evaluation of the Fetal Heart Rate

Use of available equipment to provide quality care is the decision making process being studied in this research. The nurse is responsible for assessing the fetal heart rate and maternal contractions during labor and delivery. To do this she can use the fetal stethoscope and manual palpation of the uterine contractions or the electronic fetal monitor. There are advantages and disadvantages to both methods.

The fetal stethoscope is the most widely used method to detect fetal heart rate. The fetal stethoscope is an inexpensive piece of equipment and thus readily available. The fetal stethoscope is small and easy to use on many patients who may be in labor at the same time. However, there are many disadvantages. Only a small percentage of the fetal heart rate data are sampled when using the fetal stethoscope. Hypothesizing that a woman has a six hour labor and the nurse takes the fetal heart rate every thirty minutes, counting actually fifteen seconds, only .83% of the possible fetal heart rate data are sampled. Fetal stethoscope use can result in counting errors. Hon asked fifteen obstetricians to determine the heart rate on a simulated recording. Results indicated that counting errors were frequent, especially when the fetal heart rate was outside the normal limits (Hon, 1958). Wood supported the concept of counting errors. In this study "the overall error of ausculation of the hospital staff was considerable, 20% of observations being inaccurate by more than $\pm$ 15 beats per minute" (Day, Madden and Wood, 1968). Last, but most important, is that use of the fetal stethoscope lacks any correlation to stress. "Fetal reaction to stress is signaled by a change in heart rate. Whether to consider a change in heart rate a normal or ominous sign depends on its

relationship to the uterine contractions" (Nursing Update, 1973). Since stethoscope ausculation is restricted during and shortly after the contraction there is no correlation to stress. Lack of sufficient data, counting errors, and lack of correlation to stress are three serious disadvantages of the fetal stethoscope.

Fetal monitoring samples the data and correlates it to the uterine contraction. Fetal heart monitoring can be done by 1) external (indirect) or 2) internal (direct) means; only external monitoring will be investigated in this study as it is the method most available to the nurse and the method she has the authority to decide to use or not to use. External monitoring is achieved by use of a tocotransducer "that responds to changes in pressure reflected from the uterus to the maternal abdominal wall" and an ultrasound transducer "to detect movements of the fetal heart" (Barden, 1974). "A major advantage of the indirect unit is that a nurse or technician can easily connect it to the laboring patient - it requires no internal examination and manipulation" (Rice, 1972). The external monitor can be applied regardless of cervical dilitation and when the amniotic sac is intact or ruptured.

There are disadvantages to external fetal monitoring. Certain fetal positions and/or a very active fetus may make it difficult for the transducer to pick up the fetal heart rate. In these situations the transducer would require frequent adjustments. Recordings are often best obtained when the woman is in a supine position. This is uncomfortable for some women. It is also a poor choice physiologically due to supine hypotension. The nurse may therefore need to adjust both the monitoring device and the patient's position frequently. The fetal

monitor, like the fetal stethoscope, does not record accurately when the fetal heart rate is outside the normal limits. In this situation the nurse must turn up the volume control on the fetal monitor and listen, instead of relying on the print out. The advantages to be gained from using the external fetal monitor are significant; continuous surveillance of the fetal heart rate can enhance obstetrical care and neonatal outcome.

## Specific Aims

In examining the problem area of ineffective equipment usage and answering the research question, the following questions are posed:

1. What is the primary factor involved in the nurse's decision to use or not to use the external fetal monitor?
2. Is the choice of the external fetal monitor correlated with the amount of obstetric work experience of the nurse?

## Summary

Chapter one presented the problem addressed in this study, the inconsistent use of available equipment by nurses. This problem results in a lack of quality patient care and loss of money to the hospitals who purchase this equipment.

The research question addressed in this study is: What are the factors that influence the nurse's decision to use or not to use the external fetal monitor. Irving Janis's work concerning the pre-decision conflict serves as the basis for the theoretical framework. Nurses gain information from their knowledge, attitude, perception of their peers' attitude, perception of the patient's attitude, and perception of the hospital organization's attitude and policy regarding fetal monitoring in order to solve this decisional conflict.

The advantages and disadvantages of the external fetal monitor and fetal stethoscope, the specific equipment being investigated in this study, were presented. External monitoring provides information regarding the fetal status during the stress of contractions which the fetal stethoscope can not.

The problem presented in this chapter affects all nurses. To reach the goal of quality patient care available equipment must be used effectively and consistently.

# Chapter Two

## Methodology, Data Collection, Validity and Reliability, and Sample

### Introduction

This Chapter describes the methodology of the study and the research tool. A questionnaire, composed of three sections was designed for data collection. The three sections include: 1) demographic data, 2) hypothetical situations, and 3) open-ended questions. Content validity and test-retest reliability were done on this tool.

### Methodology

To find hospitals willing to participate in this study, all hospitals listed in The American Association Guide to the Health Care Field, 1975 edition, which were in the 415 area code, and listed obstetrical services were contacted. The Directors of Nursing were contacted by letter for permission to distribute the questionnaire to their nurses. (See Appendix A) A self-addressed stamped postcard was enclosed with this letter. Directors of Nursing were asked to return this card indicating if their nurses would participate in the study, and to identify a person for the researcher to contact.

Appointments were arranged during the summer with those hospitals agreeing to participate in the study. The investigator met with the person designated by the Director of Nursing. These individuals held the positions of Head Nurse, Obstetrical Supervisor, Inservice Educator and/or Director of Nursing. Meetings lasted for ten to thirty minutes.

Details of the study were explained in personal visits to the hospital. Only registered nurses employed at least four days a week in the obstetrical unit were included in the study. A list of nurses meeting these criteria was obtained and packets for each of the nurses were made. A packet consisted of a consent form, instruction sheet, the questionnaire, and a self-addressed stamped envelope. (See Appendix B,C, and D) Each packet was labeled with the name of the nurse and an identification number. The identification number was written on the return envelope so that the returned questionnaire could be identified. The contents of the packet were reviewed during the visit, and questions were answered. Nurses were asked to complete the questionnaire, seal it in the enclosed envelope, and return it to the designated person. This person noted that the questionnaire had been completed and sent it to the investigator by mail. Follow-up contact was made to obtain the unreturned questionnaires.

Data Collection

A questionnaire, composed of three sections, was designed for data collection. The first part of the questionnaire was basic demographic data. Nurses were asked about their obstetrical work experience, education, and exposure to fetal monitoring. This section is important to ascertain if the nurses' historical knowledge plays a significant factor in her decision and to answer the second question under specific aims: is the use of the fetal monitor correlated with the amount of obstetric work experience of the nurse?

The second section of the questionnaire consisted of six hypothetical situations in which the nurse was asked to indicate what method of fetal heart rate detection, the external fetal monitor or

fetal stethoscope, she would use. Hypothetical situations to study the decision making process has been used in several studies (Grier, 1976; Davidson, 1964). The situations presented in this study were based on common experiences in the labor and delivery unit. The data presented in these situations can be viewed in three perspectives. They are: 1) physiological risks to the patient; 2) parties involved in the conflict; and 3) type of conflict, external or internal. This is shown in Diagram Two. The situations presented in this study can be classified as; 1) high risk, 2) low risk, or 3) unstable condition. There were four high risk situations (2,3,4, and 6); one low risk (5); and one unstable condition (1).

Situations can also be viewed as to the nature of the conflict. Situation two had the least amount of conflict. This situation involved a high risk patient who should be electronically monitored by hospital organization's policy. Two of the situations (1 and 5) involved conflicts between the nurse and her attitude or knowledge of the situation. These would be considered internal conflicts. Situations three and four involve both external and internal conflicts. The external conflict was due to the hospital organization's policy of electronically monitoring high risk patients; and the internal conflict was due to the nurse's attitude of monitoring patients during various stages of labor. Situation six presented two external conflicts which were in opposition to each other. The patient wanted a natural labor in contrast to the hospital organization's policy of electronically monitoring all high risk patients.

Diagram Two. Risks and Conflicts of the Six Situations

| Situation | Data from Situation | Physiological Risk to Patient | Parties Involved in Conflict | Type of Conflict |
|---|---|---|---|---|
| 1 | Pt. has a normal blood pressure and reflexes but, has small amount of protein in her urine. | Pt. has possible preeclampsia, situation unstable. | Nurse v.s. self (her knowledge of this condition) | Internal |
| 2 | Drop in the fetal heart rate immediately following a contraction. | Pt. is high risk due to fetal heart rate deceleration. | Nurse v.s. hospital organization | External |
| 3 | Elective induction for convenience not health reasons. Pt. is just starting contractions. | Pt. is high risk due to induction | Nurse v.s. hospital organization | External |
| | | | Nurse v.s. self (her attitude toward monitoring early in labor) | Internal |
| 4 | Obstetrical history of one stillbirth due to postmaturity. This pregnancy is term. Pt. is 7cm dilated. | Pt. is high risk due to obstetrical history. | Nurse v.s. hospital organization | External |
| | | | Nurse v.s. self (her attitude toward monitoring late in labor) | Internal |
| 5 | Pt. has been in labor 18 hours and is 7cm dilated. | Low Risk | Nurse v.s. self (her attitude toward the equipment) | Internal |
| 6 | Pt. wants a home delivery but fetal heart rate is 100/minute. | Pt. is high risk due to fetal distress. | Nurse v.s. patient | External |
| | | | Nurse v.s. hospital organization | External |

After selecting the method she would use to detect the fetal heart rate, the nurse was asked to indicate to what extent twenty-two factors had on her decision. These factors were based on the five variables presented in the theoretical framework. The extent of influence ranged from (3) greatly influenced, (2) influenced, (1) considered but no influence, and (0) not considered, no influence. The nurse was asked to indicate if there were other factors influencing her decision.

The last section of the questionnaire consisted of open-ended questions. These provided the nurse with an opportunity to expound on any of the previous sections. The nurse was asked, for example, if there was a difference between what method of heart rate detection she would use or thought she should use. These three components then: data information, hypothetical situations and open-ended questions comprise the questionnaire.

Validity and Reliability

Content validity is used to assure that the questionnaire was measuring what it was supposed to, specifically, decision making and the factors influencing the decision. The hypothetical situations were presented to some graduate students in the Maternal Nurse Practitioner Program, Helen L. Dulock (Perinatal Instructor), and Sandra Bryant (R.N., employed by an electronic monitoring company). Each was asked if the material presented in the situations was realistic and if there was enough information presented for a decision to be made. There was unanimous agreement on the final draft of the situations.

The theoretical framework of this study was presented to eight graduate nursing students in an advanced research class. The

questionnaire was then distributed to these students, and they were asked to indicate which of the five variables (knowledge, attitude, perception of peers' attitude, perception of patient's attitude, or perception of the hospital organization's policy and attitude) each factor represented. There was 100 percent agreement on twenty of the twenty-two factors. One person (12.5%) considered that availability of equipment was not a measurement of the organizational component. On the basis of these findings the tool was judged to be valid.

A test-retest method was used to establish reliability of the tool. Nurses employed in a hospital outside the sample area were used in this testing. All the subjects were registered nurses, employed at least four days a week in the obstetrical unit. The researcher went to the hospital where the nurses were employed, explained the study to the Head Nurse, and left two questionnaires for each of the twelve nurses meeting the requirements. The head nurse was instructed to distribute the first questionnaire immediately to the nurses, and the retest three weeks later. The questionnaires were to be returned to the investigator by mail.

Eight nurses (67%) returned the first questionnaire and six nurses (50%) returned the second questionnaire. However, only four nurses (33%) completed both tests. The first questionnaire and the second questionnaire from each of the four nurses were compared to determine test-retest reliability. Each situation was evaluated separately. Persons Product Moment Correlation (R) was used to statistically evaluate this correlation. Results are noted in Table 1.

Table 1. Measurement of Test-Retest Reliability

| Subject | Value of R Situations | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | .15* | .95 | .88 | .73 | .71 | .83 |
| 2 | .98 | .98 | 1.00 | .98 | + | + |
| 3 | .78 | .63 | .69 | .56 | + | + |
| 4 | .30* | .28 | .52** | .53** | .40* | .69 |

* indicates not significant
** indicates significant at the 5% level but not the 1%
\+ indicates questionnaire not completed

Looking at each individual and situation as a single entity, in fifteen of the twenty-one possibilities (71%) there was at least .01 significance. Situation One was the least reliable. There were no indications as to why this resulted. Results do indicate that internal consistency exists. Those subjects who had significant correlation in one situation tended to have significant correlation in the other situations and vice versa.

The results indicate that there is some question of the reliability of the tool. Time and lack of available subjects made further testing impossible.

Sample

Thirty-six hospitals met the initial requirements of listing obstetrical services, and being located in the 415 area code. These hospitals were contacted to obtain permission to use nurses from their organization in this study. Twelve of the hospitals contacted (33%) responded affirmatively, and fifteen hospitals (42%) stated they were

unable to participate in the proposed study. Three hospitals offered explanations for their refusal to participate. The reason included: 1) too many other projects occurring at this time; 2) staffing difficulty; and 3) lack of proper equipment to apply to the study. One hospital requested further information concerning the study for their research committee. This information was sent and permission was granted to use their facility.

The nine hospitals which did not return the reply card were contacted by telephone. Three of the hospitals agreed to participate and three refused. Two hospitals were not applicable for the study because there was a hospital policy to monitor all patients and therefore the nurses had no decision to make. One hospital had closed their obstetrical facility. A breakdown of the return responses are noted in Table 2.

Table 2. Response to Participation

| | Hospitals Participating | Hospitals Not Participating | Hospitals Not Applicable | Hospitals with No OB Service |
|---|---|---|---|---|
| No. | 15* | 18 | 2 | 1 |
| Percent | 42 | 50 | 6 | 2 |

* Two of the hospitals which agreed to participate were not applicable for this study, so there were 13 hospitals agreeable and applicable for the study.

The four hospitals who noted they were not applicable for the study were sent letters asking for additional information concerning how their policy was developed and who was responsible for establishing the policy. All four hospitals supplied this information. Three of the

hospitals indicated that the physician initiated the practice of externally monitoring all patients. The fourth hospital stated nurses, doctors, administration, and legal advice was responsible for this policy. All four hospitals noted that staff nurses enthusiastically supported the establishment of this policy.

Summary

Chapter Two explains the methodology, data collection, validity and reliability tests, and sample used in this study. A questionnaire composed of three sections: demographic data, hypothetical situations, and open-ended questions was developed and tested for content validity and test-retest reliability. Thirty-six hospitals were contacted to obtain permission to utilize nurses from their organization in this study. Thirteen hospitals (36%) agreed to participate and were applicable for this study. Four hospitals (11%) which were not applicable because there was a routine policy to monitor all patients, noted that the staff nurses supported this policy.

# Chapter Three

## Results and Conclusions

### Introduction

This chapter consists of three sections: results, conclusions, and implications for further study. The return rate of the questionnaire for each hospital is indicated. The process used to analyze the data and the results are shown for each section of the questionnaire. Conclusions based on these results and implications for further study are presented.

### Results

One hundred and thirty-eight questionnaires were distributed to nurses from the 13 hospitals in the sample. There were 77 usable questionnaires for a return rate of 55.8 percent. The results, as shown in Table 3, indicate that the percent of returned questionnaires seemed to be related to the type of hospital where the nurses were employed, and/or the person incharge of distributing and collecting the questionnaire.

Nurses employed at hospitals One and Two had greater than 70 percent returns. These hospitals employ more nurses, have more deliveries, and participate in more research than did most hospitals in this study. Hospital Ten had recently purchased fetal monitors and therefore, the topic of this study may have been particularly interesting to these nurses.

The percent of returned questionnaires by nurses in hospitals Four, Eleven, and Twelve was particularly low. These three hospitals did not reply to the original request to participate in the study, and had

to be contacted by telephone to obtain permission to utilize the facility. This probably indicates less than enthusiastic support for this study from the beginning. The individuals in hospitals Four and Eleven with whom the investigator met to discuss this study, showed this lack of enthusiasm; both kept the investigator waiting over thirty minutes for a scheduled appointment.

Talbe 3. Percent of Usable Questionnaires Returned

| Hospitals | No. of Questionnaires Distributed | No. Questionnaires Returned | Percent Returned |
|---|---|---|---|
| 1 | 16 | 15 | 94 |
| 2 | 17 | 12 | 71 |
| 3 | 11 | 7 | 64 |
| 4 | 11 | 3 | 27 |
| 5 | 11 | 6 | 55 |
| 6 | 7 | 3 | 43 |
| 7 | 10 | 8 | 80 |
| 8 | 7 | 4 | 50 |
| 9 | 10 | 5 | 50 |
| 10 | 10 | 8 | 80 |
| 11 | 11 | 2 | 18 |
| 12 | 11 | 2 | 18 |
| 13 | 6 | 2 | 33 |
| Total | 138 | 77 | 56 |

Demographic Data

The first part of the questionnaire was designed to elicit information regarding prior scientific and historical knowledge of the nurse. Historical knowledge involves one's experience and exposure to a given situation or object. A measurement of historical knowledge was obtained by noting the obstetrical work experience of the nurses. Scientific knowledge involves facts. Scientific knowledge, for this study, involves knowing the physiological process of labor

and delivery, principles involved in detecting fetal heart rate, and knowledge of the equipment which can be used. Scientific knowledge was measured by educational preparation and the number of inservice and/or workshops the nurses had attended on fetal monitoring. Frequency distributions were done on these data.

Results indicate that the 77 nurses worked in obstetrical units from three months to thirty-eight years, with a median of eight years. Length of employment in the obstetrical unit of the hospital of current employment varied from two months to twenty-two years. These data, as shown in Table 4, indicate that the majority of nurses have had much experience (historical knowledge) in obstetrics and their particular obstetric unit.

Nurses can be trained in three different programs which differ in the scope of knowledge presented. Associate degree programs are two years of education based on the skills and knowledge for direct patient care. Diploma programs are three years in length and are provided by a hospital or hospital-college combination. Nurses graduating from a diploma program: (1) know basic scientific principles, (2) have the understanding and skills necessary to organize and implement a plan of nursing care, and (3) are qualified to direct other members of the health team (NLN, 1970). The baccalaureate program is four years of nursing preparation. In addition to the knowledge of the other programs, the baccalaureate programs provide knowledge regarding decision making and change agent acitivity (NLN, 1973). Thus, the scope of knowledge obtained by nurses and the time of preparation is different for nurses graduating from the various nursing programs.

Table 4. Frequency Distribution of the Work Experience of the Nurses

| Months worked in O.B. | | Number of Nurses | Percent of Nurses |
|---|---|---|---|
| 0-36 | | 21 | 27 |
| 37-120 | | 23 | 30 |
| 121-204 | | 18 | 24 |
| 205-456 | | 15 | 10 |
| | Total | 77 | 100 |
| **Months worked in O.B. at Hospital Currently Employed** | | | |
| 0-36 | | 32 | 41 |
| 37-120 | | 27 | 35 |
| 121-204 | | 13 | 17 |
| 205-456 | | 3 | 4 |
| No Answer | | 2 | 3 |
| | Total | 77 | 100 |

Fifty-eight nurses (75%) in this study initially attended a diploma program. Forty-two nurses (55%) stated the diploma program was their final education. Tables 5 and 6 show the results of education preparation. This information was elicited for two reasons: (1) to get insight as to the educational preparation of nurses in this study, and (2) to determine if educational preparation influenced the decision of equipment uitlization or the factors influencing this decision.

Table 5. Frequency Distribution of Initial Nursing Preparation

| Type of Program | | No. of Nurses Prepared | Percent of Nurses Prepared |
|---|---|---|---|
| A.D. | | 4 | 5.2 |
| Diploma | | 58 | 75.3 |
| B.S. | | 14 | 18.2 |
| No Answer | | 1 | 1.3 |
| | Total | 77 | 100 |

Table 6. Frequency Distribution of Final Nursing Preparation

| Type of Program | No. of Nurses Prepared | Percent of Nurses Prepared |
|---|---|---|
| A.D. | 4 | 5.2 |
| Diploma | 42 | 54.5 |
| B.S. | 19 | 24.7 |
| Masters | 3 | 3.9 |
| No Answer | 9 | 11.7 |
| Total | 77 | 100 |

A cross tabulation was done between final education and months worked in obstetrics to obtain more information about the nurses in this study. Results show that A.D., diploma, and B.S. graduates are evenly distributed in terms of work experience. The masters prepared nurses however have all worked less than three years as shown in Table 7.

Table 7. Cross Tabulation of Months Worked in Obstetrics by Final Educational Preparation

| Months Worked in Obstetrics | A.D. | | Diploma | | B.S. | | Masters | |
|---|---|---|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent |
| 0-36 | 1 | 25 | 10 | 24 | 5 | 26 | 3 | 100 |
| 37-120 | 1 | 25 | 9 | 21 | 5 | 26 | 0 | - |
| 121-204 | 1 | 25 | 13 | 31 | 5 | 26 | 0 | - |
| 205-456 | 1 | 25 | 10 | 24 | 4 | 21 | 0 | - |
| Total | 4 | | 42 | | 19 | | 3 | |

Inservices and/or workshops are methods of providing current knowledge to nurses. The results of this study indicate that the modal number of nurses (39%) attended only one inservice or workshop on fetal monitoring. These results are shown in Table 8. These data were elicited to determine if inservice programs affect the decision making process regarding equipment utilization.

Table 8. Frequency Distribution of the Number of Inservice or Workshops Attended by Nurses on Fetal Monitoring

| No. of Programs Attended | No. of Nurses | Percent of Nurses |
|---|---|---|
| 0 | 7 | 9.1 |
| 1 | 30 | 39.0 |
| 2 | 16 | 20.8 |
| 3 | 6 | 7.8 |
| 4 | 2 | 2.6 |
| 5 | 2 | 2.6 |
| No Answer | 14 | 18.1 |
| Total | 77 | 100 |

Results show that the sample is distributed among the three shifts. Usually, more nurses are employed during the day shift, followed by evenings, then nights. The frequency distribution of the 77 nurses in this study, as shown in Table 9. follow this pattern. Therefore, the results of the study can be generalized to nurses working in obstetrics, regardless of what shift they work.

Table 9. Frequency Distribution of Nurses Employed by Shift

| Shift Worked | No. of Nurses | Percent of Nurses |
|---|---|---|
| Day | 28 | 36.4 |
| Evening | 21 | 27.3 |
| Nights | 16 | 20.8 |
| Rotate Two | 6 | 7.8 |
| Rotate Three | 2 | 2.6 |
| Other | 2 | 2.6 |
| No Answer | 2 | 2.6 |
| Total | 77 | 100 |

Results of the first section of the questionnaire show that the nurses in this study have much historical knowledge in obstetrics. The

median number of years worked in the obstetric unit were eight, and the median number of years worked at the hospital of current employment were five.

Scientific knowledge of the 77 nurses in this study are limited. Forty percent of the nurses had attended at most, one inservice or workshop on fetal monitoring. The majority of nurses (55%) graduated from a diploma program.

Results of Situations

The second section of the questionnaire was designed to answer the research question: what are the factors that influence a nurse's decision to use or not to use the external fetal monitor? These data were obtained by presenting six hypothetical situations in which each nurse was asked what method of fetal heart rate detection she would use, the external fetal monitor or fetal stethoscope, and what factors influenced this decision.

Data Processing

Frequency distributions for each situation were done to ascertain the number of nurses who reported a decision to use the external fetal monitor and the number who decided to use the fetal stethoscope. Next, to find out the characteristics of nurses chosing a particular method of fetal heart rate detection, cross tabulations of the method chosen for fetal heart rate detection by final education, number of inservice or workshops attended, and months worked in obstetrics were done.

Then, cross tabulations were performed between the method used for fetal heart rate detection and the factors influencing this decision. Thos nurses who did not indicate the method they would use or the

influence of the factors were omitted from this tabulation.

The twenty-two items presented in the questionnaire were grouped into the factors they represented, as presented in the theoretical framework. The five factors were: knowledge (KNOW), attitude (ATT), perception of peers' attitude (PEERS), perception of the patient's attitude (PTS), and perception of the hospital organization's attitude and policy (ORG), regarding the fetal monitor and fetal stethoscope. The degree of influence of these factors was noted as: (1) greatly influenced or influenced; (2) considered, no influence; and (3) not considered, no influence.

Cross tabulations of method chosen for fetal heart rate detection by degree of influence of the five factors were done for each situation. Chi square analysis was then done to see if there was a significant difference between the influence of the factors for the two groups of nurses. To determine the characteristics of nurses influenced by a given factor, cross tabulations of the influence of the factors by final education, number of inservices or workshops attended, and months worked in obstetrics were done.

## Results

The number of nurses who chose the external fetal monitor and those who chose the fetal stethoscope in each situation are noted in Table 10. These data indicate that the decision to use available equipment is dependent on the situation. In making a decision, nurses in this study examined each situation individually, as shown by the varying number of nurses chosing a particular method in a given situation.

Table 10. Frequency Distribution of the Method Chosen for Fetal Heart Rate Detection

| Situation | Nurses Who Chose The F.M. | | Nurses Who Chose the F.S. | | No Answer | Total |
|---|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | Percent | |
| 1 | 43 | 56 | 30 | 39 | 4 5 | 77 |
| 2 | 61 | 79 | 11 | 14 | 5 7 | 77 |
| 3 | 64 | 83 | 9 | 12 | 4 5 | 77 |
| 4 | 58 | 75 | 13 | 17 | 6 8 | 77 |
| 5 | 35 | 46 | 36 | 47 | 6 8 | 77 |
| 6 | 62 | 81 | 9 | 12 | 6 8 | 77 |

## Analysis

### Situation One

The first situation involved a twenty year old woman admitted in labor with a blood pressure of 134/86 and 1+ albumin in her urine. Her reflexes were normal. Although this patient had some of the characteristics of preeclampsia, she would not be classified as preeclamptic yet. Preeclampsia is a condition that affects both the mother and child and is diagnosed on the basis of increased blood pressure, weight gain, and albumin in the urine. This patient's blood pressure and urine protein are not high enough to definitely assess this condition. The conflict in this situation is due to the uncertainty of the patient's condition. The nurse could decide to use the fetal stethoscope and the outcome of this decision be utilitarian loss to mother and child. If the nurse was employed in a hospital where only high risk patients are monitored, the outcome could be disapproval by the hospital organization.

In this situation 56 percent of the nurses (N=43) chose the fetal monitor and 39 percent (N=30) the fetal stethoscope. Seventy percent of the nurses (N=14) working less than three years in obstetrics favored the fetal stethoscope, while at least 67 percent of the nurses working

more than three years chose the fetal monitor. The majority of nurses with diploma (N=24) or baccalaureate (N=11) education (63% and 58%) decided to use the fetal monitor. Sixty-seven percent (N=2) of the nurses with a master's degree favored the fetal stethoscope. Half the nurses with an associate degree (N=2) elected to use the fetal monitor and the other half the fetal stethoscope. Table 11. shows the method to detect fetal heart rate by the characteristics of the nurses.

Review of the first situation shows that presented with possible utilitarian loss to significant others, more nurses would use the external fetal monitor than the fetal stethoscope. Nurses who decided to use the fetal monitor tended to have worked more than three years in obstetrics and graduated from a diploma or baccalaureate nursing program.

Situation Two

In the second situation the major factor presented was a drop in the fetal heart rate to 110 immediately following a contraction. A fetal heart rate of 110 indicates bradycardia. The drop in the fetal heart rate indicates asphyxia following the stress of labor contractions. A fetal stethoscope is not effective to assess this condition because it does not correlate the fetal heart rate to the contraction. Using the fetal stethoscope is not effective to assess this condition because it does not correlate the fetal heart rate to the contraction. Using the fetal stethoscope would risk fetal well being. The outcome of using the fetal stethoscope is utilitarian loss to the mother and child. This patient would be considered high risk and not monitoring a high risk patient could result in disapproval by members of the hospital organization. Since the condition of the patient is clear, there is not

much conflict in this decision.

Table 11. Characteristics of the Nurses: According to Method Chosen to Detect Fetal Heart Rate: Situation One

| Characteristic | | Nurses Chosing F.M. | | Nurses Chosing F.S. | |
|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent |
| Obstetrical Work Experience | Months | | | | |
| | 0-36 | 6 | 30 | 14 | 70 |
| | 37-120 | 12 | 67 | 6 | 33 |
| | 121-204 | 14 | 70 | 6 | 30 |
| | 205-456 | 11 | 73 | 4 | 27 |
| | Total | 43 | | 30 | |
| Final Education | A.D. | 2 | 50 | 2 | 50 |
| | Diploma | 24 | 63 | 14 | 37 |
| | B.S. | 11 | 58 | 8 | 42 |
| | Masters | 1 | 33 | 2 | 67 |
| | Total | 38 | | 26 | |
| Number of Inservice Programs Attended on F.M. | 0 | 4 | 67 | 2 | 33 |
| | 1 | 19 | 66 | 10 | 34 |
| | 2 | 11 | 69 | 5 | 31 |
| | 3 or more | 7 | 47 | 8 | 53 |
| | Total | 41 | | 25 | |

Seventy-nine percent of the nurses (N=61) elected to use the fetal monitor in the second situation. Fourteen percent (N=11), of the 77 nurses in this study, chose the fetal stethoscope. Education, the number of inservice programs attended, and the amount of time worked in obstetrics were not significantly different for these two groups of nurses. The majority of nurses chose the fetal monitor despite their background.

This indicates that it is the circumstances presented in the situation that influence the decision more than the background of the nurse.

Situation Three

The third situation involved a patient admitted for elective induction of labor. Although no complications were presented in these data, inductions are usually considered high risk due to the medication which is used. Most hospitals' policies state that induced patients should be moritored. Therefore, the conflict presented in this situation involves utilitarian loss to the nurse due to disapproval by members of the hospital organization or utilitarian loss to the patients. Since this induction was elected and not being done for health reasons the nurses had to decide if the patient met the criteria for electronic monitoring. This decision could also be based on the fact that the patient is just beginning to contract.

More nurses chose the external fetal monitor in the third situation than in any of the other situations. Eighty-three percent of the nurses stated they would use the fetal monitor; twelve percent indicated they would use the fetal stethoscope.

Analysis of the third situation shows that most nurses would use the fetal monitor regardless of their level of educational preparation. All of the nurses who graduated from an A.D. (N=4) or Master's program (N=3) decided to use the fetal monitor. Ninety percent of the diploma graduates (N=35), 83 percent of the B.S. graduates, elected to use the fetal monitor.

Twenty-nine percent (N=2) of the nurses who had not attended any in-service or workshop programs chose the fetal stethoscope, compared to 10 percent or less by those nurses who attended the educational programs. The four nurses (22%) who worked more than ten years had a grater per-

centage of fetal stethoscope use than nurses (88%) who worked less than ten years. These results are shown in Table 12.

Results of the third situation show most nurses chose the external fetal monitor. Nurses who chose the fetal stethoscope were: (1) more often baccalaureate graduates, (2) had worked in obstetrics more than ten years, and (3) had not attended any inservice programs on fetal monitoring.

Situation Four

Situation four presented a woman admitted to labor 6cm dilated, fetal heart rate of 130/minute, and at forty weeks gestation. This indicates a relatively normal patient in active labor. However, this patient had one stillbirth due to postmaturity. Her history puts the patient in the high risk category. Therefore, the outcome of the nurse's decision would be disapproval by the hospital organization for not monitoring a high risk patient. The conditions which caused the stillbirth in the woman's first pregnancy are not present in this pregnancy, so the nurse must decide if the patient still meets the criteria for use of the external fetal monitor. This patient is a gravida two, 6cm dilated so delivery should be soon. The nurses must decide if it is worth the time to apply the electronic monitor. Review of the circumstances presented in this situation show that the patient would be considered high risk based on her history but circumstances are present that make a decision for either method of heart rate detection possible.

Seventy-five percent (N=58) of the nurses in this study indicated they would use the external fetal monitor to detect fetal heart rate. A greater percentage of nurses who worked over ten years (89%) stated they would use the fetal monitor than nurses who worked less than ten years as shown in Table 13. There was little difference between the two groups

of nurses based on education or the number of inservice programs attended.

Table 12. Characteristics of the Nurses: According to Method Chosen to Detect Fetal Heart Rate: Situation Three

| Characteristic | | Nurses Chosing F.M. | | Nurses Chosing F.S. | |
|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent |
| Obstetrical Work Experience | Months | | | | |
| | 0-36 | 20 | 95 | 1 | 5 |
| | 37-120 | 16 | 89 | 2 | 11 |
| | 121-204 | 14 | 78 | 4 | 22 |
| | 205-456 | 14 | 88 | 2 | 12 |
| | Total | 64 | | 9 | |
| Final Education | A.D. | 4 | 100 | 0 | - |
| | Diploma | 35 | 90 | 4 | 10 |
| | B.S. | 15 | 83 | 3 | 17 |
| | Masters | 3 | 100 | 0 | - |
| | Total | 57 | | 7 | |
| Number of Inservice Programs Attended on F.M. | 0 | 5 | 71 | 2 | 29 |
| | 1 | 26 | 90 | 3 | 10 |
| | 2 | 15 | 94 | 1 | 6 |
| | 3 or more | 9 | 90 | 1 | 10 |
| | Total | 55 | | 7 | |

Results of the fourth situation are different from those presented in the third situation. There were more definite risks in the third situation, yet, nurses working over ten years often used the fetal stethoscope. In contrast, this situation had less definite risks and those nurses who worked over ten years elected to use the fetal monitor.

This may be due to the experience of the nurses. Inductions, as presented in the third situation, were done long before the fetal monitor existed. Experienced nurses would be familiar with the procedure and functioning without a monitor. Knowledge that postmaturity can cause fetal death is relatively new. Therefore, nurses who worked over ten years may have assessed the patient in the fourth situation as high risk and elected to use the fetal monitor, but not have considered the induced patient as high risk and elected to use the fetal stethoscope.

RRble 13. Method used to Detect Fetal Heart Rate by Obstetrical Work Experience: Situation Four

| Month Worked in Obstetrics | Nurses Chosing F.M. | | Nurses Chosing F.S. | |
|---|---|---|---|---|
| | No. | Percent | No. | Percent |
| 0-36 | 15 | 79 | 4 | 21 |
| 37-120 | 13 | 72 | 5 | 28 |
| 121-204 | 16 | 89 | 2 | 11 |
| 205-456 | 14 | 88 | 2 | 12 |
| Total | 58 | | 13 | |

Situation Five

The patient in the fifth situation had the least complications of any patient presented. She was a gravida one, 7cm dilated, normal blood pressure and in active labor. The patient had been in labor eighteen hours which is longer than the usual 12-16 hour first stage labor of a primigravida. An outcome of the nurse's decision could be utilitarian loss to the patients following prolonged labor. Since the situation does not show an obvious risk to the patient the nurse must decide what method of fetal heart rate detection she considers appropriate.

The conflict results in that the method she selects may not be approved by her peers or members of the hospital organization. Although the situation presents a relatively normal patient the outcome of the nurse's decision could result in several conflicts.

Results indicate that this is the only situation where more nurses chose the fetal stethoscope than the fetal monitor. Forty-seven percent of the nurses (N=36) in this study chose the fetal stethoscope and 46 percent (N=35) chose the external fetal monitor.

One hundred percent of the nurses who had not attended any inservice programs and 70 percent (N=7) of the nurses who had attended three or more programs chose the fetal stethoscope. In contrast, 54 percent (N=15) of the nurses who attended one program and 75 percent (N=12) who attended two inservice programs chose the fetal monitor.

There were no significant differences between the method used for fetal heart rate detection and months worked in obstetrics in the fifth situation. Those nurses who worked between ten and seventeen years in obstetrics had the greatest percentage of fetal monitor use. Fifty-five percent (N=11) of the nurses who worked less than three years chose the fetal stethoscope. In comparison, 56 percent (N=10) of those who worked between four and ten years or (N=9) over seventeen years elected to use the fetal monitor.

The majority of nurses prepared in a diploma (56%) or masters (100%) elected to use the fetal stethoscope. Seventy-five percent of the nurses who graduated from an associate program (N=3) and 56 from a baccalaureate program (N=9) chose the external fetal monitor. These results are shown in Table 14.

A review of the results shown in the fifth situation indicate a

trend of equipment utilization that is based on the background of the nurses. Presented with a decision that has much conflict, nurses who have not attended inservice programs and have worked a short time in obstetrics chose the fetal stethoscope. Nurses who have worked a long time in obstetrics (10 to 17 years) and attended many inservice programs (3 or more) also elected to use the fetal stethoscope. It is those nurses in between, nurses who have worked from four to ten years and attended one or two inservice programs that chose the fetal monitor.

Situation Six

Situation six presented the most direct conflict of any situation. In this situation, the patient wanted a "natural" home delivery. However, upon admission to the hospital the fetal heart rate was noted at 100/minute. This indicates definite fetal distress. The possible outcomes of the decision on equipment used were: (1) disapproval by the patient, (2) utilitarian loss to the infant, (3) disapproval by the hospital organization for not monitoring a high risk patient, and (4) utilitarian loss to the nurse. This situation not only presented many conflicts but the risks involved are more definite than in the other situations.

Results show that of the 77 nurses in this study, 81 percent would use the external fetal monitor. There were no significant differences between the two groups of nurses on educational preparation, number of inservices attended, and months worked in obstetrics.

Table 14. Characteristics of the Nurses: According to Method Chosen to Detect Fetal Heart Rate: Situation Five:

| Characteristic | | Nurses Chosing F.M. | | Nurses Chosing F.S. | |
|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent |
| Obstetrical Work Experience | Months | | | | |
| | 0-36 | 9 | 45 | 11 | 55 |
| | 37-120 | 10 | 56 | 8 | 44 |
| | 121-204 | 7 | 41 | 10 | 59 |
| | 205-456 | 9 | 56 | 7 | 44 |
| | Total | 35 | | 36 | |
| Final Education | A.D. | 3 | 75 | 1 | 25 |
| | Diploma | 17 | 44 | 22 | 56 |
| | B.S. | 9 | 56 | 7 | 44 |
| | Masters | 0 | - | 3 | 100 |
| | Total | 29 | | 33 | |
| Number of Inservice Programs Attended on F.M. | 0 | 0 | - | 6 | 100 |
| | 1 | 15 | 54 | 13 | 46 |
| | 2 | 12 | 75 | 4 | 25 |
| | 3 or more | 3 | 30 | 7 | 70 |
| | Total | 30 | | 30 | |

Twelve percent of the nurses (N=9) elected to use the fetal stethoscope in this situation. Four of these nurses (24%) worked over seventeen years, 17 percent (N=3) graduated from a baccalaureate program, and 18 percent (N=2) had attended more than three inservice programs. These percentages are greater than the percentage of nurses who had less experience in obstetrics, graduated from a different nursing program, and attended less inservice programs. This would indicate that nurses with a high degree of education and experience in this situation put the patient's desires first in providing nursing care.

Factors Influence

Cross tabulations for each of the situations were done between method used to detect fetal heart rate and the degree of influence of the five factors. Nurses were divided into two groups: those who chose the external fetal monitor, and those that chose the fetal stethoscope. Chi square analysis was done on these cross tabulations. Additional cross tabulations were performed to determine the characteristics of nurses influenced by a certain factor.

Situation One

The cross tabulation for the first situation is noted in Table 15. The patient factor was the only one with significant results on chi square analysis. This situation which had a low degree of conflict, involved a patient with possible preeclampsia.

Results indicate that in the first situation the patient's attitude was a significantly more important factor affecting the decision making in favor of the fetal stethoscope, than the fetal monitor. Eight nurses (27%) who elected to use the fetal stethoscope stated this factor influenced their decision. The thirty of the nurses who chose the fetal monitor (71%) stated they had not considered the patient's attitude in their decision. The significance shown in the chi square analysis of the patient factor is due to the influence of the patient in the decision of those nurses who chose the fetal stethoscope, and the lack of considering the patient by those nurses who chose the external fetal monitor.

Table 15. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Factors: Situation One

| Factors | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| ORG | GI or I | 18 | 43 | 10 | 33 | .79 |
| | CNI | 4 | 9 | 3 | 10 | |
| | NCNI | 20 | 48 | 17 | 57 | |
| | Total | 42 | | 30 | | |
| ATT | GI or I | 13 | 31 | 4 | 13 | 5.35 |
| | CNI | 8 | 19 | 3 | 10 | |
| | NCNI | 21 | 50 | 23 | 77 | |
| | Total | 42 | | 30 | | |
| KNOW | GI or I | 25 | 60 | 11 | 36 | 4.06 |
| | CNI | 3 | 7 | 2 | 7 | |
| | NCNI | 14 | 33 | 17 | 57 | |
| | Total | 42 | | 30 | | |
| PEER | GI or I | 8 | 19 | 5 | 17 | .10 |
| | CNI | 6 | 14 | 4 | 13 | |
| | NCNI | 28 | 67 | 21 | 70 | |
| | Total | 42 | | 30 | | |
| PTS | GI or I | 1 | 3 | 8 | 27 | 11.53* |
| | CNI | 11 | 26 | 10 | 33 | |
| | NCNI | 30 | 71 | 12 | 40 | |
| | Total | 42 | | 30 | | |

Key:
GI or I --- greatly influenced or influenced
CNI --- considered, but no influence
NCNI --- not considered, no influence

*Significant at .01

There were no significant results on chi square analysis of the factors influencing the decision by background of the nurses. However, 10 percent of the nurses (N=2) who worked up to three years in obstetrics noted the patient factor influenced their decision compared to less than 5 percent (N=1) for nurses who worked over three years.

Results show that attitude, knowledge, and perception of the hospital organization's attitude were more influential on nurses who chose the fetal monitor than nurses who chose the fetal stethoscope. However, there were no significant differences between the two groups. Thirty-one percent (N=13) of the nurses who chose the fetal monitor stated their attitude influenced the decision, as compared to only 13 percent (N=4) of those nurses who chose the fetal stethoscope. Sixty percent (N=25) of the fetal monitor group indicated that their knowledge influenced the decision as compared to only 36 percent (N=11) of the fetal stethoscope group. Results indicate that knowledge became more important the longer the nurse worked in obstetrics. Forty-one percent (N=7) of the nurses who worked over seventeen years stated knowledge influenced their decision. Two of the nurses who graduated from A.D. programs (50%) and ten of the nurses who attended no inservice programs (35%) considered knowledge most influential as shown in Table 16. There was little difference between the two groups on the influence of their peers' attitude. The majority of nurses from both groups (67% and 70%) indicated this factor was not considered in their decision.

Analysis of the first situation indicate that there was a difference between the two groups concerning what information was considered in their decision. Over 50 percent of the fetal stethoscope group did not consider their attitude, knowledge, perception of their peers' attitude or

organization's attitude when making a decision. In contrast, 50 percent of the fetal monitor group did not consider their peers' or the patient's attitude. Thus, nurses who chose the external fetal monitor considered more information before making a decision than nurses who chose the fetal stethoscope.

Situation Two

Situation two involved a drop in the fetal heart rate immediately following a contraction. This indicates that the fetus is negatively affected by the stress of contractions. Only the fetal monitor can provide information of the infant's status during the stress of contractions. The outcome is very clear in this situation and there is little conflict.

Results, as shown in Table 17. indicate that knowledge became more important in the decision process for both groups in this situation. Sixty-two percent (N=38) of the nurses who chose the fetal monitor, and 55 percent (N=6) who chose the fetal stethoscope stated knowledge influenced their decision.

The difference between the two groups on the knowledge factor is best shown in the cross tabulation and chi square analysis of the knowledge item, "the other method would not provide the needed information", shown in Table 18. Results indicate that the nurses who chose the fetal monitor knew this method would provide them with information that could not be obtained with a fetal stethoscope.

Table 16. Cross Tabulation of Characteristics of the Nurses by Degree of Influence of the Knowledge Factor: Situation One

| Characteristics | NCNI | | CNI | | GI or I | |
|---|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | No. | Percent |
| Months Worked in Obstetrics | | | | | | |
| 0-36 | 6 | 30 | 13 | 65 | 1 | 5 |
| 37-120 | 6 | 35 | 6 | 35 | 5 | 30 |
| 121-204 | 3 | 17 | 9 | 50 | 6 | 33 |
| 205-456 | 2 | 12 | 8 | 47 | 7 | 41 |
| Total | 17 | | 36 | | 19 | |
| Final Education | | | | | | |
| A.D. | 1 | 25 | 1 | 25 | 2 | 50 |
| Diploma | 7 | 19 | 17 | 46 | 13 | 35 |
| B.S. | 3 | 16 | 13 | 68 | 3 | 16 |
| Masters | 1 | 33 | 1 | 33 | 1 | 33 |
| Total | 12 | | 32 | | 19 | |
| Number of Inservice Programs Attended on F.M. | | | | | | |
| 0 | 7 | 27 | 10 | 38 | 10 | 35 |
| 1 | 7 | 39 | 8 | 44 | 3 | 17 |
| 2 | 2 | 13 | 9 | 56 | 5 | 31 |
| 3 or more | 1 | 8 | 9 | 75 | 2 | 17 |
| Total | 17 | | 36 | | 20 | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

Table 17. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Factors: Situation Two

| Factors | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| ORG | GI or I | 25 | 41 | 3 | 27 | 1.14 |
| | CNI | 6 | 10 | 2 | 18 | |
| | NCNI | 30 | 49 | 6 | 55 | |
| | Total | 61 | | 11 | | |
| ATT | GI or I | 20 | 33 | 1 | 9 | 3.08 |
| | CNI | 7 | 12 | 1 | 9 | |
| | NCNI | 33 | 55 | 9 | 82 | |
| | Total | 60 | | 11 | | |
| KNOW | GI or I | 38 | 62 | 6 | 55 | 1.09 |
| | CNI | 3 | 5 | 0 | - | |
| | NCNI | 20 | 33 | 5 | 45 | |
| | Total | 61 | | 11 | | |
| PEER | GI or I | 14 | 23 | 2 | 20 | 6.87* |
| | CNI | 11 | 18 | 4 | 40 | |
| | NCNI | 36 | 59 | 4 | 40 | |
| | Total | 61 | | 10 | | |
| PTS | GI or I | 3 | 5 | 1 | 9 | .62 |
| | CNI | 13 | 21 | 3 | 27 | |
| | NCNI | 45 | 74 | 7 | 64 | |
| | Total | 61 | | 11 | | |

Key:
GI or I --- greatly influenced or influenced
CNI --- considered, but no influence
NCNI --- not considered, no influence

*Significant at .05

Table 18. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Knowledge Item

| Item | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| "The other method would not provide the needed information" | GI or I | 50 | 83 | 1 | 10 | 23.62* |
| | CNI | 1 | 2 | 1 | 10 | |
| | NCNI | 9 | 15 | 8 | 80 | |
| | Total | 60 | 100 | 10 | 100 | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence * Significant at .01

Cross tabulations between the background of the nurses by the knowledge factor indicate the characteristics of those nurses influenced by knowledge. In the second situation, 53 percent of the nurses (N=10) who worked between 10-17 years in obstetrics were influenced by knowledge compared to 32 percent (N=6) of the nurses who worked less than three years. One hundred percent of the nurses who graduated from an associate degree program indicated that knowledge influenced their decision, in contrast to less than 50 percent for the other nurses. Sixty percent (N=9) of the nurses who attended two workshops on fetal monitoring considered knowledge influential compared to less than 48 percent of the other nurses in this study.

There were significant results on the chi square analysis of the peer factor. The difference between the two groups was that more nurses who chose the fetal stethoscope (40%) considered their peers' attitude, as compared to 18 percent of the nurses who elected to use the fetal monitor.

Fifty-nine percent (N=36) of the fetal monitor group did not consider this factor in their decision. This was the only factor with significant chi square results.

Although organization and attitude were more important to nurses who chose the external fetal monitor, these factors were not considered by most nurses. Forty-nine percent (N=30) of the fetal monitor group and 55 percent (N=6) of the fetal stethoscope group did not consider the organization's attitude in their decision. If more nurses considered the organization's attitude towards this high risk situation, more nurses might have used the fetal monitor.

The patient's attitude was not considered by most of the nurses. This was indicated by 74 percent (N=45) of the nurses who chose the fetal monitor and 64 percent (N=7) who chose the fetal stethoscope. The patient's attitude was slightly more important to those nurses who chose the fetal stethoscope. Nine percent of the nurses who chose the fetal stethoscope stated the patient's attitude influenced their decision as compared to 5 percent of the nurses who elected to use the fetal monitor. In the second situation, 5 percent (N=1) of the nurses working less than three years indicated that the patient factor influenced their decision. None of the nurses working over three years were influenced by this factor.

In this second situation, over 50 percent of the nurses in both groups did not consider their attitude or the patient's attitude in the decision. Since results show that several of the factors were not considered, nurses made their decision without considering all the possible outcomes.

Situation Three

Results of the cross tabulation of the third situation are shown in Table 19. The chi square analysis indicated no significant differences between the two groups on the factors.

The third situation involved a patient electing to be induced. Inductions are usually considered high risk and many hospitals' policies state specifically that induced patients should be monitored. Therefore, the investigator hypothesized that more nurses would use the fetal monitor and the organization factor, which includes hospitals' policies, would be more influential than in other situations. This situation did have the greatest percentage of nurses (83%) who elected to use the external fetal monitor, and the organization factor was considered more in this situation than in any of the others. Fifty-one percent (N=31) of the nurses who chose the external fetal monitor stated this influenced their decision, compared to 33 percent (N=3) of the nurses who chose the fetal stethoscope. These results indicate that even though this was an elective procedure nurses sided with the hospital organization and its policy to monitor all induced patients.

Attitude was also more influential on the nurses who chose the fetal monitor. Thirty-nine percent (N=24) stated their attitude influenced the decision, while 78 percent (N=7) of the fetal stethoscope group did not consider this factor.

Nurses who chose the fetal monitor were influenced by the knowledge factor, as shown by the 65 percent (N=40) who stated knowledge influenced their decision. Only 44 percent (N=4) of the fetal stethoscope group noted knowledge influenced the decision. The cross tabulation of the items measuring knowledge show the fetal monitor group knew this method would provide

information that could not be obtained by use of the fetal stethoscope. These cross tabulations are shown in Table 20.

Table 19. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Factors: Situation Three

| Factors | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| ORG | GI or I | 31 | 51 | 3 | 33 | 2.08 |
| | CNI | 5 | 8 | 2 | 22 | |
| | NCNI | 25 | 41 | 4 | 44 | |
| | Total | 61 | | 9 | | |
| ATT | GI or I | 24 | 39 | 1 | 11 | 2.88 |
| | CNI | 7 | 11 | 1 | 11 | |
| | NCNI | 31 | 50 | 7 | 78 | |
| | Total | 62 | | 9 | | |
| KNOW | GI or I | 40 | 65 | 4 | 44 | 1.58 |
| | CNI | 3 | 5 | 1 | 11 | |
| | NCNI | 19 | 30 | 4 | 44 | |
| | Total | 62 | | 9 | | |
| PEER | GI or I | 15 | 24 | 2 | 22 | .93 |
| | CNI | 15 | 24 | 1 | 11 | |
| | NCNI | 32 | 52 | 6 | 67 | |
| | Total | 62 | | 9 | | |
| PTS | GI or I | 3 | 5 | 1 | 11 | 2.63 |
| | CNI | 14 | 24 | 4 | 44 | |
| | NCNI | 42 | 71 | 4 | 44 | |
| | Total | 59 | | 9 | | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

Table 20. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Knowledge Items

| Item | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| "This method would provide the needed information" | GI or I | 64 | 100 | 7 | 78 | 18.49* |
| | CNI | 0 | - | 1 | 11 | |
| | NCNI | 0 | - | 1 | 11 | |
| | Total | 64 | | 9 | | |
| "The other method would not provide the needed information: | GI or I | 54 | 87 | 2 | 25 | 17.92** |
| | CNI | 2 | 3 | 1 | 13 | |
| | NCNI | 6 | 10 | 5 | 62 | |
| | Total | 62 | | 8 | | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

*Significance = .000
**Significance = .001

The characteristics of those nurses influenced by the knowledge factor are shown in Table 21. One hundred percent of the A.D. nurses elected to use the fetal monitor and stated knowledge influenced their decision. Sixty-three percent (N=12) of the nurses who worked less than three years and 60 percent (N=9) who worked over seventeen years indicated knowledge influenced the decision. In comparison, less than 50 percent of the nurses who worked 4-17 years noted that knowledge influenced the decision.

Table 21. Crosstabulation of Characteristics of the Nurses by Degree of Influence of the Knowledge Factor: Situation Three

| Characteristics | NCNI | | CNI | | GI or I | |
|---|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | No. | Percent |
| Months Worked in Obstetrics | | | | | | |
| 0-36 | 0 | - | 7 | 37 | 12 | 63 |
| 37-120 | 2 | 11 | 8 | 44 | 8 | 44 |
| 121-204 | 2 | 11 | 7 | 39 | 9 | 50 |
| 205-456 | 0 | - | 6 | 40 | 9 | 60 |
| Total | 4 | | 28 | | 38 | |
| Final Education | | | | | | |
| A.D. | 0 | - | 0 | - | 4 | 100 |
| Diploma | 3 | 8 | 11 | 29 | 24 | 63 |
| B.S. | 1 | 6 | 10 | 59 | 6 | 35 |
| Masters | 0 | - | 2 | 67 | 1 | 33 |
| Total | 4 | | 23 | | 31 | |
| Number of Inservice Programs Attended on F.M. | 0 | - | 9 | 39 | 14 | 61 |
| | 1 | 20 | 8 | 40 | 8 | 40 |
| | 2 | - | 6 | 40 | 9 | 60 |
| | 3 or more | - | 5 | 42 | 7 | 58 |
| Total | 4 | | 28 | | 38 | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

There was little difference between the two groups on the peer factor. Most nurses, 52 percent who chose the fetal monitor (N=32) and 67 percent who chose the fetal stethoscope (N=6), did not consider their peers' attitude when making the decision.

The patient's attitude was again shown to be more important to nurses chosing the fetal stethoscope. Twice as many nurses who chose the fetal stethoscope stated the patient's attitude influenced their decision (11% to 5%). Forty-two nurses in the fetal monitor group, 71 percent, did not consider the patient's attitude when making the decision. More diploma graduates and nurses who worked over seventeen years in obstetrics stated this factor influenced their decision than other nurses in the study.

Analysis of the third situation indicates that attitude, knowledge and perception of the organization's attitude were more influential for nurses chosing the external fetal monitor. This group considered more information in making the decision than nurses who chose the fetal stethoscope. Perception of the patient's attitude was more important in the decision of those nurses chosing the fetal stethoscope.

Situation Four

The patient in the fourth situation had an obstetrical history of one stillbirth due to postmaturity. This pregnancy, now at forty weeks, had been normal. The conflicts were due to whether or not the nurse considered this patient as high risk and the hospital organization's policy of monitoring high risk patients. Results of the cross tabulation of the fourth situation are noted in Table 22. There were no significant results on chi square analysis.

The greatest difference between the two groups in the fourth situation was on the attitude factor. Eighteen nurses (32%) who chose the fetal monitor stated their attitude influenced the decision, but, none of the nurses who chose the fetal stethoscope indicated this was an influencing factor. Results show that 83 percent (N=10) of the fetal stethoscope group did not even consider their attitude in the decision.

Table 22. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Factors: Situation Four

| Factors | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.M. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| ORG | GI or I | 23 | 42 | 4 | 31 | .79 |
| | CNI | 6 | 11 | 1 | 8 | |
| | NCNI | 26 | 47 | 8 | 61 | |
| | Total | 55 | | 13 | | |
| ATT | GI or I | 18 | 32 | 0 | - | 5.31 |
| | CNI | 7 | 13 | 2 | 17 | |
| | NCNI | 31 | 35 | 10 | 83 | |
| | Total | 56 | | 12 | | |
| KNOW | GI or I | 43 | 59 | 5 | 38 | 4.04 |
| | CNI | 6 | 11 | 1 | 8 | |
| | NCNI | 17 | 30 | 7 | 54 | |
| | Total | 66 | | 13 | | |
| PEER | GI or I | 12 | 22 | 2 | 15 | .74 |
| | CNI | 12 | 22 | 2 | 15 | |
| | NCNI | 31 | 56 | 9 | 69 | |
| | Total | 55 | | 13 | | |
| PTS | GI or I | 8 | 14 | 3 | 23 | .80 |
| | CNI | 11 | 20 | 3 | 23 | |
| | NCNI | 37 | 66 | 7 | 54 | |
| | Total | 56 | | 13 | | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

A difference was also shown between the two groups on the knowledge factor. The majority of nurses who chose the fetal monitor (59%) stated knowledge influenced their decision; the majority of nurses who elected to use the fetal stethoscope (54%) stated they had not considered this factor. Further analysis show that nurses who indicated that knowledge

influenced their decision were most often: (1) A.D. graduates (75%), (2) had attended two inservice programs on fetal monitoring (56%), and (3) had worked over seventeen years in obstetrics (53%) as shown in Table 23.

Although most of the nurses stated the patient's attitude was not considered in the decision, the fetal stethoscope group noted it was more influential on them than on the fetal monitor group. Twenty-three percent (N=3) of the fetal stethoscope group stated the patient's attitude influenced the decision, compared to 14 percent (N=8) of the fetal monitor group. More nurses who worked less than three years (16%) stated the patient's attitude influenced their decision than any of the nurses in this study.

In analyzing the fourth situation, it is difficult to determine what bases was used by nurses who chose the fetal stethoscope in reaching a decision. The majority of this group did not consider any of the five factors in their decision. In contrast, knowledge was shown to be the primary factor for the nurses chosing the fetal monitor.

Situation Five

Situation five presented a normal obstetrical patient who had been in labor 18 hours. This situation had several conflicts. The use of the fetal monitor and fetal stethoscope were divided equally between the 77 nurses in this study. To determine the factors which influenced nurses to use a certain method of heart rate detection cross tabulations were done, as shown in Table 24. Two of the factors showed chi square analysis significant at the .05 level.

There was a significant difference between the two groups on the attitude factor. Attitude was much more influential for nurses chosing

the external fetal monitor, 28 percent (N=9) of these nurses stated attitude influenced their decision. In contrast 78 percent (N=28) of the fetal stethoscope group did not consider their attitude towards the equipment.

Table 23. Cross Tabulation of Characteristics of the Nurses by Degree of Influence of the Knowledge Factor: Situation Four

| Characteristics | NCNI | | CNI | | GI or I | |
|---|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | No. | Percent |
| Months Worked in Obstetrics | | | | | | |
| 0-36 | 5 | 26 | 7 | 37 | 7 | 37 |
| 37-120 | 5 | 28 | 8 | 44 | 5 | 28 |
| 121-204 | 3 | 17 | 7 | 39 | 8 | 44 |
| 205-456 | 1 | 7 | 6 | 40 | 8 | 53 |
| Total | 14 | | 28 | | 28 | |
| Final Education | | | | | | |
| A.D. | 0 | - | 1 | 25 | 3 | 75 |
| Diploma | 7 | 19 | 12 | 32 | 18 | 49 |
| B.S. | 3 | 17 | 10 | 56 | 5 | 28 |
| Masters | 2 | 67 | 0 | - | 1 | 33 |
| Total | 12 | | 23 | | 18 | |
| Number of Inservice Programs Attended on F.M. | | | | | | |
| 0 | 5 | 22 | 9 | 39 | 9 | 39 |
| 1 | 7 | 37 | 7 | 37 | 5 | 26 |
| 2 | 1 | 6 | 6 | 38 | 9 | 56 |
| 3 or more | 1 | 8 | 6 | 50 | 5 | 42 |
| Total | 14 | | 28 | | 28 | |

Key:

GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

Significant results were also shown on the patient factor. Twenty-two percent (N=8) of the fetal stethoscope group indicated this influenced their decision, compared to only 3 percent (N=1) of the fetal monitor group. The majority of nurses who chose the fetal monitor (80%) did not consider this factor. Perception of the patient's attitude was most influential to those nurses who had worked over seventeen years and graduated from an A.D. program.

Knowledge was more influential in the decision of those nurses who elected to use the fetal monitor. Eighteen of these nurses (56%) stated knowledge influenced their decision. In contrast, 53 percent (N=19) of the fetal stethoscope group did not consider this factor.

Cross tabulation of the nurses' background by influence of the knowledge factor show the characteristics of those nurses influenced by knowledge. Forty percent of the nurses (N=6) who worked over seventeen years noted knowledge influenced their decision compared to less than 20 percent of the other nurses.

There was little difference between the two groups on the organization and peer factors. The majority of the nurses in both groups did not consider these factors.

Analysis of the fifth situation shows perception of the patient's attitude as most influential on the nurses who chose the fetal stethoscope, and attitude and knowledge most influential on those who decided to use the fetal monitor. This situation which had many conflicts and had more significant chi square results on the influence of the factors by groups, than any of the other situations.

Table 24. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Factors: Situation Five

| Factors | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| ORG | GI or I | 11 | 36 | 10 | 28 | 1.38 |
| | CNI | 2 | 7 | 5 | 21 | |
| | NCNI | 17 | 57 | 21 | 58 | |
| | Total | 30 | | 36 | | |
| ATT | GI or I | 9 | 28 | 2 | 6 | 6.46* |
| | CNI | 3 | 9 | 6 | 16 | |
| | NCNI | 20 | 63 | 28 | 78 | |
| | Total | 32 | | 36 | | |
| KNOW | GI or I | 18 | 56 | 12 | 23 | 3.86 |
| | CNI | 4 | 13 | 5 | 14 | |
| | NCNI | 10 | 31 | 19 | 53 | |
| | Total | 32 | | 36 | | |
| PEER | GI or I | 5 | 16 | 6 | 17 | .08 |
| | CNI | 6 | 19 | 6 | 17 | |
| | NCNI | 20 | 65 | 24 | 66 | |
| | Total | 31 | | 36 | | |
| PTS | GI or I | 1 | 3 | 8 | 22 | 7.89** |
| | CNI | 5 | 17 | 11 | 31 | |
| | NCNI | 24 | 80 | 17 | 47 | |
| | Total | 30 | | 36 | | |

Key:

GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

* and ** are significant at .05

## Situation Six

Situation six presented the hypothetical situation of a patient being admitted to the hospital and fetal heart rate noted at 100/minute. The

Table 25. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Factors: Situation Six

| Facotrs | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| ORG | GI or I | 23 | 40 | 3 | 33 | .36 |
| | CNI | 7 | 12 | 1 | 11 | |
| | NCNI | 27 | 48 | 5 | 56 | |
| | Total | 57 | | 9 | | |
| ATT | GI or I | 16 | 28 | 0 | - | 3.42 |
| | CNI | 6 | 10 | 1 | 11 | |
| | NCNI | 35 | 62 | 8 | 89 | |
| | Total | 57 | | 9 | | |
| KNOW | GI or I | 37 | 64 | 3 | 33 | 2.93 |
| | CNI | 4 | 7 | 1 | 11 | |
| | NCNI | 17 | 29 | 5 | 56 | |
| | Total | 58 | | 9 | | |
| PEER | GI or I | 12 | 20 | 3 | 33 | 1.16 |
| | CNI | 14 | 24 | 1 | 11 | |
| | NCNI | 33 | 56 | 5 | 56 | |
| | Total | 59 | | 9 | | |
| PTS | GI or I | 5 | 9 | 6 | 67 | 20.15* |
| | CNI | 12 | 20 | 2 | 22 | |
| | NCNI | 42 | 71 | 1 | 11 | |
| | Total | 59 | | 9 | | |

Key:

GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence

*Significant at .01

normal fetal heart rate is 120-160 so this infant was in distress. However, the mother wanted a home birth, or natural course of labor. The factors influencing the decision of which equipment to use in this situation reflect the decisional conflict presented. The results are noted in Table 25.

The factor, perception of the patient's attitude, showed a significant difference between the two groups. Sixty-seven percent (N=6) of the fetal stethoscope group indicated this factor influenced their decision, while 71 percent (N=42) of the fetal monitor group did not consider the patient's attitude. These results show that those nurses who elected to use the fetal stethoscope put the patient's wants as the primary influence in the decision. A greater percentage of nurses who graduated from an A.D. program (25%) and had worked over seventeen years in obstetrics (27%), stated that the patient's attitude influenced their decision.

The primary influence of nurses who decided to use the external fetal monitor was knowledge. Sixty-four percent (N=37) of the fetal monitor group stated this factor influenced their decision, while 56 percent (N=5) of the fetal stethoscope group did not consider the knowledge factor. Cross tabulations and chi square analysis of two of the items measuring knowledge showed this difference. Again, nurses who elected to use the external fetal monitor indicated this method would provide them with information that could not be obtained with the fetal stethoscope. These results are shown in Table 26.

Table 26. Significance of Difference Between Method Chosen for Fetal Heart Rate Detection by Degree of Influence of Knowledge Items

| Item | Degree of Influence | Nurses Chosing F.M. | | Nurses Chosing F.S. | | $X^2$ |
|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | |
| "This method would provide the needed information" | GI or I | 56 | 97 | 5 | 56 | 26.74* |
| | CNI | 2 | 3 | 1 | 11 | |
| | NCNI | 0 | - | 3 | 33 | |
| | Total | 58 | | 9 | | |
| "The other method would not provide the needed information" | GI or I | 50 | 85 | 1 | 11 | 25.42* |
| | CNI | 5 | 8 | 2 | 22 | |
| | NCNI | 4 | 7 | 6 | 67 | |
| | Total | 59 | | 9 | | |

Key:
GI or I --- Greatly influenced or influenced
CNI --- Considered, no influence
NCNI --- Not considered, no influence *Significance at .0

The nurses who chose the external fetal monitor indicated that their attitude was more influential than nurses who chose the fetal stethoscope. Whereas 28 percent (N=16) of the fetal monitor group indicated their attitude influenced the decision, none of the fetal stethoscope group indicated this was an influencing factor. Results show that 89 percent (N=8) of the fetal stethoscope group did not even consider this factor.

The perception of their peers' attitude was slightly more important to those nurses who chose the fetal stethoscope. Thirty-three percent (N=3) of the nurses who chose the fetal stethoscope stated this factor influenced their decision compared to 20 percent (N=12) of the nurses who chose the fetal monitor. Fifty-six percent of the nurses in

both groups did not consider their peers' attitude.

The sixth situation presented a direct conflict between the patient's desires and her need for quality care. Nurses who chose the fetal monitor indicated their decision was influenced by knowledge and their attitude. Nurses who chose the fetal stethoscope indicated the patient's desires influenced them.

A review of the results from the second section of the questionnaire indicated that perception of the patient's attitude was the primary factor influencing the decision of nurses who chose the fetal stethoscope. In four of the six situations, more nudses graduating from an A.D. program indicated the patient's attitude influenced their decision more than nurses who graduated from any other program. It was those nurses who worked under three years or over seventeen years in obstetrics that noted the patient's attitude influenced their decision.

Knowledge and attitude were the primary factors which influenced the decision to use the external fetal monitor. Those nurses who most often noted knowledge influenced their decision were: (1) associate degree graduates, (2) had over seventeen years work experience in obstetrics, and (3) attended no inservice programs on fetal monitoring.

Results of this section of the questionnaire indicate that nurses did not consider all the possible outcomes before they made a decision. Nurses who elected to use the fetal monitor, who graduated from an A.D. program, and who worked over seventeen years in obstetrics, considered more of the outcomes than any of the other nurses.

The results can also be studies in terms of the total number of decisions made. Seventy-seven nurses participated in this study, and decided the method of fetal heart rate detection they would use in six hypothetical situations. Therefore, this study includes 462 decisions.

Results show that 323 of these decisions (70%) favored the external monitor; 108 (23%) favored the fetal stethoscope; and 31 times (75) no decisions were made.

Table 27. Characteristics of the Nurses by Method Chosen to Detect Fetal Heart Rate for the Total Study

| Characteristics | Nurses Chosing F.M. | | Nurses Chosing F.S. | | Total | |
|---|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | No. | Percent |
| Months Worked in Obstetrics | | | | | | |
| 0-36 | 86 | 71 | 35 | 29 | 121 | 100 |
| 37-120 | 80 | 75 | 27 | 25 | 107 | 100 |
| 121-204 | 83 | 77 | 25 | 23 | 108 | 100 |
| 205-456 | 74 | 78 | 21 | 22 | 95 | 100 |
| Total | 323 | | 108 | | 431 | |
| Findal Education | | | | | | |
| A.D. | 19 | 82 | 4 | 18 | 23 | 100 |
| Diploma | 173 | 75 | 57 | 25 | 230 | 100 |
| B.S. | 78 | 73 | 28 | 27 | 106 | 100 |
| Masters | 11 | 61 | 7 | 39 | 18 | 100 |
| Total | 281 | | 96 | | 377 | |
| Number of Inservice Programs Attended on F.M. | | | | | | |
| 0 | 27 | 69 | 12 | 31 | 39 | 100 |
| 1 | 131 | 76 | 42 | 24 | 173 | 100 |
| 2 | 81 | 85 | 13 | 15 | 94 | 100 |
| 3 or more | 44 | 73 | 16 | 27 | 60 | 100 |
| Total | 283 | | 83 | | 366 | |

Analysis of the total number of decisions indicates that 19 nurses who graduated from an A.D. program (82%), and 31 nurses (85%) who attended two inservice programs on fetal monitoring decided to use the external fetal monitor. These nurses had the greatest percentage of decisions that favored the fetal monitor. There was little difference between months worked in obstetrics and the nurses' decisions. The results of the total decisions by characteristics of the nurses is shown in Table 27.

Analysis of the individual nurse's decision making pattern indicates that the majority of nurses considered each situation separately. Only 19 of the 77 nurses (24%) chose the same method of fetal heart rate detection in all six situations. Eighteen of these 19 nurses consistently chose the external fetal monitor, and one nurse decided in favor of the fetal stethoscope in all six situations. There were no distinguishing characteristics of nurses who chose the same method continuously as shown in Table 28. The one nurse who consistently decided in favor of the fetal stethoscope in all six situations was a baccalaureate graduate who had worked over seventeen years in obstetrics.

Analysis of those nurses who consistently decided in favor of the fetal monitor indicates that these nurses had much experience in obstetrics and attended many inservice programs on fetal monitoring. Those nurses who worked less than three years (N=3, 14%) and attended no inservice programs on fetal monitoring (N=0) had the lowest percentage of consistent fetal monitor use.

Further analysis was done on the decision making pattern of the nurses in this study. Table 29. shows the number of nurses who chose the fetal monitor in how many of the situations.

Table 28. Characteristics of Nurses who Chose the External Fetal Monitor in All Six Situations

| Characteristics | Number of Nurses | Percent of Nurses | Toal Number of Nurses in Study |
|---|---|---|---|
| 0-36 | 3 | 14 | 21 |
| 37-120 | 5 | 21 | 23 |
| 121-204 | 5 | 27 | 18 |
| 205-456 | 5 | 33 | 15 |
| Total | 18 | | 77 |
| **Final Education** | | | |
| A.D. | 1 | 25 | 4 |
| Diploma | 10 | 25 | 42 |
| B.S. | 4 | 20 | 19 |
| Masters | 0 | 0 | 3 |
| Total | 15 | | 68 |
| **Number of Inservice Programs Attended on F.M.** | | | |
| 0 | 0 | 0 | 7 |
| 1 | 7 | 26 | 30 |
| 2 | 7 | 45 | 16 |
| 3 or more | 3 | 30 | 10 |
| Total | 17 | | 63 |

Table 29. Frequency Distribution of Pattern of Method Chosen for Fetal Heart Rate Detection

| No. of Situations in Which the F.M. was Used | No. of Nurses | Percent of Nurses |
|---|---|---|
| 0 | 1 | 1 |
| 1 | 2 | 3 |
| 2 | 2 | 3 |
| 3 | 10 | 13 |
| 4 | 14 | 18 |
| 5 | 18 | 23 |
| 6 | 18 | 23 |

It is of interest that nurses (N=18) who chose the fetal monitor in five of the situations, chose the fetal stethoscope in situation five or situation one only. Situation one presented uncertain risks and moderate

conflict, and situation five was low risks and high conflict. Of the 18 nurses who only elected to use the fetal stethoscope once, 44 percent (N=8) used it in situation five and 33 percent (N=6) used it in situation one.

Results of the Open-Ended Questions

The last section of the questionnaire was designed to clarify information from the previous two sections. A frequency distribution was done on these data.

In the second section nurses were asked to indicate their decision based on the method of fetal heart detection they would use. In this section nurses were asked if there was a difference between what they would use and thought they should use. Thirty-one nurses (41%) replied yes, and 28 (36%) replied no.

Nurses were then asked why there was a difference. The most frequent response, given by 28 nurses, was "the internal monitor should be used in certain situations". Table 30 shows for each situation the number of nurses who indicated they should use an internal monitor by groups. It is of interest to note that in the sixth situation 17 percent of the nurses who chose the fetal stethoscope indicated they should use an internal monitor. The internal monitor is an invasive procedure. The nurses who decided to use the fetal stethoscope indicated the patient's attitude influenced their decision so these results are surprising. It was assumed that if they would not use an external monitor due to the patient's attitude, they surely would not use the internal monitor. More nurses who chose the fetal stethoscope indicated that they should have used an internal monitor in the fifth situation than in any other situation. This is also surprising since this is the most "normal"

patient presented.

Table 30. Nurses Indicating They "Should" Use an Internal Monitor by Groups

| Situations | Nurses Who Chose the F.M. | | Nurses Who Chose the F.S. | | Total |
|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | |
| 1 | 21 | 88 | 3 | 12 | 24 |
| 2 | 22 | 96 | 1 | 3 | 23 |
| 3 | 22 | 96 | 1 | 4 | 23 |
| 4 | 19 | 86 | 3 | 14 | 22 |
| 5 | 11 | 50 | 11 | 50 | 22 |
| 6 | 19 | 83 | 4 | 17 | 23 |

Other common answers are as follows:

"There are not, or may not be enough monitors available." This response was noted more by nurses who chose the fetal monitor than those who chose the fetal stethoscope in all six situations.

"I must use what the physician prefers, or need a physician's order."

In those situations which were high risk (2,3,4, and 6) this response was most often cited by nurses who used the fetal monitor. In situations One and Five more nurses who decided to use the fetal stethoscope made this comment.

Examples of the responses are as follows:

"Any time I find a slow or irregular fetal heart rate I prefer the internal monitor for a more accurate tracing that is not influenced by fetal or maternal movement."

"Availability would be the determining factor; there might be a choice between which of two patients should have the only available monitor."

Next nurses were asked if this was a nursing decision. Only two nurses (3%) indicated it was not a nursing decision. In four of the situations one of these nurses decided to use the fetal monitor and the other the fetal stethoscope. In situations four and six, both of which are high risk, these two nurses used the fetal monitor. Twelve nurses (16%) stated they were with the patient more and should use their judgement. An example of the response given is the following:

> "If I feel safer for the patient's sake in using the fetal monitor then I think I have the right to use it, unless the doctor wants to come and do the worrying about the whole situation."

Nurses were then asked what risks are encountered in making this decision. This was another means of determing what factors the nurse must consider in making a decision. Twenty-two nurses stated there were no risks in using the fetal monitor, the risk came from not using it and getting a stressed baby. This is an example of a utilitarian loss for significant others, as described by Janis. It is of interest that even though nurses responded there was a risk to the patients in not using the fetal monitor, some nurses in each situation still decided to use the fetal stethoscope. Eleven nurses mentioned disapproval of the physician as a possible risk. This indicates disapproval of a significant other. One nurse noted peer pressure and another nurse stated that not knowing how to interpret the monitor tracing was a possible risk. It is of interest to note that four of the five variables in the theoretical framework were mentioned in this section. Sixteen nurses said there were no risks in making this decision.

Examples of the type of responses made are:

"When in doubt, I would use the monitor and the only 'risk' I would encounter is that one of our doctors might say that he did not think it was necessary."

"By using the external fetal monitor I can effectively determine the well being of a fetus. If I were to depend more heavily on the stethoscope I take the chance of not diagnosing a compromised fetus".

The last section of the questionnaire made reference to all five of the factors mentioned in the theoretical framework. Nurses noted that they got information from these five factors and realized some of the consequences this information had on their decision. This was seen, for example, in that nurses risked disapproval of the doctor (an organization factor) in making their decision. Nurses also stated that utilitarian loss to significant others, mother and infant, could result by using the fetal stethoscope (Knowledge factor).

Conclusions

Results show that the decision of which equipment to use differs with the situation. Those situations which presented definite physiological risks (2,3,4 and 6) had the greatest percentage of fetal monitor usage. The decision making pattern of the individual nurse also supports the use of the external monitor in high risk situations. Nurses who did not use the fetal monitor consistently, decided in favor of the fetal monitor in high risk situations.

The amount of type of conflict also affected the nurses' decisions. Situations which presented external conflicts (2,3,4 and 6) had a greater percentage of decisions favoring the external fetal monitor than the

situations with internal conflicts.

Knowledge and the attitude of the nurses were the influencing factors in the decision of those nurses who decided to use the external fetal monitor. These results were shown in all six situations. In contrast, perception of the patient's attitude was the influencing factor of the decisions made by those nurses who decided to use the fetal stethoscope in all six situations.

Results show that nurses who graduated from an A.D. program (N=4) considered both their knowledge and the patient's attitude in the decision. Associate degree graduates acknowledged a greater percentage of influence from these two factors than did nurses from any other program. Decision making is presented in the curriculum of the baccalaureate program and therefore it was thought that they would consider more factors than nurses graduating from other programs. The data from this study show that this conjecture is not true; nurses graduating from A.D. nursing programs utilize more factors than B.S. nurses in their decision-making.

Nurses who worked over seventeen years in obstetrics considered knowledge and the patient's attitude more than the other nurses in this study. Even though these nurses considered both factors, results show they still used the fetal stethoscope more than the fetal monitor. This indicates that these nurses put the patient's attitude over knowledge that could be obtained by using the fetal monitor.

Knowledge, attitude, and perception of the patient's attitude are the primary factors in the nurse's decision to use or not to use the fetal monitor. This has several implications for the introduction of equipment into the hospital.

Since knowledge is influential in the nurse's decision to utilize available equipment, to promote quality care by consistent equipment utilization, knowledge must be stressed. Nine percent of the nurses in this study (N=7) had not attended a single inservice or workshop on equipment they are exposed to daily. This is particularly alarming considering the great number of programs available. Educational programs would be one way of increasing a nurse's scientific knowledge. This could be accomplished by providing time and money for nurses to attend such programs. Several manufactures will provide in-house conferences concerning their equipment at no charge to the hospital. This would expose many nurses to the needed information. Since these nurses are stable in their jobs, the hospitals are not confronted with training personnel and losing their investment. Special attention needs to be focused on those nurses who have worked in obstetrics a long time. They particularly need this information. Knowledge can make a difference in equipment utilization, and is important to promote quality patient care.

Perception of the patient's attitude has been shown to be a primary factor in nurses' decisions regarding equipment utilization. Unfortunately, little has been written on how patients feel about equipment, so the nurse is left to assume. An article was published after this study, which explored the patient's response to the fetal monitor (Dulock and Herron, 1976). Dulock noted that <u>after</u> delivery, 26 of the patients (85%) responded positively to the monitor. Seventy-seven percent made some positive comment on the monitor assisting them in labor, and 90 percent made positive comments on hearing or seeing the fetal heart rate.

This is important information for those nurses who assume patients will not like the monitor. If nurses realize that with effective orientation patients can view the fetal monitor positively, a more consistent use of the fetal monitor would result and subsequently a higher quality of patient care.

Finally, this study has shown a need to teach nurses how to make decisions. Nurses need to know more than just the patient's physical condition to make a decision. Knowledge of decision making and consideration of all the possible outcomes of a decision should be used by all nurses.

Implications for Further Study

There are several implications for further study that are based on the research tool. At the time of this study nurses could not apply the internal monitor and therefore, had no decision as to its use. Currently, several hospitals are in the process of establishing guidelines to allow nurses to apply the internal scalp electrode. Therefore, to make future studies consistent with current practice nurses should be given the option to chose the fetal stethoscope, external fetal monitor, or internal fetal monitor.

The situations presented in this study need to be revised before the study is replicated. Too many of the situations presented high risk patients; four of the six situations were high risk. Situations should be ranked from high risk to low risk so that the decision process can be compared and contrasted to this factor.

The conflicts presented in this study also need to be revised. Future studies should include more direct conflicts. Examples of the types of conflicts that should be included are the nurse and her peers

and the nurse and the doctor.

The time element of the decision is also important. Do nurses decide to use one method of fetal heart rate detection at a certain time, knowing that they will use another method later? Therefore, one suggestion would be to develop a time series questionnaire. The nurses would be asked what method they would use and then asked if at a later time or under what circumstances they would make another decision.

The items used to measure the factors influencing the nurses' decisions needs further testing. The items for a given factor did not give consistent results. Two of the knowledge items, "this method would provide the needed information" and "the other method would not provide the needed information were frequently noted as influencing the nurses' decisions. The other two knowledge items were seldom mentioned as influencing the nurses' decisions.

The results of this study have several implications for future research. The factor, perception of the patient's attitude, was more influential for nurses who chose the fetal stethoscope than for nurses who chose the external fetal monitor. However, in only one situation were the patient's wants stated. This indicates that the nurses were assuming what the patients wanted. More research is needed concerning what the patient does want in terms of care and how the patient perceives this care. Fetal monitoring is only one procedure used in providing patient care so, the implications for further study on patients' feelings towards their care are numerous.

## Summary

This chapter has dealt with the results, conclusions, and implications for further study. Results were accomplished by using frequency distributions, cross tabulations, and chi square analysis. Results indicate that knowledge, attitude, and perception of the patient's attitude are the primary factors in the nurse's decision to use or not to use the external fetal monitor. Educational programs and more information concerning patients' views on equipment are needed to increase equipment utilization. Nurses need to be taught how to make decisions. Implications for further study include revising the tool, improving the reliability, and conducting more research of the patient's feelings towards the use of equipment.

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## Appendix A

May 22, 1976

Dear

I am a registered nurse currently attending graduate school at the University of California San Francisco, School of Nursing. This letter is to request your participation in a research study to determine what factors influence a nurse's decision to use or not use available patient care equipment. The study has the approval of the Committee on Human Research of the University of California, San Francisco Medical Center. Each year millions of dollars are spent on hospital equipment, researching the effectiveness of this equipment, and educating nurses to its proper usage. However, equipment is only effective when it is used. The results of this study will indicate what factors must be stressed to obtain optimal equipment usage, and thus promote quality patient care.

The fetal monitor is the specific piece of hospital equipment being investigated. Therefore, I am requesting the participation of hospitals in Northern California that have an obstetrical unit and the available equipment, the fetal monitor. I will be gathering the data by means of a questionnaire, distributed to the individual nurse working regularly on an obstetrical unit.

Participation in this study requires the following:

1. Arrange a meeting with the appropriate personnel (Director of Nursing, Head Nurse of Labor and Delivery, etc.) to discuss the purpose of the study and means of data collection.

2. Provide the nurses with a twenty minute period to complete the questionnaire. The distribution and collection of the data will be done by the head nurse at a time convenient with the patient load and nurse staffing.

Your participation in this study will be greatly appreciated.

Enclosed is a postcard for your reply. Upon receipt of the postcard I will be in contact with the person designated.

If there are any questions, please feel free to contact me at 681-3558.

Sincerely,

Vicki Ann Schwartz, R.N.
Graduate Nursing Student

## Appendix B

### CONSENT FORM

A study to ascertain the factors influencing nurses' decisions in the use of available equipment is being conducted by Vicki Schwartz, R.N., a graduate student at the University of California, San Francisco. You are being asked to participate in this study. You were chosen on the basis of a selection of nurses who work regularly in a hospital obstetrical setting.

Participation in this study requires you to comply with the following:

1. Supply background information on yourself and your work experience.
2. Complete a questionnaire concerning the factors that influence your decision to use specific equipment in your work.
3. Place this information in the attached envelope and return it to your head nurse. (This information is confidential and available only to the researcher. You are asked to put your name on the data sheet so the investigator can interview you later if necessary. However, if you wish, you may remain anonymous by omitting your name from the data sheet.)
4. Participate in an interview with the researcher if indicated. You will be personally contacted regarding this at a later date, if necessary.

I understand that I may withdraw from this study at any time without penalty and/or jeopardy to my professional employment.

I understand that there is no monetary benefit for participating in this study, and that I will be notified of the results.

Thank you very much for your help and participation.

Nurse's Signature_____ Date_____

## Appendix C

## QUESTIONNAIRE

DESCRIPTION: This questionnaire consists of six hypothetical situations in which a nurse might find herself. You are asked to indicate which method, external fetal monitor or fetal stethoscope, you would use for detecting the fetal heart rate for each situation. Both methods are to be considered available and in working condition. Would use means the method you would actually put into practice, not what you think you should use. The last part of each situation consists of a list of 22 factors that a nurse might consider in making her decision to use either the external fetal monitor or fetal stethoscope.

INSTRUCTIONS: For each situation do the following:

1. Read the situation.
2. Place a mark (X) in front of the method you would use to detect fetal rate.
3. Read the first possible factor. Indicate the extent to which you may have been influenced in your decision by circling (3) if Greatly Influenced, (2) if Influenced, (1) if Considered but No Influence, and (0) if Not Considered and No Influence.

   GREATLY INFLUENCED --- (3) indicated that this factor is a primary reason for your decision.

   INFLUENCED --- (2) Indicated that this factor is some basis for your decision.

   CONSIDERED BUT NO INFLUENCE --- (1) indicates that you thought of this factor but it had no basis for your decision.

   NOT CONSIDERED AND NO INFLUENCE --- (0) indicates that you have not thought of this factor and it had no basis for your decision.

4. Continue on through the rest of the 22 possible factors considering each factor as a separate item.

5. Write in, in the space provided, any factor which you considered that was not listed.

EXAMPLE: Here is an example:

A primigravida is admitted to the hospital in early labor, three centimeters dilated. There are no known complications.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE:

___external fetal monitor ___X___fetal stethoscope

Suppose that you would use the fetal stethoscope. Then mark (X) on the line in front of fetal stethoscope.

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

This is the method the physician would order. 3 (2) 1 0

Suppose that this is some basis for your decision. Then you would circle (2), influenced.

I like this method the most. (3) 2 1 0

Suppose this is the primary reason for your decision. Then you would circle (3), greatly influenced.

## Appendix D-1

## DATA INFORMATION SHEET

1. Name: _____

2. Number of years you have worked in obstetrics: _____

3. Number of years employed in obstetrics at this particular hospital: _____

4. Education: (please check initial nursing program attended)

   _____A.D. program  _____Baccalaureate program

   _____Diploma program  _____Masters program

5. Education: (Please check last nursing program attended)

   _____A.D. program  _____Baccalaureate program

   _____Diploma program  _____Masters program

6. Work setting: (please check appropriate answer)

   _____day shift  _____rotate two shifts

   _____evening shift  _____rotate three shifts

   _____night shift  _____other (please explain

7. Please note any inservice programs or workshops you have attended concerning fetal monitoring:

Appendix D-2

A 20 year old primigravida patient is admitted in labor at 4:00 PM. She is 5cm dilated, maternal blood pressure of 134/86, fetal heart rate of 130/minute, and intact membranes. Labor began at 11:00 AM. There has been trace albumin in her urine throughout her pregnancy. Upon admission the urine has been +1 albumin. Reflexes are normal.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE: ___external fetal monitor

___fetal stethoscope

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

(3) - Greatly Influenced (2) - Influenced (1) - Considered but No Influence
(0) - Not Considered, No Influence

| | | | | |
|---|---|---|---|---|
| This is the method the physician would order. | 3 | 2 | 1 | 0 |
| I dislike the other method. | 3 | 2 | 1 | 0 |
| This method would provide me with the needed information. | 3 | 2 | 1 | 0 |
| Most of the nurses on my unit would disapprove of the other method. | 3 | 2 | 1 | 0 |
| This is the method the patient would like. | 3 | 2 | 1 | 0 |
| The other method is not readily available at this hospital. | 3 | 2 | 1 | 0 |
| I feel like a better nurse when I use this method. | 3 | 2 | 1 | 0 |
| I am unsure of using the other method. | 3 | 2 | 1 | 0 |
| Most of the nurses on my unit would use this method. | 3 | 2 | 1 | 0 |
| The other method is uncomfortable for the patient. | 3 | 2 | 1 | 0 |
| Hospital policy would require me to use this method. | 3 | 2 | 1 | 0 |
| I would feel like a bad nurse if I used the other method. | 3 | 2 | 1 | 0 |
| I am skillful in using this method. | 3 | 2 | 1 | 0 |
| Most of the nurses on my unit would not use the other method. | 3 | 2 | 1 | 0 |
| This method is most comfortable for the patient. | 3 | 2 | 1 | 0 |
| The physician would not order the other method. | 3 | 2 | 1 | 0 |
| I like this method the most. | 3 | 2 | 1 | 0 |
| The other method would not provide me with the needed information. | 3 | 2 | 1 | 0 |
| Most of the nurses on my unit would approve of this method. | 3 | 2 | 1 | 0 |
| The patient would not like the other method. | 3 | 2 | 1 | 0 |
| This method is readily available at this hospital. | 3 | 2 | 1 | 0 |
| Hospital policy would require me not to use the other method. | 3 | 2 | 1 | 0 |
| Other reason:_____. | 3 | 2 | 1 | 0 |

Appendix D-3

A 21 year old primigravida is admitted at 2:00 PM to labor and delivery. Labor began at 8:00 AM. On admission the patient was 4cm dilated, fetal heart rate of 130/minute, intact membranes, and contracting every four minutes. At 4:00 PM you check fetal heart rate immediately following a contraction and get a rate of 110/minute. She is now 6cm dilated and contracting every three minutes.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE: ___external fetal monitor

___fetal stethoscope

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

(3) - Greatly Influenced (2) - Influenced (1) - Considered but No Influence
(0) - Not Considered, No Influence

| | |
|---|---|
| This is the method the physician would order. | 3 2 1 0 |
| I dislike the other method. | 3 2 1 0 |
| This method would provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would disapprove of the other method. | 3 2 1 0 |
| This is the method the patient would like. | 3 2 1 0 |
| The other method is not readily available at this hospital. | 3 2 1 0 |
| I feel like a better nurse when I use this method. | 3 2 1 0 |
| I am unsure of using the other method. | 3 2 1 0 |
| Most of the nurses on my unit would use this method. | 3 2 1 0 |
| The other method is uncomfortable for the patient. | 3 2 1 0 |
| Hospital policy would require me to use this method. | 3 2 1 0 |
| I would feel like a bad nurse if I used the other method. | 3 2 1 0 |
| I am skillful in using this method. | 3 2 1 0 |
| Most of the nurses on my unit would not use the other method. | 3 2 1 0 |
| This method is most comfortable for the patient. | 3 2 1 0 |
| The physician would not order the other method. | 3 2 1 0 |
| I like this method the most. | 3 2 1 0 |
| The other method would not provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would approve of this method. | 3 2 1 0 |
| The patient would not like the other method. | 3 2 1 0 |
| This method is readily available at this hospital. | 3 2 1 0 |
| Hospital policy would require me not to use the other method. | 3 2 1 0 |
| Other reason:_____. | 3 2 1 0 |

Appendix D-4

A 22 year old primigravida is admitted to labor and delivery. She is 39 weeks gestation. Due to holidays coming up the patient has chosen to have her labor induced. L/S ratios indicates a mature fetus. Her cervix is soft and 50% effaced. I.V. pitocin has begun and contractions are just beginning. Contractions are every six minutes lasting approximately thirty seconds. The fetal heart rate is 130/minute upon admission.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE: ___external fetal monitor

___fetal stethoscope

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

(3) - Greatly Influenced (2) - Influenced (1) - Considered but No Influence
(0) - Not Considered, No Influence

| | |
|---|---|
| This is the method the physician would order. | 3 2 1 0 |
| I dislike the other method. | 3 2 1 0 |
| This method would provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would disapprove of the other method. | 3 2 1 0 |
| This is the method the patient would like. | 3 2 1 0 |
| The other method is not readily available at this hospital. | 3 2 1 0 |
| I feel like a better nurse when I use this method. | 3 2 1 0 |
| I am unsure of using the other method. | 3 2 1 0 |
| Most of the nurses on my unit would use this method. | 3 2 1 0 |
| The other method is uncomfortable for the patient. | 3 2 1 0 |
| Hospital policy would require me to use this method. | 3 2 1 0 |
| I would feel like a bad nurse if I used the other method. | 3 2 1 0 |
| I am skillful in using this method. | 3 2 1 0 |
| Most of the nurses on my unit would not use the other method. | 3 2 1 0 |
| This method is most comfortable for the patient. | 3 2 1 0 |
| The physician would not order the other method. | 3 2 1 0 |
| I like this method the most. | 3 2 1 0 |
| The other method would not provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would approve of this method. | 3 2 1 0 |
| The patient would not like the other method. | 3 2 1 0 |
| This method is readily available at this hospital. | 3 2 1 0 |
| Hospital policy would require me not to use the other method. | 3 2 1 0 |
| Other reason:_____. | 3 2 1 0 |

Appendix D-5

A 24 year old gravida 2, para 0 patient is admitted in labor. She is 6cm dilated, fetal heart rate is 130/minute, maternal blood pressure is 120/80. Her first pregnancy was 42 weeks gestation and resulted in a stillbirth. She is 40 weeks gestation with this pregnancy. Her prenatal course has been normal.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE: ___external fetal monitor

___fetal stethoscope

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

(3) - Greatly Influenced (2) - Influenced (1) - Considered but No Influence
(0) - Not Considered, No Influence

| | |
|---|---|
| This is the method the physician would order. | 3 2 1 0 |
| I dislike the other method. | 3 2 1 0 |
| This method would provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would disapprove of the other method. | 3 2 1 0 |
| This is the method the patient would like. | 3 2 1 0 |
| The other method is not readily available at this hospital. | 3 2 1 0 |
| I feel like a better nurse when I use this method. | 3 2 1 0 |
| I am unsure of using the other method. | 3 2 1 0 |
| Most of the nurses on my unit would use this method. | 3 2 1 0 |
| The other method is uncomfortable for the patient. | 3 2 1 0 |
| Hospital policy would require me to use this method. | 3 2 1 0 |
| I would feel like a bad nurse if I used the other method. | 3 2 1 0 |
| I am skillful in using this method. | 3 2 1 0 |
| Most of the nurses on my unit would not use the other method. | 3 2 1 0 |
| This method is most comfortable for the patient. | 3 2 1 0 |
| The physician would not order the other method. | 3 2 1 0 |
| I like this method the most. | 3 2 1 0 |
| The other method would not provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would approve of this method. | 3 2 1 0 |
| The patient would not like the other method. | 3 2 1 0 |
| This method is readily available at this hospital. | 3 2 1 0 |
| Hospital policy would require me not to use the other method. | 3 2 1 0 |
| Other reason:_____. | 3 2 1 0 |

Appendix D-6

A 25 year old primigravida is admitted to labor and delivery at 2:00 PM. Labor began with spontaneous rupture of the membranes at 8:00 PM. The fluid was clear color. Contractions are now every five minutes, lasting forty-five seconds. She is 7cm dilated, 100% effaced, maternal blood pressure of 126/82, and fetal heart rate of 120/minute.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE: ___external fetal monitor

___fetal stethoscope

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

(3) - Greatly Influenced (2) - Influenced (1) - Considered but No Influence
(0) - Not Considered, No Influence

| | |
|---|---|
| This is the method the physician would order. | 3 2 1 0 |
| I dislike the other method. | 3 2 1 0 |
| This method would provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would disapprove of the other method. | 3 2 1 0 |
| This is the method the patient would like. | 3 2 1 0 |
| The other method is not readily available at this hospital. | 3 2 1 0 |
| I feel like a better nurse when I use this method. | 3 2 1 0 |
| I am unsure of using the other method. | 3 2 1 0 |
| Most of the nurses on my unit would use this method. | 3 2 1 0 |
| The other method is uncomfortable for the patient. | 3 2 1 0 |
| Hospital policy would require me to use this method. | 3 2 1 0 |
| I would feel like a bad nurse if I used the other method. | 3 2 1 0 |
| I am skillful in using this method. | 3 2 1 0 |
| Most of the nurses on my unit would not use the other method. | 3 2 1 0 |
| This method is most comfortable for the patient. | 3 2 1 0 |
| The physician would not order the other method. | 3 2 1 0 |
| I like this method the most. | 3 2 1 0 |
| The other method would not provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would approve of this method. | 3 2 1 0 |
| The patient would not like the other method. | 3 2 1 0 |
| This method is readily available at this hospital. | 3 2 1 0 |
| Hospital policy would require me not to use the other method. | 3 2 1 0 |
| Other reason:_____. | 3 2 1 0 |

Appendix D-7

A 27 year old primigravida is admitted to labor and delivery at 7:00 PM, 6cm dilated. The couple wanted a natural home delivery however, the contractions became too painful and they came into the hospital. Labor began at 12:00 PM. Membranes are intact, maternal blood pressure is 110/70, and the fetal heart rate is 100/minute.

CHECK WHICH OF THE FOLLOWING YOU WOULD USE: ___external fetal monitor

___fetal stethoscope

CIRCLE THE NUMBER INDICATING HOW EACH FACTOR INFLUENCED YOUR DECISION:

(3) - Greatly Influenced (2) - Influenced (1) - Considered but No Influence
(0) - Not Considered, No Influence

| | |
|---|---|
| This is the method the physician would order. | 3 2 1 0 |
| I dislike the other method. | 3 2 1 0 |
| This method would provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would disapprove of the other method. | 3 2 1 0 |
| This is the method the patient would like. | 3 2 1 0 |
| The other method is not readily available at this hospital. | 3 2 1 0 |
| I feel like a better nurse when I use this method. | 3 2 1 0 |
| I am unsure of using the other method. | 3 2 1 0 |
| Most of the nurses on my unit would use this method. | 3 2 1 0 |
| The other method is uncomfortable for the patient. | 3 2 1 0 |
| Hospital policy would require me to use this method. | 3 2 1 0 |
| I would feel like a bad nurse if I used the other method. | 3 2 1 0 |
| I am skillful in using this method. | 3 2 1 0 |
| Most of the nurses on my unit would not use the other method. | 3 2 1 0 |
| This method is most comfortable for the patient. | 3 2 1 0 |
| The physician would not order the other method. | 3 2 1 0 |
| I like this method the most. | 3 2 1 0 |
| The other method would not provide me with the needed information. | 3 2 1 0 |
| Most of the nurses on my unit would approve of this method. | 3 2 1 0 |
| The patient would not like the other method. | 3 2 1 0 |
| This method is readily available at this hospital. | 3 2 1 0 |
| Hospital policy would require me not to use the other method. | 3 2 1 0 |
| Other reason:_____. | 3 2 1 0 |

Appendix D-8

In completing this questionnaire you were asked to answer what method of fetal heart rate detection you would use. In any of these situations did you feel you should use a different method? _____(please explain)

Why is there a difference between what you would use and what you think you should use?

To what extent do you think it is a nursing decision to use or not use the external fetal monitor?_____

What risk do you encounter in making your decision to use or not use the external fetal monitor?

## Appendix E

Thank you for your help and participation in my study; "Factors Influencing the Nurse's Decision to Use or Not Use the External Fetal Monitor."

The questionnaire is to be completed by each nurse individually. There are no "correct" or "incorrect" answers. Once you have completed the questionnaire, place it in the enclosed self-addressed envelope, seal it, and return the envelope to_____.

Please check your name off the list below once you have returned the completed questionnaire.

Thank you again.

Vicki Ann Schwartz, R.N.