Pregnancy outcome of the elderly primipara
by Linda Jo Geiger

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University
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Abstract:
The purpose of this study was to identify risk factors which occurred more frequently to the Elderly Primipara (EP) and her infant, when compared to the Younger Primipara (YP). The hypotheses tested were H1 -there will be a greater incidence of reproductive risk factors in the EP when compared to a matched sample of YPs, as well as H2 - there will be a greater incidence of perinatal risk factors in infants of EPs when compared to YPs.

A retrospective survey design was utilized for data collection. Existing risk surveys developed by a local health department and the University of Montana's Speech, Hearing, and Language Clinic and medical records were used to gather data on the incidence of risk factors affecting the primipara and her infant. The population included 62 EPs giving birth from November 1, 1978 to February 1, 1985 and a matched sample of YPs. Data were analyzed by the use of frequency tables, chi square and t-tests.

Results indicated that certain risk factors were found to be significantly higher in the EP group.

These factors were incidence of cesarean section, combined pre-existing illnesses, and congenital anomalies. A risk factor of notable concern but not significantly higher in the EP were perinatal mortality. Variables that were not statistically significant but had higher frequencies in the EP group compared to the YP group were toxemia, meconium staining of amniotic fluid, forceps delivery, birth related lacerations, length of labor, malpresentation, and Apgar score. Variables that had higher frequencies in the YP group or were equal to the EP group were abruptio placenta, prematurity, post maturity, Large for Gestational Age (LGA), and placenta previa.

The results of this study demonstrated that the EP still has a higher likelihood than the YP of expressing certain risk factors more frequently. However, with good antenatal care and active management of labor, an elderly primipara and her child can fare well.

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

Master

of

Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

November 1985

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ABSTRACT

The purpose of this study was to identify risk factors which occurred more frequently to the Elderly Primipara (EP) and her infant, when compared to the Younger Primipara (YP). The hypotheses tested were H_1 - there will be a greater incidence of reproductive risk factors in the EP when compared to a matched sample of YPs, as well as H_2 - there will be a greater incidence of perinatal risk factors in infants of EPs when compared to YPs.

A retrospective survey design was utilized for data collection. Existing risk surveys developed by a local health department and the University of Montana's Speech, Hearing, and Language Clinic and medical records were used to gather data on the incidence of risk factors affecting the primipara and her infant. The population included 62 EPs giving birth from November 1, 1978 to February 1, 1985 and a matched sample of YPs. Data were analyzed by the use of frequency tables, chi square and t-tests.

Results indicated that certain risk factors were found to be significantly higher in the EP group. These factors were incidence of cesarean section, combined pre-existing illnesses, and congenital anomalies. A risk factor of notable concern but not significantly higher in the EP were perinatal mortality. Variables that were not statistically significant but had higher frequencies in the EP group compared to the YP group were toxemia, meconium staining of amniotic fluid, forceps delivery, birth related lacerations, length of labor, malpresentation, and Apgar score. Variables that had higher frequencies in the YP group or were equal to the EP group were abruptio placenta, prematurity, post maturity, Large for Gestational Age (LGA), and placenta previa.

The results of this study demonstrated that the EP still has a higher likelihood than the YP of expressing certain risk factors more frequently. However, with good antenatal care and active management of labor, an elderly primipara and her child can fare well.

CHAPTER 1

INTRODUCTION

Background and Rationale for Study

According to Westoff (1976), "more and more American couples are successfully planning the timing as well as limiting the size of their families" (p. 38). There is evidence that women are postponing marriage and couples are delaying parenthood (Sklar, 1975). The National Center for Health Statistics (1971, 1979) reports that from 1971 to 1979, women having their first births increased by 9.6% in women 30-34 years of age, and 5.2% in women 35-39. This trend is expected to rise in the 1980s (Sklar, 1975).

Couples have made decisions to delay a family for a variety of reasons, including career and educational attainment, buildup of their financial resources, time to grow and mature as individuals as well as couples (Bing & Coleman, 1980; Daniels, 1979). Kessler (1970) reports the single most significant factor for delaying childbirth is delayed marriage.

A woman can bear a child anytime from the onset of menstruation in the early teens until menopause in the late 40s or early 50s. Most authors (Blum, 1979; Booth, 1964; Haire, 1982; Howley, 1981; Kessler, 1980; Morrison, 1974; Nortman, 1974) have defined the elderly primipara (EP) as a

woman aged 35 years or more at her first delivery. Within this span of potential reproductivity, questions arise regarding minimum as well as maximum risk involved in bearing a child.

Since more and more couples are delaying parenthood, they want to learn about the health risks to both mother and baby. The EP is routinely included on lists for screening that examine physiologic as well as psychosocial risks (Haire, 1982). Determining the degree of risk may be more difficult, since statistical evidence and recent research in the United States about the effects of age are limited and results are inconsistent.

Nortman (1974) states "the rationale for trying to isolate the influence of parental age on pregnancy outcome is that age differentials persist even as the level of risk introduced by other variables is reduced" (p. 3). These variables include cultural practices, genetic disposition, nutrition, medical care, income, health and hygiene.

Butnarescu (1978) suggests that the professional nurse interested in the care of pregnant and yet to be pregnant families are key figures who play a large and important role in the efforts toward achieving a healthy reproductive outcome. The nurse is in a position to counsel the couple about the risks involved in conceiving a baby later in life. The nurse should be aware of the unique needs of the EP in completing his/her on-going assessments and nursing

care. According to Howley (1981), the nurse should include a discussion about cesarean delivery in preparing the couple for labor and delivery. Alment (1970) states the practitioner should be prepared to manage the particular needs and potential complications of the EP. Because so much emphasis is placed on the high risk of pregnancy after 35 years of age, the nurse should ensure that provisions are made to deal with the emotional consequences of high-risk pregnancy. In conclusion, the nurse has the responsibility for planning nursing care in response to clearly identified and validated individual and family needs unique to each reproductive risk situation (Butnarescu, 1978). Because nurses can play an important role in reducing reproductive risk for the EP, further documentation of the incidence of risk factors in this age group can have a significant impact on nursing intervention.

Purpose

The aim of this study was to identify the incidence of risk factors which occur more frequently in the primipara 35 years of age and older and her offspring, when compared to the younger primipara (YP).

Three areas were studied and variables related to these areas were investigated in order to accomplish the purpose. The first area was maternal morbidity and mortality, which included pre-existing medical conditions such as essential hypertension, uterine fibroids, sexually

transmitted diseases and diabetes mellitus, as well as pregnancy-induced hypertension or heart disease. The second area was perinatal mortality and morbidity. Variables examined in this area included prematurity, congenital anomalies, and gestational age. The course of labor and delivery was the third area which may affect perinatal mortality and morbidity. Length of labor, incidence of birth related laceration, use of anesthesia, narcotics, and forceps were also examined as variables that influence maternal and perinatal outcome.

Statement of Hypothesis

In order to accomplish the purpose of this study, the following hypotheses were tested:

H_1 There will be a greater incidence of reproductive risk factors in the EPs when compared to a matched sample of YPs.

H_2 There will be a greater incidence of perinatal risk factors in infants of EPs when compared to YPs.

Definition of Terms

Mortality Rate: The death rate and number of deaths in relation to a specific population (Jensen, 1977).

Morbidity Rate: The condition of being diseased and number of cases of disease or sick persons in relation to a specific population (Jensen, 1977).

Perinatal: Refers to the fetus from the twenty-eighth week of gestation to the newborn until he/she leaves the hospital (Jensen, 1977).

High Risk: Having an increased possibility of suffering harm, damage, loss or death (Jensen, 1977).

Elderly Primipara (EP): A woman giving birth to an infant at the point of viability (28 weeks or older) for the first time at 35 years of age or more (Morrison, 1974).

Prematurity: An infant born before the thirty-eighth week of gestation, regardless of birth weight (Jensen, 1977).

Presentation: That part of the fetus which first enters the pelvis and lies over the inlet. Left occiput anterior is considered to be the most favorable (Jensen, 1977).

Malpresentation: The faulty presentation of the fetus to include breech, transverse, brow or face (Jensen, 1977).

Small for Gestational Age (SGA): The inadequate growth of the fetus for his/her gestational age included in the lower 10th percentile of ranges for gestational age (Battaglia, 1967; Jensen, 1977).

Large for Gestational Age (LGA): The excessive growth of the fetus for his/her gestation age included in the upper 10th percentile of ranges for gestational age (Battaglia, 1967; Jensen, 1977).

Toxemia: A disease encountered during pregnancy or early in the puerperium characterized by increasing hypertension, albuminuria, and generalized edema. Referred to also as pre-eclampsia and pregnancy induced hypertension

(Jensen, 1977; Reeder, 1980).

Abruptio Placenta: A partial or complete separation of a normally implanted placenta (Jensen, 1977).

Placenta Previa: A placenta which is implanted in the uterine segment so that it adjoins or covers the internal os of the cervix (Reeder, 1980).

Congenital Anomaly: Absence, deformity, or extra body parts present at and existing from the time of birth (Miller, 1972; Reeder, 1980).

Length of Labor: Labor begins from the onset of regular contractions and lasts to the delivery of the fetus (Jensen, 1977).

Laceration: An irregular tear of tissue caused by childbirth; it refers to a tear in the perineum, vagina, or cervix (Jensen, 1977).

Young Primipara (YP): A woman giving birth to an infant at the point of viability (28 weeks or older) for the first time at 20-34 years of age.

Apgar Score: A method for determining an infant's physiologic condition at birth by scoring the heart rate, respiratory effort, muscle tone, reflex irritability and color (Miller, 1972).

Summary

The number of women delaying childbirth until 35 years of age and older is increasing and this trend is expected to continue. The purpose of this study was to identify risk

factors which occurred more frequently to the EP and her infant when compared to the YP. A thorough knowledge base regarding the problems of the older primipara will enhance the nurses' ability to assist the pregnant family in achieving the best possible outcome.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

Conceptual Framework

In order to investigate the hypotheses which proposes that there will be a greater incidence of risk factors in the EP and her infant, the literature reviewed included categories and concepts pertaining to reproductive risk. The levels and scope of reproductive risk will be discussed and related to the concept of reproductive morbidity and mortality. The section will be concluded by discussing the relationship of nursing intervention to the concept of risk, morbidity and mortality.

The Concept of Risk

Pillitteri (1985) states "a high risk infant is one who is born with less ability or chance to survive, or a greater chance to be left with a permanent handicap, either psychosocial or physiologic, than the average child." A high risk pregnancy is one in which some maternal factors, either psychological or physiological, are apt to result in the birth of a high risk infant or in some way harm the woman herself.

Childbearing (Jensen, 1977) is a normal physiologic function and, for most women and their offspring, pregnancy and birth represent a physically and emotionally safe

process. The delivery of a high risk infant, in contrast, is usually an event associated with great fear and anxiety (Roberts, 1977). Such fear and anxiety may influence the parent-child relationship for years to come.

Categories of Risk

Reproductive risk can be viewed in four categories: psychosocial, economic, genetic,and biophysical. These categories can assist the health care professional in screening and treatment of the prospective mother and/or her infant at risk. The age of the mother can directly or indirectly be considered in all four categories.

Psychosocial risk. A relationship between age of the mother and infant mortality is reported consistently by authors (Jensen, 1977; Olds, 1980; Pillitteri, 1985; Reeder, 1980). For the pregnant teenager, risks that the baby will be stillborn, die soon after birth, or be born with low-birth-weight are much higher than those women giving birth in their 20s (Reeder, 1980). For the older woman bearing her first child after the age of 34, an increased occurrence of toxemia (Kessler, 1980), perinatal mortality (Morrison, 1975), congenital anomalies (Goldberg, 1979), and prematurity (Kajanaja, 1978) are seen.

Behavioral risk factors that influence childbearing outcome include the mother's use of tobacco, alcohol, and drugs. Smoking by the prospective mother is linked with growth retardation (Reeder, 1980). Fetal alcohol syndrome

is found in infants whose mothers consumed moderate to large amounts of alcohol (Pillitteri, 1985). Mothers who are drug addicted deliver infants who are Small for Gestational Age (SGA) and experience withdrawal symptoms after birth (Pillitteri, 1985).

The role of ethnicity is apparent with non-whites faring much worse than whites in perinatal outcome. The relative differential is actually rising between the two groups (Reeder, 1980). Although race may have some bearing on perinatal outcome, socioeconomic differences appear to be the more significant factor (Jensen, 1978; Reeder, 1980).

Pregnancy outcome can be influenced by life events and life crises (Reeder, 1980). Events such as divorce, illness, death of a significant other, and job loss are referred to here. Supportive relationships from the nuclear as well as the extended family are important considerations in assessing the pregnant woman and her child.

Economic risk. Indicators of economic status such as family income, education of mother and father, and ethnicity can be risk factors in pregnancy (Reeder, 1980). Low-income individuals are considerably more predisposed to lowered health status and obstetrical complications during pregnancy (Reeder, 1980). One of the most important factors related to low economic status is undernutrition. Undernutrition has an effect on fetal brain development, low birth weight, and hypertensive disorders (Reeder, 1980). The high cost of

health care as well as availability of services can be viewed as risk factors. The type of health insurance coverage and need for long-term hospitalization can indirectly affect the outcome of the pregnancy.

There is a strong correlation between socio-economic status and age of the mother. Older parents tend to be more educated and/or have higher family incomes than families with younger parents (Reeder, 1980).

Genetic risk. The category of genetic risk includes such factors as maternal and paternal history of inherited diseases. The implication of a genetic disorder run the gamut from a nuisance, such as color blindness, to varying degrees of morbidity, including sickle cell anemia, and fatal diseases, such as Tay-Sachs disease, ancenphaly, hydrocephalous, and various heart anomalies (Gabbe, 1981; Reeder, 1980).

There is an increased incidence of chromosomal abnormalities with advanced age (Goldberg, 1979; Reeder, 1980). The most common condition caused by an extra chromosome is Down's Syndrome. These infants have physical deformities as well as defective mentality. With recent advances in fetal diagnosis and elective abortion, the risk of giving birth to a Down's Syndrome child is considerably reduced (Goldberg, 1979).

Biophysical risk. Biophysical risks include pre-existing disorders which the prospective mothers may

have, such as essential hypertension, diabetes mellitus, cardiovascular disease, sexually transmitted diseases, obesity and/or genito-urinary conditions. When a woman enters pregnancy with a chronic health problem, the course of a normal pregnancy imposed on these disease conditions can cause complications either of the disease process, or with the pregnancy and fetal health. These effects are magnified with age.

Following conception, complications of pregnancy, labor, and delivery may seriously jeopardize the health of both the mother and her unborn infant. Complications that result from pregnancy are hemorrhagic conditions including placenta previa and abruptio placenta, pregnancy induced hypertension, premature rupture of the membranes and hyperemesis gravidarum. Risks associated with labor and delivery are malpresentation, cephalopelvic disproportion, uterine dysfunction, and hemorrhage which result from laceration, use of forceps, dystocia and cesarean section.

The infant can be affected by birth trauma, anoxia and respiratory distress syndrome. Perinatal risk can be directly related to any complication from the mother's pregnancy, labor, and delivery. For example, when the mother experiences pregnancy-induced hypertension, the infant has an increased chance of being small for gestational age, hypoglycemic and polycythemic. When premature labor occurs, the infant has a higher risk of

developing respiratory distress syndrome (Reeder, 1980). Steward (1954) states that reproductive capacity declines with advancing age. This author suggests that labor becomes more difficult due to the increased rigidity of the pelvis and less reserve power of the uterus.

Age can influence all four categories of risk. Researchers (Goldberg, 1979; Reeder, 1980; Steward, 1954) state that the genetic and biophysical categories of risk are adversely affected by age. Age can also be a positive factor when assessing risk in the pregnant unit.

Levels of Risk

Even the medically or obstetrically healthy woman carries a certain degree of risk because of the inability to predict or control unknown or unexpected outcome variables. Butnarescu (1978) prefers to consider reproductive risk a dynamic rather than a static concept, which may see the health status of mother or fetus change at any time. Risk should be viewed as a scale, ranging from little or no risk to the pregnant unit to death of one or more members. Classifying risks into levels of minimum, moderate, or maximal assist health professionals determine the type of care needed.

Butnarescu (1978) defines levels of risk as the following:

Minimum risk is believed to exist whenever there

is a potential for little or no damage to the pregnant unit. Should damage occur, it is of short-term duration or does not interfere with optimal long-range functioning. An example is an EP who is experiencing some moderate bleeding for 3-4 days in her second trimester.

Moderate risk is the concept used to describe an increase in the number or complexity of variables that combine to require increased prenatal supervision and therapy in order to maintain or restore health. A situation that may describe moderate risk is an EP who has developed pregnancy induced hypertension in her second trimester.

Maximal risk refers to an increase in the number and complexity of variables of such magnitude that there is likelihood of damage or death of the pregnant unit. To illustrate maximal risk the EP as described above now has experienced premature rupture of membranes in her seventh month of pregnancy.

Scope of Reproductive Risk

Jensen (1977) reports approximately 3.5 million pregnancies in North America reach viability each year, but of these at least 45,000 fetuses fail to survive. Another 40,000 infants die during the first few months of life, and about the same number of babies have congenital anomalies. Pregnancy and delivery complications are responsible to some degree for approximately 90,000 mentally retarded individuals. Brain damage from perinatal injury can lead to

conditions such as cerebral palsy, mental retardation, epilepsy, and developmental abnormalities.

Perinatal mortality exceeds that of all other causes of death combined until 65 years of age (Wilner, 1973). When viewed in this perspective, high risk pregnancy presents one of the most critical and urgent problems of modern medicine and nursing.

Reproductive risk is costly to the individual, the family, and society in relation to the expenditures of material as well as human resources. The costs of long-term maintenance are staggering for children who have birth defects or are mentally retarded; similar costs occur when premature or low-birthweight infants require long-term hospitalization in a Neonatal Intensive Care Unit (Butnarescu, 1978). Minimal insurance coverage is available for pregnancies that are catastrophic in nature. This leaves the brunt of the cost on the families, the hospitals, the community and, lastly, society through tax support.

The cost related to the expenditures of human resources is less easily computed. The cost of stress to the family at risk and the pain and suffering of a damaged child, and the loss to society of a productive human being, must also be considered (Butnarescu, 1978).

The concepts of reproductive risk are integrated in combining and weighing risk factors. Scoring systems have been devised (Fogel, 1981; Gabbe, 1981; Jensen, 1978) to

assess the woman during her pregnancy or her infant shortly after birth for risk. It is apparent that the pregnant unit may be at greater risk because of certain factors when contrasted with others. An accumulation of factors with less weight can also be indicative of high risk.

Factors such as diabetes mellitus or toxemia for prospective mothers, and prematurity or respiratory distress syndrome for the neonate, indicate morbidity and have potential for mortality. Factors such as a cesarean section or prolonged labor for the pregnant woman, and malpresentation or meconium staining of amniotic fluid for the infant indicate a potential for morbidity.

The Relationship Between Nursing Intervention and Risk

Professional nurses are in a key role to decrease reproductive risk in families, and can assist them in obtaining the optimal birth experience. Nurses interface with all aspects of health care and have the knowledge and skills to provide care to pregnant families. The professional nurse has the knowledge and skill to assess the reproductive health status of individuals at all points along the reproductive continuum. Beyond the point of assessment, the nurse can give quality health care to the pregnant unit in the community, as well as in institutions (Butnarescu, 1978).

Nurses in prenatal, natal, and postnatal areas are in first-line positions to identify deviation from the normal

that will affect the woman and her child. For example, pregnancy-induced hypertension is a complication that begins with subtle symptoms. The nurse needs to be able to detect small changes before they become irreversible (Pillitteri, 1985). During labor, the nurse assesses the progress of labor, the need for and effect of anesthesia and pain medications, and the status of the fetus. If necessary, the nurse gives anticipatory guidance for potential cesarean section. After the infant is born, assessment and care is required for possible respiratory distress and congenital anomalies.

The goal of this research was to determine the incidence of risk factors in the EP and compare this with the primipara 20-34 years of age. By determining what the increased risk factors are, the nurse can plan for potential problems that may affect the pregnant family.

Summary

Reproductive risk is a problem of great magnitude in today's world and specifically in the United States, a country with high standards of health care (Butnarescu, 1978). The elderly primipara is considered to be at risk by many authors (Jensen, 1977; Pillitteri, 1985; Reeder, 1980). The degree of risk is still undetermined.

Professional nurses interested in the care of pregnant and yet to be pregnant families play a large and important role in the effort toward achieving a healthy reproductive

outcome for all individuals. More information is needed to assist him/her in the assessment and care of the EP.

Literature Review

Introduction

In order to delineate the study's research hypotheses which proposes differences between YPs and EPs in rate of occurrence of selected morbidity and mortality factors, an extensive literature review was done. The review of literature is divided into three areas of content. The first area is maternal risk, morbidity and mortality, which includes the mother's medical and current obstetrical history and maternal death rate. The second area is perinatal risk, morbidity and mortality, which encompasses the incidence of congenital anomalies, prematurity, and small and large for gestational age infants. The third area is maternal and perinatal risk as it is influenced by the course of labor and delivery. Cesarean section, prolonged labor, use of forceps, and malpresentation will also be discussed in the third area.

Previous studies concerning the outcome of pregnancy for the older primipara have not been numerous. Several of the more recent studies were done in countries other than the United States, such as Israel, Canada, England, and Australia (see Table 1). Overall, natality statistics of

these countries vary from the United States. Review of the literature revealed discrepancies which are difficult to assess. There is often no standardization when referring to age groups, definitions or statistical reporting; therefore, the research must be viewed with caution.

The following table (Table 1) was compiled by the investigator after a review of the research studying childbearing. Factors examined by the investigator included year the study was conducted, where the study was conducted, whether or not the subjects were primiparas and, finally, the sample size for each study.

Table 1. Research studies of childbearing at 35 years of age and older.

Author	Year of Study	Study Location	Exclusively Primipara	Study Size
Kessler	1982	Israel	Yes	98
Cohen	1980	Israel	Yes	53
Blum	1979	Israel	Yes	55
Morrison	1975	Canada	Yes	127
Kane	1967	United States	Yes	3,819
Booth	1964	London	Yes	1,018
MacDonald	1960	Great Britain	Yes	662
O'Sullivan	1960	Belfast	Yes	595
Legerski	1959	Canada	Yes	124
Kajanaja	1978	Finland	No	558 (130, OP)
Horger	1977	United States	No	440
Biggs	1970	Australia	No	231
Tysol	1970	Canada	No	4,622 (62, OP)
Posner	1961	Harlem, NY	No	541 (43, OP)
Hidgon	1960	United States	No	522 (32, OP)

Maternal Risk, Morbidity and Mortality Factors

Maternal risk includes complications of pregnancy and maternal mortality. Complications of pregnancy can be related to preexisting disorders as well as obstetrical complications. Daniels (1979) believes that an older woman is at greater overall medical risk than a younger one regardless of pregnancy. Nevertheless, the incidence of diabetes, heart disease, essential hypertension, kidney disorders and uterine fibroid can effect the success of a pregnancy. Each of these factors will be examined in this section.

The following table is a compilation by the investigator that outlines a comparison of mortality rates in the EP with that of the YP. Kane's (1967) research was the only one reporting any incidence of death of the YP.

Table 2. Maternal mortality in pregnancies of women 35 years of age and older.

Author	Year of Study	Sample Size	Mortality Rate in the EP	Mortality Rate in the YP
Kessler	1982	98	No incidence	No incidence
Kane	1967	3,819	One in 3,819	One in 32,633
Booth	1964	1,018	One in 1,018	No incidence
O'Sullivan	1960	595	One in 595	No incidence
MacDonald	1959	662	One in 662	No incidence
Legerski	1959	124	No incidence	No incidence
Posner	1961	541	Two in 541	No incidence

Maternal death rates for women of all ages have dropped from 376 per 100,000 live births in 1940 (Daniels, 1979) to 9.6 per 100,000 in 1979 (National Center for Health Statistics, 1984). Daniels (1979) and Nortman (1974) conclude that maternal death rates rise after 35, but appear more related to parity rather than age. This corresponds with Biggs (1973) and Posner's (1961) studies utilized for Table 2.

Kessler (1980) and Legerski (1959) report no maternal deaths in their research on the EPs (see Table 2). Booth (1980), MacDonald (1960) and O'Sullivan (1960) all report one incidence of maternal death from their studies. These findings are difficult to evaluate because of the limited number of cases in the studies, but a significant increase is seen compared to the national average figure reported in 1960 (National Center for Health Statistics) of 37.1 per 100,000 live births.

Toxemia is the most common reported complication in studies of the EP (Kessler, 1980; Legerski, 1959; MacDonald, 1960; O'Sullivan, 1960) (see Table 3). However, Booth (1964) and Blum (1979) found no difference in the rate of toxemia between the two groups, and Booth (1964) showed no increase until the EP was over 40 years old. Tysol (1970) and Kessler (1980) concluded that the rate of toxemia increases with age and at an even higher rate with the EP.

Table 3 is a summary of the incidence of toxemia in the

EP when compared to the YP. The data for the table was compiled by the investigator after reviewing related literature.

There is confusion in comparing statistical research on the incidence of toxemia because the definition is not consistent. Pre-eclampsia, hypertension, toxemia, hyptertension with proteinuria and severities ranging from mild, moderate and severe are defined differently in statistical reporting by each author.

Table 3. Incidence of toxemia occurring in pregnancies of women 35 years and older.

Author	Year	Sample Size	Percentage Rate of Toxemia Occurring in the EP	Percentage Rate of Toxemia Occurring in the YP
Kessler	1982	98	11	2
Blum	1979	55	5.5	6.9
Kane	1967	3,819	5.6	3.2
Booth	1964	1,018	20	No data given
MacDonald	1960	662	32.3	15.8
O'Sullivan	1960	595	36.5	No data given
Legerski	1959	124	33.5	No data given
Horger	1979	440	34.5	No data given
Biggs	1973	231	18.6	No data given
Tysol	1970	4,622	10	6.5
Posner	1961	541	5	No data given
Hidgon	1960	522	9.3	No data given

Kessler (1980) reports that the incidence of diabetes mellitus, essential hyptertension, and cardiac disease in pregnancy was no different between the EP and YP groups. Blum (1979) had one incidence of diabetes and one of

essential hypertension in his study of 55, compared to 0 in the control group. Horger (1977) reports an incidence of 7.3% of diabetes mellitus. Kane (1967) found a progressively higher incidence of uterine fibroids with age. This coincides with all authors (Booth, 1960; Horger, 1977; Kessler, 1980; Legerski, 1959) reporting on the presence of uterine fibroids.

Table 4 is an investigator compiled table which illustrates differences in incidence of placenta previa and abruptio placenta between YPs and EPs. In Kane's (1967) study, there was a slighty increased occurrence of both placenta previa and abruptio placenta in the EP (see Table 4). The higher incidence of placenta previa was at a more significant and consistent rate. In studies by Horger (1977) and Tysol (1970) that are concerned with childbearing in advanced age, but not necessarily a primipara, a higher incidence of both abruptio placenta and placenta previa were reported. Abruptio placenta occurred at a rate of 4.6% in Horger's (1977) study which he states led to five fetal deaths.

Daniels (1979) and Nortman (1974) found that there was an increased incidence of placenta previa with age, while abruptio placenta was related more to parity. These views are consistent with study findings of Kane (1967) and Horger (1977). Because of the limited number of studies reporting incidence of either complication, it is difficult to form

Table 4. Incidence of placenta previa and abruptio placenta occurring in women giving birth at 35 years of age and older.

Author	Year of the Study	Sample Size	Percentage of Abruptio Placenta in the EP	Percentage of Abruptio Placenta in the YP	Percentage of Placenta Previa in the EP	Percentage of Placenta Previa in the YP
Kane	1967	3,919	35-39; 1.4 40-44; 1.1	25-29; .6 30-34; .9	35-39; 1 40-44; 1.5	No incidence
O'Sullivan	1960	595	No data given	No data given	1.1	No data given
Legerski	1959	124	4.6	No data given	.7	No data given
Horger	1977	440	4.6	No data given	.68	No data given
Tysol	1970	4,622	1.3	.7	1.3	.4
Hidgon	1960	522	1.3	No data given	1.1	No data given

definite conclusions about the incidence of abruptio.

Perinatal Risk, Morbidity, and Mortality Factors

Perinatal risk factors examined in this section include incidence of congenital anomalies, prematurity, and gestational age in infants. Since these factors may or may not lead to illness, morbidity is also discussed under risk factors. Perinatal mortality will also be examined.

The perinatal period is one of great importance with respect to the survival and future well-being of the child. The following table illustrates perinatal mortality in

Table 5. Perinatal mortality occurring in pregnancies at 35 years of age and older.

Author	Year of Study	Sample Size	Mortality Rate Per 1000 Births Occurring in the EP's Offspring	Mortality Rate Per 1000 Births Occurring in the YP's Offspring
Kessler	1982	98	30	10
Blum	1979	55	36.4	30-35; 20.6 20-29; 0
Kajanaja	1978	558	39	19
Kane	1967	3,819	39	20-24; 22 30-34; 30.1
Morrison	1975	127	47	No data
Booth	1964	1,018	37.4	21.8
MacDonald	1960	662	102	No data
O'Sullivan	1960	595	73	No data
Legerski	1959	124	32	No data
Horger	1977	440	77	No data
Biggs	1973	231	48	No data
Tysol	1970	4,622	48.2	20-24; 22 30-34; 33.1
Posner	1961	541	82	No data
Hidgor	1960	522	22	No data

the EP population. Perinatal mortality in the review of literature is defined as deaths occurring from the twentieth week of conception through the first 28 days after birth.

Kessler (1980) found a three-fold higher perinatal mortality rate in the EP group than that of the control group (see Table 5). He reports, however, the difference is not statistically significant. Blum (1979) had the same results with a similar conclusion.

Kane (1976) and Tysol (1970) report a progressive increase of perinatal mortality from a rate of 22 in the 20-24 age group to 33.1 in the 30-34 group, and 39 to 48.2 in the EP group. Morrison (1975), MacDonald (1960), O'Sullivan (1960) and Kajanaja (1978) report a considerably higher perinatal mortality rate than the other researchers.

The National Center for Health Statistics (1984) reports a perinatal mortality rate of 18.3 for all races in 1979. If studies were compared to the perinatal mortality rate of 34.8 in 1960 (National Center for Health Statistics, 1984), O'Sullivan's (1960) perinatal rate of 73 and MacDonald's (1960) rate of 102 was two to three times higher.

The National Center of Health Statistics (1978) reports a rate of congenital anomalies of 811.03 per 100,000 live births in 1974. The incidence of Down's Syndrome is 37.1 per 100,000 live births. The National Center for Health Statistics (1978) reports that rates of Down's Syndrome and

other congenital anomalies increased steadily with age. Rates for first births were consistently higher than any other birth order regardless of age. Rates of abnormalities were the highest for the EP, 1414.2 per 100,000, the highest observed for any age-order group. This conflicts with Nortman's (1974) and Goldberg's (1979) conclusion that congenital anomalies other than Down's Syndrome does not increase with age.

Table 6 is an investigator-compiled table that summarizes the rate of occurrence of congenital anomalies and Down's Syndrome in EPs as identified by various studies.

Table 6. The incidence of congenital anomalies occurring in pregnancies of women 35 years of age and older.

Author	Year of Study	Sample Size	Percentage of All Types of Anomalies	Percentage of Down's Syndrome
Kessler	1982	98	No incidence	No incidence
Blum	1979	55	35-39; 5.45	No data
			30-35; 3.09	
			20-29; 1.20	
Kajanaja	1978	558	9.6	4.2
Morrison	1975	127	2.4	.78
MacDonald	1960	662	> 35; 4.1	No data
			< 35; 1.9	
O'Sullivan	1960	595	1.5	.33
Legerski	1959	124	3.2	No incidence
Goldberg	1979	209,688	45+; 16.5	45+; 10.6
			40-44; 0.5	40-44; 6.5
			35-39; 5.5	35-39; 1.8
			< 35; 3.4	- 35: .3
Horger	1977	440	3.4	.23
Biggs	1973	231	7.3	No data
Tysol	1970	4,622	4.28	2.37
Mulcahy	1968		35-39; 1.79	No data
Hidgon	1960	522	4.5	2.0
Posner	1961	541	1.2	.37

Congenital anomalies are positively associated with age (Goldberg, 1979; Kajanaja, 1978; Mulcahy, 1968; Nortman, 1974) (see Table 6). The degree to which age influences the incidence of congenital anomalies is uncertain.

Kessler (1980) reported no congenital anomalies in his study, while Blum (1979), Biggs (1973), MacDonald (1960) and Mulcahy (1968) reported no Down's Syndrome, but did find other anomalies (see Table 6). Mulcahy (1968) concludes that both age and multiparity appear to be equally associated with incidence of anomaly. Mulcahy (1968) continues to explain that it is evident that the incidence of abnormal births begins to rise significantly by about mid-thirties and after the third child is born.

Goldberg (1979) and Nortman (1974) report that the relationship of maternal age to non-chromosomal birth defects are not statistically significant. With fetal diagnosis and elective abortion, Goldberg (1979) concludes that in a woman 35-44 years of age, the risk of bearing an infant with severe birth defects is reduced to a level comparable with that for younger women. Women over 45 years still have a two times greater risk than their younger counterparts for having a baby with a congenital anomaly.

Prematurity and SGA were also risk and morbidity factors examined in reviewing the literature. Table 7 summarizes findings of the literature related to prematurity

Table 7. Incidence of prematurity and small for gestational age infants of women giving birth at 35 years of age and over.

Author	Year of Study	Sample Size	Percentage of Prematurity in the EP	Percentage of Prematurity in the YP	Percentage of SGA in the EP	Percentage of SGA in the YP
Kessler	1982	98	12.2	6.9	4	1
Blum	1979	55	14.5	30-35; 11.3 20-29; 3.2	No data	No data
Morrison	1975	127	14	5.7	11	No data
Kane	1967	3,819	13	8.7	No data	No data
Booth	1964	1,018	No difference between groups		No data	No data
Legerski	1959	124	5.6	No data	No data	No data
Kajanaja	1978	558	12	6	9	No data
Horger	1977	440	14.9	No data	No data	No data
Hidgon	1960	522	5	No data	No data	No data

and SGA in both the EP and YP.

Most research concludes that there is a higher incidence of prematurity in the EP than in her younger counterpart (see Table 7). Kessler (1982) and Morrison (1975) state that the increase is not statistically significant even though the increase is two-fold in the EP. Booth's (1964) study reported no difference in the two groups concerning the incidence of prematurity.

There are limited studies reporting the incidence of infants who were SGA for the EP. As seen in Table 7, Kessler (1982) found a four-fold increase, and Morrison (1975) a five-fold increase in the EP population.

Hidgon (1960), Horger (1977), and Tysol (1970) reported a statistically significant increase of infants weighing more than 4,000mg in women giving birth after the age 35. A high rate of infants large for gestational age could have an impact on the rate of cesarean, use of forceps, and long labors.

Prematurity and retarded growth are the greatest risks facing the infants of an elderly primipara (Kajanaja, 1978). Nortman (1974) reports that because low birth weights are highly correlated with high risks of mortality and morbidity in both infants and children, more research is needed in this area.

Maternal and Perinatal Risk Influenced by Labor and Delivery

Complications occurring during labor and delivery can

affect both the mother and her infant simultaneously or individually. These complications include cesarean section, prolonged labor, use of forceps and malpresentation.

Studies reporting a significantly higher rate of cesarean section in the older primipara than in her younger counterpart are those of Kessler (1982), Blum (1979), Kajanaja (1978), Kane (1967), and Morrison (1975). The higher incidence was related in part to obstetric complications and in part to a more aggressive approach to surgical intervention in this group considered high risk (Haire, 1983; Kane, 1976; Kessler, 1980). Most researchers

Table 8. Maternal cesarean section in pregnancies occurring at 35 years of age and older.

Author	Year of Study	Sample Size	Percentage of Cesarean in the EP	Percentage of Cesarean in the YP
Kessler	1982	98	26	2.9
Blum	1979	55	29	30-35; 21.6 20-29; 2.3
Kajanaja	1978	558	31	12
Kane	1967	3,819	24.75	30-34; 10.5 20-29; 6
Morrison	1975	127	31	No data
Booth	1964	1,018	16.4	20
MacDonald	1960	662	23.2	1.6
O'Sullivan	1960	595	21	8
Legerski	1959	124	18.5	2.1
Horger	1977	440	12.2	No data
Biggs	1973	231	18	5
Tysol	1970	4,622	35-40; 23 40+; 40	20-24; 4.5 25-29; 8 30-35; 12
Posner	1961	541	33.5	3
Hidgon	1960	522	21	3.8

(Biggs, 1973; Kajanaja, 1978; MacDonald, 1960; O'Sullivan, 1960) advocate the liberal use of cesarean section, but others (Blum, 1979; Booth, 1964; Legerski, 1959) feel this would not decrease perinatal mortality. The most common reasons cited for operative intervention are toxemia (Booth, 1964; Legerski, 1959; O'Sullivan, 1960), cephalopelvic disproportion (Blum, 1979; Legerski, 1959), and breech position (Blum, 1979; Booth, 1979; Legerski, 1959). The cesarean section rate is considerably less in the older multiparous woman, indicating the significance of the combined variable primagravida and age in determining the likelihood of cesarean section occurring.

Table 9 is a compilation of studies comparing the occurrence of prolonged labor in the EP and YP. It is especially difficult to compare research results on prolonged labor because of the varying method of reporting. MacDonald (1960) and Tysol (1970) show an increased duration of labor in the EP group (see Table 9). Legerski (1959) found that the EP's average length of labor was twice as long as the YP's. Morrison (1975) suggests that if delivery has not occurred within 20 hours, intervention on behalf of the fetus is indicated. Booth (1964), however, does not advocate a more radical approach, because, according to his study, perinatal outcome would not have changed.

Daniels (1979) believes that older women are prone to dysfunctional labor. He feels obstetricians may treat their

Table 9. The incidence of prolonged labor occurring in women giving birth at 35 years of age and over.

Author	Year of Study	Study Size	Incidence of Prolonged Labor in the EP	Incidence of Prolonged Labor in the YP
Morrison	1975	127	31.3%; over 20 hrs.	No data
Booth	1964	1,018	16.0%; over 24 hrs.	No data
MacDonald	1960	662	22.7%; 20-48 hrs. 9.5%; over 48 hrs.	21.7%; 24-48 hrs. 5.7%; + 48 hrs.
O'Sullivan	1960	595	26.5%; over 24 hrs.	No data
Horger	1977	440	4.3%; over 20 hrs.	No data
Biggs	1973	231	1.8%; over 19 hrs.	No data
Tysol	1970	4,622	87.0%; over 18 hrs.	61.0%; + 18 hrs.
Hidgon	1960	522	3.9%; over 20 hrs.	No data
Posner	1961	541	20.0%; over 12 hrs.	No data

older patients more conservatively with heavy sedation which influences the progression of labor. Friedman (1964) suggested that heavy sedation was the major cause of a secondary arrest of dilatation in the EP in his study. Cohen (1980) found no significant increase in the use of anesthesia among older gravidas, although he found an increased frequency of protraction disorders. He, therefore, speculates that the increase in dysfunctional labors is intrinsic to age, perhaps somehow related to diminished efficiency of the myometrium.

To examine the incidence of forceps use in deliveries of EPs compared with YPs, the investigator compiled the information found in Table 10. The researchers cited in Table 10 reported that an increased use of forceps is seen

Table 10. Incidence of the use of forceps in deliveries of women 35 years of age and older.

Author	Year of Study	Sample Size	Percentage of the use of forceps in the EP	Percentage of the use of forceps in the YP
Blum	1979	55	3.6	30-35; 2.5 20-29; 2.3
Morrison	1975	127	18	32
Kane	1967	3,819	35-38; 54 39-42; 45	25-34; 63 No data
Booth	1964	1,018	28	No data
MacDonald	1960	662	31.2	11.4
O'Sullivan	1960	595	39.6	16.3
Legerski	1959	124	46	No data
Hidgon	1960	522	78	No data
Posner	1961	541	5	No data

in the EP's deliveries except in Kane's (1967) study. He found a slightly higher use of forceps in the YP population (see Table 10). Many studies report the use of forceps in both vaginal and cesarean deliveries instead of just vaginal deliveries. These data are then misleading because of the high increase of cesarean section seen with the EP.

O'Sullivan (1960) states that the delay in the second stage of labor was the most common cause of forceps use, while Alment (1970) indicates malpresentation as being the most frequent reason for forceps usage. Booth (1964) reports the indication for forceps usage was uterine inertia rather than an unfavorable position of the occiput or cephalopelvic disproportion. Booth's (1964) explanation for the need to use forceps more frequently with the EP is that inefficient uterine contractions fail to rotate the head. Steward (1954) concluded that labor becomes more difficult with advancing age and suggested that this may be due to increased rigidity of the pelvis and less reserve power of the uterus.

Another maternal and perinatal morbidity factor is malpresentation. Table 11 summarizes the incidence of malpresentation in EPs and where data is available for YPs. Breech and other types of malpresentation were examined.

With the exception of McDonald (1960), all investigators reported malpresentation occurs more frequently in the EP. MacDonald's (1960) study showed a

Table 11. Incidence of malpresentation in women giving birth 35 years of age and over.

Author	Year of Study	Sample Size	Percentage of Breech in the EP	Percentage of Breech in the YP	Percentage of Malpresentation in the EP	Percentage of Malpresentation in the YP
Kessler	1982	98	5.1	.9	No data	No data
Kane	1967	3,819	6.1	5.3	20	13.3
Booth	1964	1,018	3.8	No data	No data	No data
MacDonald	1960	662	4.4	5.3	No data	No data
O'Sullivan	1960	595	5.7	No data	18	No data
Legerski	1959	124	8	No data	No data	No data
Kajanaja	1978	558	9	No data	No data	No data
Biggs	1977	231	2.6	No data	No data	No data
Hidgon	1960	522	9.3	No data	18.8	No data
Posner	1961	541	8.3	No data	No data	No data

slightly higher incidence of breech presentation in the YP group. Booth (1964) states that 25 percent of cesarean deliveries were because of breech presentation. Kessler (1982) also reported the indication for cesarean section related to dysfunctional dynamics of presentation or to breech presentation. According to Booth's (1964) study, there was a relationship between malpresentation and infant death.

The cause of malpresentation is unknown. Kane (1967) suggests, however, that the possibility of an increased occurrence of uterine fibroids in the EP may contribute to a higher rate of malpresentation.

Conclusions

For the purpose of delineating the variables in this study's research hypotheses which propose that there will be an increased incidence of maternal and perinatal risk morbidity and mortality factors in the elderly primipara when compared to the YP, three areas of related literature were reviewed. Areas reviewed were maternal risk, morbidity, and mortality; perinatal risk, morbidity, and mortality, and variables examined were prematurity, congenital anomalies, gestational age and perinatal mortality. The incidence of cesarean section, use of forceps, malpresentation, and dysfunctional labor were factors included under the third section; i.e., maternal and perinatal risk factors influenced by labor and delivery

complications.

The review of literature documents that reproductive risk does increase with advancing age and that childbearing is more problematic. The review of the literature also reveals an increased incidence of toxemia, congenital anomalies, prematurity, cesarean section, prolonged labor, use of forceps, and malpresentation in the EP. Perinatal and maternal mortality occur more frequently in the population of EPs. Higher rates of complications increase the likelihood of perinatal and maternal mortality. However, there is disagreement among the researchers cited as to the degree of risk that exists in the EP population. Kessler (1980) suggests removal of the EP from the high risk category. Other researchers suggest that meticulous prenatal care and active management of labor will improve outcome for the EP.

In summary, there is little systematic research that adequately documents the interrelationship of the variables identified under each section of this literature review, nor does research literature adequately document systematically the influence of these variables on maternal and perinatal outcomes for both the EP and YP. Many of the studies cited contain conflicting information when results from the studies are compared. These gaps in the existing literature substantiate the need for further research that incorporates the significant influencing variables identified in this literature review into one study design.

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this chapter is to describe the methodology utilized for this study. A description of the study design, selection of records for review, sample and setting, protection of human rights, data collection, reliability and validity, and data analysis are included.

Study Design

The design chosen for this study was a retrospective survey design. This design was chosen because relationships can be determined by systematically collecting data from existing documents. The retrospective survey design also provides a method to describe, predict or explore facts (Polit, 1978). A retrospective design uses historical literature or recall to find relationships between variables (Treece, 1977).

Selection of Records for Review

The "Hospital Survey of the Newborn Infant" questionnaire, birth logs, and medical records from the mother and her infant were used to obtain data. The "Hospital Survey of the Newborn Infant" questionnaire (Appendix A) was developed by a local health department and the University of Montana's Speech, Hearing, and Language Clinic. This survey form was developed with the intention of screening mothers and their infants for risk, including

predicting a child's potential speech or hearing impairment. The questionnaire was given to every woman delivering a baby since 1972 at a hospital located in a selected Northwestern Montana city. The questionnaire has two sections to be completed--one by the mother and the second by the delivery nurse.

Permission was granted to the researcher for access by facilities who developed and housed medical documents used for the study. Records were not removed while gathering data.

The purpose of this study was to describe the characteristics of the EP's birth experience and compare it to a matched sample of YPs. By utilizing survey forms, prenatal records, birth logs and medical records of the primiparas and their infants, data collection was consistent with a retrospective survey design. Frequency of occurrence and statistical significance utilizing chi square were the methods used to identify and compare risk factors.

Sample and Setting

The sample for this study consisted of a sample matched for date of birth and first time birth of 62 YPs and EPs, for a total sample size of 124. The study compared the EPs' perinatal risk factors to a control group of YPs aged 20-34 by utilizing existing documents. Teenage primiparas were excluded from the control group because increased adolescent factors already identified in the group would affect the

data obtained for YPs.

A matched sample was chosen rather than a random sample for the control group because of convenience.

To obtain a sample, the hospital birth logs from November 1, 1978 to February 1, 1985 were scanned for age and parity. Seventy-two elderly primipara delivered infants during the time period. A matched sample of young primiparas aged 20-34 were chosen for the control group. The control group was randomly selected from all primiparas who delivered on the same day as the corresponding elderly primipara. The sample was reduced to 62 because of the inability to locate the subjects' medical records or discovering the woman was not primipara.

The setting for the study was a Northwestern Montana general hospital consisting of 115 beds, of which 30 were obstetrical. In 1984, the obstetrical unit recorded 1578 births. The unit is classified as a Level II Perinatal Unit.

Protection of Human Subjects

Because of the type of research design used, a retrospective survey, human subjects were not utilized directly; however, protection of human subjects was assured by employing confidentiality and anonymity in collecting and recording the data.

Consent was obtained from participants who completed the "Hospital Survey of the Newborn Infant" questionnaire at

the time of delivery for the use of information for research purposes with the intent of improving infant care. Anonymity was maintained upon collection and analysis of data by using coding for actual names.

Permission was granted for use of questionnaires housed in the County Health Department (Appendix B) and the University of Montana's Speech, Hearing, and Language Clinic (Appendix C). The hospital also gave consent for access to birth logs and medical records for collecting data for this study (Appendix D). A copy of the Human Subject Review was reviewed by the three facilities.

The Human Subjects Review Committee of Montana State University's College of Nursing reviewed the research design and methodology for protection of human rights. The committee agreed that all subjects' rights were protected and the research project could proceed.

Data Collection

A collection tool (Appendix E) was developed for gathering information from the survey form and the subject's medical records. A retrospective review of the birth logs was completed to obtain an appropriate sample. The infant's name, birthdate and weight, and the parents' name and age were recorded for identifying questionnaires and medical records. Data were collected by completing the collection tool with information from available survey forms and the records of the primipara and their infants. Parental

demographic data were available on the EPs charts from their attending physicians. An attempt was made to locate all existing documents for each subject. Verification of data among records was done.

The data collection tool was developed to ensure that data were obtained in a consistent manner. The use of the tool eased the collection process and statistical analysis.

Survey forms and medical records were scanned to locate birth information. Frequencies of risk factors and birth information, such as length of labor and type of anesthesia, were recorded. Other pertinent data (i.e., cause of death, complications) were also documented in a descriptive fashion.

Variables

Demographic data collected were father's age, occupation, and education of both spouses. Method of feeding and attendance at childbirth classes were also recorded.

The independent variable controlled for was the primipara's age. The effects of advancing age on birth experience is the focus of this study.

Identified risk factors affecting the primipara and her infant were recorded and were the dependent variables of the study. The dependent variables were selected because they were available from existing documents, comparable to other research, and appropriate for the statistical analysis

employed.

Dependent variables include the following:

1. History of pre-existing illnesses of the prospective mother to include essential hypertension, sexually transmitted diseases, fibroids, diabetes, asthma, heart disease, and hyperthyroidism.
2. Pregnancy induced hypertension.
3. Maternal mortality.
4. Abruptio placenta and placenta previa.
5. Perinatal mortality.
6. Congenital anomalies.
7. Pre- and post-maturity.
8. Low birth weight.
9. Large and small for gestational age.
10. Apgar score.
11. Fetal distress.
12. Cesarean section.
13. Usage of forceps.
14. Degree of birth related laceration.
15. Length of labor.
16. Malpresentation and breech.
17. Use of anesthesia and narcotics.

Validity and Reliability

Validity was established by use of a research design that included a matched sample and a randomly selected

control group. Criterion-related validity was addressed through development of the survey form by the University of Montana's Speech, Hearing and Language Department for research purposes. This survey has been used for select research in order to collect and organize birth data for infants with potential hearing impairments.

Content validity was established by a comparison of the dependent variables in this study with high risk scoring systems (Fogel, 1981; Gabbe, 1981; Jensen, 1978). Factors listed in these screening tools were utilized when developing the collection tool. These scoring systems were designed to assess the pregnant woman as well as her infant for risk and morbidity.

Reliability was addressed by a pilot study completed before data collection. An additional factor that supports reliability is the sample size of 62 for each group. There is concern for reliability of the data initially recorded in that many nurses were completing the "Hospital Survey of the Newborn Infant" as well as the subjects' medical records.

Data Analysis

The independent variable tested in this research project was the effect of age on the outcome of pregnancy for the primipara. Data were analyzed through the use of the computer program, MINITAB, and are found in the following chapter depicted in frequency distribution tables. The dependent variables were tested for

significance by the use of the chi square and t-tests. These statistical formulas were used because the data were nominal or ordinal. Level of significance was 0.05 and highly significant was 0.01. These values are standards most commonly used in research which makes comparisons easier with previous studies. A statistician was employed by the investigator for assistance in statistical and design procedures.

Summary

A retrospective survey design that employed a randomly selected sample matched for day of birth and parity was utilized to collect data from patient records. A collection tool was developed to consistently gather data on the incidence of risk factors affecting the primipara and her infant. Variables were tested for statistical significance by use of chi square and t-tests.

CHAPTER 4

FINDINGS

The purpose of this study was to determine whether or not selected risk factors occur more frequently and are statistically more significant in the EP and her offspring when compared to her younger counterpart. Data were collected retrospectively from November 1978 to February 1985 utilizing existing medical records. The results were descriptively analyzed with the findings and discussion presented in this chapter. Data analyzed include demographic description of the sample, maternal risk factors, perinatal risk factors, and both maternal and perinatal risk factors occurring during labor and delivery.

Demographic Description of the Sample

Birth logs from a hospital located in a Northwestern Montana city were used to obtain the study's sample and control group. Sixty-two EPs delivered 64 infants during the five year span utilized for the study. As seen in Table 12, the number of births by EPs increased from two in 1979 to 21 in 1984.

Table 13 depicts the demographic description of age of the EP and the YP control group. The EPs' average age was 36.6 years; 91.9% of all EPs were in the age group 35 to 39 years, and only 8% were 40 years of age and over. The average age of the control group was 25.3 years.

Table 12. Birth occurring to EPs.

Year		Number of Births
from November	1978	2
	1979	2
	1980	8
	1981	6
	1982	14
	1983	10
	1984	21
to February	1985	2
	Total	64

Table 13. Age of primipara.

EP		YP	
Age	Number of Primipara	Age	Number of Primipara
42	2	34	1
41	2	33	1
40	1	32	1
39	4	31	2
38	6	30	4
37	8	29	2
36	17	28	6
35	22	27	4
		26	5
		25	9
		24	6
		23	7
		22	3
		21	7
		20	4
Total	62	Total	62

The age of the father was also recorded when available. The mean age for the fathers of the EPs' infant was 35.9, which was calculated from a total of 54 of 62 records reviewed. This is slightly lower than the EP herself. The

fathers of the YP's infants mean age was 28.3. This average is three years higher than the YP herself.

Educational demographics. When examining demographic data related to education, the EPs' educational attainment was calculated to be highly significant when compared to the YP group, $t(58) = 5.46$, $p < 0.01$. The mean grade of the EPs was 15.67 and the YPs' mean grade was 13.36. The EP's infant's father's mean grade was 15.58, while the YP's group father's mean was 14.08. The EP's husband's educational attainment was significantly higher when compared to the control group, $t(54) = 2.614$, $p < 0.05$.

Demographics of occupation. Tables 14 and 15 illustrate the types of occupation of the primipara and her

Table 14. Types of profession for the primipara.

Profession	EP Frequency	EP Percent	YP Frequency	YP Percent
Executive, Managerial Scientist	4	7	4	6.9
Clerical, Services	8	14	24	41.4
Teachers, Health Professionals	23	40	9	15.5
Homemaker	12	21.1	16	27.6
Writers, Artists	5	8.8	2	3.4
Unemployed, Student	5	8.8	3	5.2
Total	57	100.00	58	100.00

husband. The EP had the greatest number employed as teachers, and health professionals, while clerical and service positions were the most frequent reported occupations of the YP. When comparing the husbands of the primipara, there is a higher frequency of professional and managerial occupations in the EP group. Over half of the husbands of the YPs worked in construction, transportation, production, agricultural or mechanical types of employment, compared to one-third in the EP group.

Table 15. Types of profession for the primipara's husband.

	EP		YP	
Profession	Frequency	Percent	Frequency	Percent
Executive, Managerial, Scientist	9	17.3	4	7.7
Teachers, Health Professionals	14	26.9	5	9.6
Clerical, Services	4	7.7	6	11.5
Construction, Transportation, Production, Agriculture Mechanic	19	36.5	28	53.8
Unemployed, Student	0	0	4	7.7
Writers, Artists, Marketing	6	11.5	5	9.6
Total	52	100.00	52	100.00

Demographics of feeding and attendance at parenthood classes. Analysis of other demographic data include attendance at Lamaze or parenthood classes and incidence of breast feeding versus bottle feeding. As seen in Tables 16 and 17, the difference in frequencies was minimal, and there was no statistically significant difference between the two groups when comparing either variable.

Table 16. Attendance at parenthood or Lamaze classes.

	EP		YP	
Attendance	Frequency	Percent	Frequency	Percent
Yes	40	64.5	39	62.9
No	22	35.5	23	37.1
Total	62	100.00	62	100.00

Table 17. Type of feeding for the newborn.

	EP		YP	
Method	Frequency	Percent	Frequency	Percent
Breast	54	87	49	79
Bottle	8	13	13	21
Total	62	100	62	100

Maternal Mortality, Morbidity, and Risk Factors

The maternal mortality rate was zero for both groups, which was expected in a sample of this size. Pre-existing illnesses that the primiparas experienced are seen in

Table 18. There is a small increase in frequency with any single disease. The YPs' only previous illness was herpes. The highest incidence of disease for the EP was fibroids and

Table 18. The incidence of pre-existing illness of the primipara.

	EP		YP	
Illness	Frequency	Percent	Frequency	Percent
Hypertension	2	3.2	No incidence	
Diabetes	2	3.2	No incidence	
Asthma	2	3.2	No incidence	
Hypothyroidism	2	3.2	No incidence	
Seizure Disorder	1	1.6	No incidence	
Herpes	7	11.3	6	9.7
Gonorrhea	1	1.6	No incidence	
Fibroids	5	8.0	No incidence	
Endometriosis	3	4.8	No incidence	
Total	25	40.0	6	9.7

endometriosis. When medical conditions are combined, however, there is a highly significant difference between the two groups (see Table 19).

Table 19. Combined incidence of pre-existing illnesses in the primipara.

	EP		YP	
Illness	Frequency	Percent	Frequency	Percent
Yes	25	40	8	13
No	37	60	54	87
Total	62	100	62	100

$\underline{X}^2$ (1) = 11.93, $p < 0.01$

The incidence of toxemia is illustrated in Table 20. The rate of toxemia is higher in the EP group, but the difference is not significantly higher.

Abruptio placenta occurred once in both the EPs' and the YPs'. Placenta previa occurred once in the YP control group.

Table 20. Incidence of toxemia in the primipara.

Toxemia	EP Frequency	EP Percent	YP Frequency	YP Percent
Yes	15	24	9	14.5
No	47	76	53	85.5
Total	62	100	62	100.00

$\underline{X}^2$ (1) = 1.86, $p > 0.05$

Perinatal Mortality, Morbidity, and Risk Factors

The overall perinatal mortality rate in both groups of the study was 23.8 per 1,000 births, compared to the national rate of 18.3 (National Center for Health Statistics, 1984). Two stillbirths occurred in the EP group. Both of these infants were full term and the cause of the stillbirths was due to cord thrombosis. The YPs gave birth to one full-term stillborn, in which death was also caused by cord thrombosis. The YP delivering the stillborn was 34 years of age.

Table 21 illustrates the rate of congenital anomalies. There is a twofold increase in the rate of congenital anomalies of the EPs when compared to the YPs, which is

statistically significant. Table 22 illustrates the types of anomalies occurring in both groups. Down's Syndrome occurred once in the EP group. The infant with a tracheo-esophageal fistula was transported to Salt Lake City shortly after birth for advanced medical follow-up.

Table 21. Incidence of congenital anomaly in the primipara infant.

Anomaly	EP Frequency	EP Percent	YP Frequency	YP Percent
Yes	8	12.5	4	6.5
No	56	87.5	58	93.5
Total	64	100	62	100

$\underline{X}^2$ (1) = 4.59, $p < 0.05$

Table 22. Types of congenital anomalies occurring to the primipara's infant.

Anomaly	EP	YP
Undescended Testicles	1	2
Hip Dysplasia	3	1
Hypospadias	2	No incidence
Down's/Tracheo-esophageal fistula	1	No incidence
Micrognathia, Heart Murmur	1	No incidence
Diastasis Recti	No incidence	1
Total	8	4

The incidence of prematurity and postmaturity occurred equally between the two groups. The mean of the EP's

premature infant was 35.65 weeks compared to 36.65 weeks for the YPs' infants.

Low birth weight which occurred in the EPs' infants was eight times more frequent when compared to the YPs' infants (see Table 23). Statistical significance of this variable could not be calculated from the data because too many cells had low expected frequencies which violates the assumptions of chi square analysis.

Table 23. Incidence of low birth weight in the primiparas' infants.

Low Birth Weight	EP Frequency	EP Percent	YP Frequency	YP Percent
Yes	8	12.5	1	1.6
No	56	87.5	61	98.4
Total	64	100.0	62	100.0

The incidence of LGA infants occurred more frequently in the YP group, but the difference was not statistically significant (see Table 24). Infants that were born SGA occurred in nine deliveries (8.1%) in the EP group. There was no incidence of SGA infants in the YPs. Results were unable to be analyzed because of violation in the program for statistical analysis as explained above.

The results of the study showed that the EPs' infants' apgar score at one minute was not statistically different when compared to YPs, $t\ (111) = 1.595$, $p > 0.05$. The mean

Table 24. Incidence of LGA infants in the primipara.

LGA	EP Frequency	EP Percent	YP Frequency	YP Percent
Yes	9	14	12	19.4
No	55	86	50	80.6
Total	64	100	62	100

X^2 910 = 0.64, $p > 0.05$

of the EPs' infants' apgar compared to the YP's was 7.35 and 7.8, respectively. The results were even less significant when comparing Apgar scores at one minute, t (121) = 0.563, $p > 0.05$. The mean difference of Apgar scores at one minute between the two groups was .07, with the EPs' infants' Apgar score being slightly lower.

Fetal distress was determined by the incidence of meconium staining of amniotic fluid and transfer of the newborn to the Neonatal Intensive Care Unit. Transfer of the newborn occurred once in each group. Meconium staining occurred more frequently in the EP group, but the difference was not statistically significant (see Table 25).

Table 25. Incidence of meconium staining in the primipara.

Meconium	EP Frequency	EP Percent	YP Frequency	YP Percent
Yes	14	22.6	10	16.1
No	48	77.4	52	83.9
Total	62	100	62	100

X^2 (1) = 0.83, $p > 0.05$

Perinatal and Maternal Risk Factors Occurring During the Course of Labor and Delivery

There was almost a threefold increase in cesarean births in the EP group when compared with the YP group (see Table 26). This difference is highly significant. The most common cause for cesarean births cited in both groups was failure to progress.

Table 26. Incidence of cesarean section in the primipara.

	EP		YP	
Cesarean	Frequency	Percent	Frequency	Percent
Yes	26	41.9	9	14.5
No	36	58.1	53	85.5
Total	62	100	62	100

$\underline{X}^2$ (1) = 11,50, $p < 0.01$

In one-third of the 36 EP vaginal deliveries, forceps were used, while less than one-fourth of the YPs had forceps

Table 27. Incidence of the use of forceps in the primipara.

	EP		YP	
Forceps	Frequency	Percent	Frequency	Percent
Yes	12	33.3	12	22.6
No	24	66.6	41	77.4
Total	36	100	53	100

$\underline{X}^2$ (1) = 1.24, $p > 0.05$

used (see Table 27). The difference is not statistically significant.

When the degree of birth related laceration was compared between the two groups, the older mothers did not have a significantly higher degree of laceration than the younger mothers, $t\ (77) = 0.747$, $p > 0.05$. There was a mean difference of .2, with the EP group having the higher mean.

The results of the study showed that the EPs did not have significantly longer labors when compared to the YPs, $t\ (70) = 0.703$, $p > 0.05$. The EPs had a mean of 11.145 hours while the YPs was 10.261.

Table 28 illustrates the occurrence of malpresentation in the study's primiparas. Malpresentation included brow,

Table 28. Incidence of malpresentation in the primipara's infant.

	EP		YP	
Malpresentation	Frequency	Percent	Frequency	Percent
Yes	10	16.1	7	11.3
No	52	83.9	55	88.7
Total	62	100	62	100

$\underline{X}^2\ (1) = 0.61$, $p > 0.05$

face, and shoulder presentations. The EPs experienced a slightly higher incidence of malpresentation, but the difference was not statistically significant. The incidence of breech presentation occurred four times in the EP group and

twice in the YP group. Because of violations of the assumptions for chi square analysis, level of significance could not be determined.

Table 29 illustrates the types of anesthesia reported for vaginal deliveries in the two groups. There is very little difference between the frequency and types of anesthesia when comparing the two groups.

Table 29. Types of anesthesia used for the primipara.

	EP		YP	
Anesthesia	Frequency	Percent	Frequency	Percent
None	4	12.1	3	7.3
Local	14	42.2	19	46.3
Pudenal	11	33.3	15	36.6
Saddle Block/ Caudal	1	3.0	1	2.4
Epidural	3	9.1	3	7.3
Total	33	100	41	100

Use of narcotics was examined in vaginal deliveries (see Table 30). Stadal, Demerol, and Nisentil were the narcotics prescribed for women in this study. The incidence of no narcotics usage during labor and delivery was slightly higher in the EP group, but the pattern of narcotic usage was not significantly different between the two groups.

Table 30. Narcotic use in the primipara.

Usage	EP Frequency	EP Percent	YP Frequency	YP Percent
None	19	52.8	25	47
One dosage	8	22.2	18	34
Two or more dosages	9	25	10	18.9
Total	36	100	53	100

$\underline{X}^2$ (2) = 1.53, $p > 0.05$

Summary

Analysis of data partially supported the hypotheses that there would be a greater incidence of selected retrospectively maternal and perinatal risk factors in the EPs when compared to a matched sample of YPs. Three variables were statistically significant. These variables include combined pre-existing illnesses, cesarean section and congenital anomalies. Variables that were not statistically significant, but had higher frequencies in the EP group compared to the YP group were toxemia, meconium staining, use of forceps, birth related lacerations, length of labor, malpresentation, and low Apgar score. Variables that had higher or equal incidences in the YP group were abruptio placenta, prematurity, post maturity, LGA, and placenta previa. Variables that were unable to be analyzed because of violations of the chi square statistical requirements were low birth weight, SGA, breech presentation, placenta previa, perinatal mortality and use of anesthesia.

CHAPTER 5

SUMMARY

The purpose of Chapter 5 is to summarize and derive conclusions from the study results. This chapter also includes implication for nursing, recommendations for future studies, and limitations of the study itself.

Summary and Conclusions

The study hypotheses were the following. H_1 - There will be a greater incidence of risk factors in the EP when compared to a matched sample of YPs. H_2 - There will be a greater incidence of risk factors in the EPs' infants when compared to a matched sample of YPs' infants. The hypotheses were partially supported based on the findings of this study. Three variables were statistically significant; and these were combined pre-existing illnesses, cesarean section, and congenital anomalies.

The review of literature indicates that reproductive risk does increase with advancing age, however the degree of risk is still debatable. Most recent studies have been done in countries outside the United States where mortality statistics differ with the United States. From the review of literature, there is generally an increased incidence of toxemia, congenital anomalies, prematurity, perinatal mortality, use of forceps and cesarean section in the EP

population. This study had similar findings, except there was not a higher incidence of prematurity in the EP group.

The conceptual framework for this study integrated the concept of reproductive risk. Reproductive risks were viewed within four categories: psychosocial, economic, genetic and biophysical. Age can influence all four categories (see Conceptual Framework, Chapter 2).

Types of risk factors have been divided into four categories: demographic factors, maternal risk factors, perinatal risk factors, and risk factors occurring during labor and delivery that affect both the mother and her infant. Summaries and conclusions will be discussed in light of the above categories related to the conceptual framework.

This study supports Sklar's (1975) prediction that the incidence of women postponing childbirth until 35 years of age and older is on the rise. Statistics from this study indicated that from 1979 to 1984 there was a tenfold increase in the number of EPs giving birth at the site from which the sample was drawn.

Demographic Data

The EPs in this study were more educated and were more likely to work in a professional position (see Table 14) than the woman giving birth to her first child in her 20's or early 30's. Findings of this study demonstrated

that the spouse of the EP was more likely to be better educated and to be working in a managerial or professional occupation than the YP's husband (see Table 15). The mean grade of the EP's husband was 15.58 and the YP's husband's mean grade was 14.08. Seventeen percent of the EPs' husbands had an executive or managerial position compared to 7.7% of the YPs' husbands. Twenty-six and nine-tenths percent of the EPs' husbands were teachers or health professionals, compared to nine and six-tenths in the YP group.

The increased likelihood of the EP and her husband to be better educated and to be working in a professional occupation than the YP's is significant because Butnarescu (1978) indicates that socioeconomic class and education are important when assessing the risk of the pregnant family. Families with higher income and more education are less likely to have health problems and obstetrical complications than low income, less educated families. The findings of this study support Butnarescu's conclusions.

Maternal Mortality, Morbidity, and Risk Factors

There was no incidence of maternal mortality as would be expected in a study of this size. The maternal mortality rate in the United States is 9.6 per 100,000 live births. The incidence of maternal mortality in this study occurred similarly to previous studies that found a single

incidence of maternal mortality. No conclusions regarding rate of maternal mortality can be drawn from this study due to low frequencies and small numbers.

There was a significantly higher incidence of combined pre-existing illnesses of the EPs (40% compared to the YPs 13%, see Table 19). The only single disease that was considerably higher in the EP was the occurrence of fibroids (8%) compared to the YPs (0%). Study results indicated that a woman 35 years of age, who has a health problem and is contemplating pregnancy for the first time, has an increased likelihood of having some type of complications with her pregnancy. Maternal complications occurring in this study were hypertension, diabetes, asthma, hypothyroidism, seizure disorder, herpes, gonorrhea, fibroids, and endometriosis. The results of this study demonstrated that 40% of the EPs with a pre-existing illness developed a complication during pregnancy; or infants of the sample EPs' infants experienced fetal distress during delivery or the infants were born with a congenital anomaly. Despite complications, overall, the EP's chances of delivering a healthy infant is still favorable with good prenatal care. From this study, the perinatal mortality rate was 3.1% and the rate of congenital anomalies was 12.5%, compared with the YP's rate of 1.6% and 6.5%, respectively. Only one

congenital anomaly in the EP group was life-threatening.

First time older pregnant women can expect a greater chance of developing pregnancy induced hypertension. This study's incidence of 24% is considerably higher than in recent studies (Blum, 1979; Kane, 1967; Kessler, 1983). The study's control group rate of 14.5% was also higher when

comparing it to previous studies. This may be attributed to access to more information than in previous studies.

Perinatal Mortality, Morbidity, and Risk Factors

Perinatal mortality, congenital anomalies, low birth weight, and SGA infants occurred more frequently to the infants of the EPs when compared to the YP control group (see Tables 21 and 23). Low birth weight and SGA infants occurred eight times more frequently in the EP group. Low birth weight infants cannot be compared to earlier studies' findings because of scant reporting of the variable. SGA infants occurred at a similar rate in this study (8.1%) as those reported previously (Kajanaja, 1978; Kane, 1967; Kessler, 1982).

The EPs' infant perinatal mortality rate of 23.8 per 1,000 births in this study was higher than the United States' rate of 18.3 (National Center for Health Statistics, 1984). The hospital in which data were obtained for the study had a perinatal mortality rate of 10.5 per 1,000 births during the same time frame of this

study. The EPs experienced two stillbirths, compared to the YPs one perinatal death, which was delivered by a primipara 34 years of age.

The occurrence of congenital anomalies was significantly higher in the EP group (12.5%) when compared to the YP group (6.5%). The EPs' anomaly rate was also considerably higher in this study when compared to the literature, which had rates of 0, 5.45, 9.6, 2.4 (Blum, 1979; Kajanaja, 1978; Kessler, 1982; Morrison, 1975). One reason for the high rate of anomalies in this study could be because more types of anomalies were reported than in previous studies. Only one infant of an EP had an anomaly that was incompatible with life, tracheoesophageal fistula. The other anomalies requiring medical attention occurred in the EP group.

The incidence of premature infants occurred eight times in each group. The YPs experienced a higher rate (19.4%) of LGA infants when compared to the EPs' infants (14%). The literature review supports higher frequencies of both variables for the EPs. Fetal distress measured by meconium staining of amniotic fluid was slightly higher in the EP group (22.6) compared to the YPs (16.1). Both groups had one infant transferred to the Neonatal Intensive Care Unit.

This study supports Morrison's (1974) view that perinatal risk factors occur more frequently in the EPs'

infants. This study's results indicate that a continual awareness of fetal risk is warranted in the EP group.

Risk Factors Occurring During Labor and Delivery

The use of forceps or cesarean section occurred in 75% of the EP population compared to 37% of the YP group. Cesarean section occurred more frequently in this study than those reported in the literature. The increased frequency of cesarean is also true in the study's control group. The use of forceps varies greatly among previous studies, and this study's incidence of forceps use was within range of earlier statistics reviewed. There was a higher rate of forceps use in this study's control group when compared to previous studies. This could be due to the conservative approach of the obstetricians from the study site.

The average length of labor for the EP (11.15 hours) was higher than the YPs (10.26 hours). Similar results were seen when comparing the degree of birth related lacerations between the two groups. The mean frequency of occurrence in the EPs was 1.03 compared to 0.82 for the YPs. The high incidence of cesarean births (in this study) makes it impossible to draw conclusions about variables that occur in vaginal births. The use of anesthesia and narcotics were similar in both groups of vaginal deliveries. The similar use of narcotics and anesthesia between the two groups disagrees with Daniels' (1979) view

that the use of anesthesia or narcotics is higher in the EPs and, therefore, promotes dysfunctional labor.

The incidence of malpresentation was lower in this study in the EP and YP group (16.1% and 11.3%, respectively) than that reported in the literature. The occurrence of malpresentation was only slightly higher in the EP group as compared to the YPs. Results were similar for breech presentation since the rate for the EP group was 6.2% and the YP group was 3.2%.

Overall Conclusions

On the basis of this study, it appears that, with good antenatal care and active management of labor, an elderly primipara and her child can fare well. In this study, the EP herself did not experience any long-standing complications. The perinatal mortality rate was somewhat higher, but the overall chances of perinatal death occurring is low. There was only one infant congenital anomaly that was life-threatening and required surgery in the EP group. The EP can expect certain risk factors to occur more frequently than in her younger counterpart.

Risk factors found in this study that occurred at a significantly higher rate in the EP group are incidence of cesarean section, combined pre-existing illnesses, and congenital anomalies in the infant. The EP can expect an assisted birth by cesarean section or use of forceps, but outcomes for herself and her infant are still favorable.

Although assisted births are high, many authors (Biggs, 1973; Kajanaja, 1978; MacDonald, 1960; O'Sullivan, 1960) advocate cesarean births because they believe the end results are more favorable to their patient.

The elderly primipara herself has a 40% chance of having a pre-existing illness. The impact of this factor can be controlled somewhat because the prospective mother can choose to give birth knowing she has a health problem. If she does have a health problem, she can reduce the risk by taking an active part in management of her disease. Her chances of delivering a healthy infant are still good, but there are increased chances of having an obstetrical complication or congenital anomaly.

The third risk factor, congenital anomaly in the infant, is significantly higher in the EPs. The occurrence of having an infant with a congenital anomaly can be reduced if diagnosed in utero through amniocentesis. The EP can choose to abort the fetus if an anomaly is diagnosed; however, this may not be an option for all women. In this study population, one infant was born with Down's Syndrome and one newborn had a congenital anomaly that was life-threatening or posed long-standing health problems to the child.

A risk factor of notable concern but not significantly higher in the EP was perinatal mortality. The two incidents in the EP group in this study population is three

times higher than the hospital's average, and the age (34) of the woman from the control group delivering a stillborn verify the need for concern.

Implications for Nursing

As stated earlier in this study, the professional nurse is in a key position to influence risk factors so that maternal and fetal outcomes of pregnancy are positive. Through education, assessment and intervention with expectant families, he/she can ensure an optimal birth experience. The nurse could also assist in educating the community about potential risks as well as benefits in delaying childbirth.

Specifically, as the findings of this study indicate, the nurse who cares for the EP should be concerned with the need for a thorough prenatal assessment and be aware of the increased likelihood of a pre-existing illness in the EP. If a pre-existing illness does exist, the nurse needs to obtain a good history of the disease, encourage active management of the illness by the EP herself, and monitor the disease closely during the pregnancy.

Prior to delivery, the nurse should educate the EP about the possibility of assisted childbirth by cesarean section and/or use of forceps. At the time of delivery, the nurses working in labor and delivery and the nursery should observe for possible complications occurring from a congenital anomaly in the EP's infant.

Limitations of the Study

This small retrospective study has the following limitations. The occurrence of certain risk factors were so infrequent that chi square analysis could not be done because of violations of the statistical requirements. A larger sample would more accurately represent frequencies in the population and increase the generalizability.

In a five-year span, many nurses were responsible for recording data. Because original data collection occurring through the nurses' recordings on the patient charts was not controlled, inconsistencies could occur. Although data were usually objective, some variables reflect some degree of subjective judgment, especially the Apgar score and/or degree of birth related lacerations. Variables were not always documented on records used for this study by the nurse or the EP.

The results demonstrate a high percentage of cesarean births in the EP group compared to the YP group. Variables occurring only in EPs' vaginal births limited the total sample size of that group.

Recommendations for Future Studies

Recommendations for future research includes the following. Replication of this study is needed with a larger sample size in order to increase generalizabilities. The effects of the age of the older father's sperm on the occurrence of congenital anomaly and

child development should be explored. Exploration of the effects that postponing childbirth has on parental relationships with each other as well as their adjustment to the child is also needed.

Summary

The hypotheses of this study, H_1 - there will be a greater incidence of reproductive risk factors in the EP when compared to a matched sample of YPs, as well as H_2 - there will be a greater incidence of perinatal risk factors in infants of EPs when compared to YPs were partially supported. There were three risk factors that were significantly higher in occurrence in the EP group when compared to the YP group. These three risk factors were pre-existing illnesses, cesarean section and congenital anomalies.

The nurse can influence risk factors through the use of a risk model that includes categories and degrees of risk. By using the model when assessing the pregnant family unit, the professional nurse through a thorough assessment can gain insight to potential problems and intervene for the best possible pregnancy outcome.

REFERENCES CITED

REFERENCES CITED

Alment, E. A. J. (1970). The elderly primigravida. The Practioner, 204, 371-376.

Battaglia, F. C., & Lubchenco, L. O. (1967). A practical application of newborn infants by weight and gestational age. Journal of Pediatrics, 71, 159.

Biggs, J. S. G. (1973). Pregnancy at 40 years and over. Medical Journal of Australia, 1, 542-545.

Bing, E., & Coleman, L. (1980). Having a baby after 30. New York: Bantam Books.

Blum, M. (1979). Is the elderly primipara really at high risk? Journal of Perinatal Medicine, 7, 108-112.

Booth, R. T., & Williams, G. L. (1964). Elderly primigravida. Journal of Obstetrics and Gynecology of the British Commonwealth, 71, 249-254.

Butnarescu, G. F., Tillotson, D. M., & Villarral, P. P. (1980). Perinatal Nursing, Volume Two, Reproductive Risk. New York: John Wiley & Sons.

Christianson, R., Van Den Berg, B., Milkovich, L., & Oechsli, F. (1981). Incidence of congenital anomalies among white and black live births with long term follow-up. American Journal of Public Health, 71, 1333-1341.

Cohen, W., Newman, L., & Friedman, A. (1980). Risk of labor abnormalities and advancing maternal age. Journal of Obstetrics and Gynecology, 4, 414-416.

Daniels, P., & Weingarten, K. (1979). A new look at the medical risks in late childbearing. Women and Health, 4, 5-36.

Fogel, C. I., & Woods, N. F. (1981). Health Care of Women, High Risk Pregnancy. St. Louis, MO: C. V. Mosby.

Fortney, J., Higgins, J., Diaz-Infante, A., Hefnawi, F., Lampe, L., & Bartans, I. (1982). Childbearing after age 35: Its effect on early perinatal outcome. Journal of Biosocial Science, 14, 69-80.

Friedman, E. A., & Sachtleben, M. R. (1965). Relation of maternal age to the course of labor. American Journal of Obstetrics and Gynecology, 91, 915-922.

Gabbe, S. G., O'Leary, J., Petrie, R. H., & Sokal, R. S. (1981). High risk pregnancy, trimester 1: Assessing risks and options. Patient Care, 15, 76-109.

Galloway, K. G. (1976). The uncertainty and stress of high risk pregnancy. The American Journal of Maternal Child Nursing, 1, 294-299.

Goldberg, M. F., Edmonds, L. D., & Oakley, G. F. (1979). Reducing birth defect risk in advanced maternal age. Journal of the American Medical Association, 242, 2292-2294.

Haire, M. (1982). Beyond 35 and pregnant. Perinatalogy-Neonatology, 6, 57-62.

Hidgon, A. (1960). Pregnancy in the woman over forty. American Journal of Obstetrics and Gynecolocy, 80, 38-42.

Horger, E., & Smythe, A. (1977). Pregnancy in women over forty. Journal of Obstetrics and Gynecology, 49, 257-260.

Howley, C. (1981). The older primipara--implications for nurses. Journal of Obstetrics and Gynecology for Nursing, 10, 182-185.

Hurt, H. (1984). Continuing care of the high risk infant. Clinics in Perinatology, 11, 3-17.

Jensen, M., Benson, R., & Bobak, I. (1977). Maternity care: The nurse and the family. St. Louis, MO: C. V. Mosby Co.

Kajanaja, P., & Widholm, O. (1978). Pregnancy and delivery in women aged 40 and over. Obstetrics and Gynecology, 51, 47-51.

Kane, H. (1976). Advancing age and the primigravida. Journal of Obstetrics and Gynecology, 29, 409-414.

Kessler, I., Lancet, M., Borenstein, R., & Steinmetz, A. (1980). The problem of the older primipara. Journal of Obstetrics and Gynecology, 56, 165-169.

Legerski, R. J. C. (1959). The elderly primipara. Canadian Medical Association Journal, 80, 876-879.

MacDonald, I. R, & MacLennon, H. R. (1960). A consideration of the treatment of elderly primigravida. Journal of Obstetrics and Gynecology of the British Empire, 67, 443-450.

Miller, B. F., & Keane, C. B. (1972). Encyclopedia and Dictionary of Medicine and Nursing. Philadelphia, PA: W. B. Saunders Co.

Morrison, I. (1974). The elderly primigravida. American Journal of Obstetrics and Gynecology, 121, 465-470.

Mulcahy, R. (1968). Effect of age, parity, and cigarette smoking on outcome of pregnancy. American Journal of Obstetrics and Gynecology, 101, 844-849.

National Center for Health Statistics. (1976). Vital Statistics of the United States, Mortality, 1971. Hyattesville, MD: Department of Health and Human Services.

National Center for Health Statistics. (November, 1978). Congenital Anomalies and Birth Injuries among Live Births: United States, 1973-74. Vital Health Statistics Series 21, No. 31, DHEW Pub. No. 79-1909. Hyattesville, MD: Public Health Service, 1-58.

National Center for Health Statistics. (1984). Vital Statistics of the United States, Mortality, 1979, Volume I. Hyattesville, MD: Department of Health and Human Services.

National Center for Health Statistics. (1984). Vital Statistics of the United States, Mortality, 1979, Volume II. Hyattesville, MD: Department of Health and Human Services.

Nortman, D. (1974). Parental age a factor in pregnancy outcome and child development. Report on Population/ Family Planning: The Population Council, Inc.

Olds, S., London, M., Ladeweg, P., & Davidson, S. (1960). Obstetric Nursing. Reading, MA: Addison-Wesley Publishing Co.

O'Sullivan, J. (1960). The elderly primigravida. Journal of Obstetrics and Gynecology of the British Commonwealth, 67, 265-272.

Pillitteri, A. (1985). Maternal-newborn nursing care of the growing family, (3rd ed.). Boston, MA: Little & Brown Co.

Polit, D., & Hungler, B. (1978). Nursing research: Principles and methods. Philadelphia, PA: J. B. Lippincott Co.

Posner, L. B., Chidiac, J. E., & Posner, A. C. (1960). Pregnancy at age 40 and over. Obstetrics and Gynecology, 17, 194-198.

Reeder, S. J., Mastroianni, L., & Martin, L. (1980). Maternity nursing. Philadelphia, PA: J. B. Lippincott Co.

Roberts, F. B. (1977). Perinatal nursing care of newborn and their families. New York: McGraw-Hill.

Schneider, J. (1971). The high risk pregnancy. Hospital Practice, 10, 133-143.

Sklar, J., & Berkov, B. (1975). The American birth rate: Evidence of a coming rise. Science, 189, 693-700.

Sousa, R. A., & Cupoli, J. M. (1981). The birthing process: The effects on the parents. Clinics in Perinatology, 8, 197-210.

Steward, D. B., & Bernard, R. M. (1954). A clinical classification of difficult labour and some examples of its use. Journal of Obstetical Gynecology British Empire, 61, 18.

Treece, E. W., & Treece, J. W. (1977). Elements in Nursing Research. St. Louis, MO: C. V. Mosby.

Tysoe, F. W. (1970). Effect of age on the outcome of pregnancy. Pacific Coast Society of Obstetrics and Gynecology Transactions. St. Louis, MO: C. V. Mosby.

Westoff, C. F. (1976). The decline of unplanned birth in the United States. Science, 191, 38-41.

Wilner, D. M., Walkby, R. P., & Goerke, L . S. (1973). Introduction to public health, (6th ed.). New York: Macmillan Publishing Co., Inc.

APPENDICES

APPENDIX A

HOSPTIAL SURVEY OF THE NEWBORN INFANT QUESTIONNAIRE

Missoula City-County Health Department
and
University of Montana Speech, Hearing and Language Clinic

Hospital Survey of the Newborn Infant

PART "A"

Date completed _____

Infant's name _____ B.D. _____ Weight _____
first - middle last

Mother's name _____ B.D. _____

Father's name _____ B.D. _____

Marital Status S M W D Sep (Circle)

Children's names: _____ B.D. _____

_____ B.D. _____

_____ B.D. _____

_____ B.D. _____

_____ B.D. _____ Obstetrician _____

_____ B.D. _____

_____ B.D. _____ Pediatrician _____

Other household members: _____ B.D. _____

_____ B.D. _____

Home address: _____ Telephone _____

_____ (If no phone give number where you can be reached)

Grade School area _____

Education: Mother _____ Father _____
Last grade completed Last grade completed

Section A: TO BE COMPLETED BY MOTHER

	YES	NO
1. Did you take any prescription medication in the 18 months preceding this pregnancy? Please name below:	____	____ 1.
Birth Control Pills _____		
Others _____		
2. Did you take any prescription medications during this pregnancy?	____	____ 2.
Please name _____		
3. Did you smoke during this pregnancy?	____	____ 3.
If so, how many cigarettes per day? _____		
4a. Did anyone in your household smoke during this pregnancy?	____	____ 4a.
Who _____ and how many cigarettes per day? _____		
4b. Does the baby's father smoke?	____	____ 4b.
How long has he been smoking? _____		
How many cigarettes per day? _____		
5. Have any of you or your husband's relatives had any of the following:	____	____ 5.

Indicate relationship. (Father, mother, brother, sister, aunt, uncle)

Condition	Relationship
Cancer	
Diabetes	
Kidney (renal) disease	
Thyroid disease	
Congenital defect	
Hypertension (diagnosed high blood pressure)	
Heart condition (diagnosed)	
Other	

		YES	NO
6.	Do you know of anyone on either yours or your husbands side of the family who has had a hearing loss?		
	a. Father	____	____ 6a.
	b. Mother	____	____ 6b.
	c. Brother	____	____ 6c.
	d. Sister	____	____ 6d.
	e. Grandparent	____	____ 6e.
	f. Aunt	____	____ 6f.
	g. Uncle	____	____ 6g.
	h. Cousin	____	____ 6h.
	i. Other	____	____ 6i.
	j. How old is this person now? _____		
	k. How old was he when the loss occurred? _____		
	l. Was the hearing loss treated?	____	____ L
	If so, how? _____		
	m. Do you have any reason to think your baby may develop a hearing loss?	____	____ m.
	Explain _____		
7.	Have you had any blood transfusions before this pregnancy?	____	____ 7.
	If yes, when? _____		
9.	Did you have any x-ray and/or radio-isotope treatments in the 18 months preceding your pregnancy?	____	____ 9.
	Describe _____		
10.	Did you have any x-ray and/or radio-isotope exposure (for example, chest, abdominal) during this pregnancy?	____	____ 10.
	Explain _____		
11.	Did you have any immunizations in the 4 months preceding this pregnancy?	____	____ 11.
	Describe _____		
12.	Did you take any drugs or narcotics (for example, marijuana or other hallucinogens, amphetamines, barbituates, opium derivatives) in the 18 months preceding this pregnancy?	____	____ 12.
	Name _____		
13.	Did you take any drugs or narcotics during this pregnancy?	____	____ 13.
14.	Have you ever habitually used drugs or alcohol?	____	____ 14.
15.	Have you had syphilis or gonorrhea (circle which one(s)?	____	____ 15.
	When _____		
15a.	Was it treated?	____	____ 15a.
16.	Has the baby's father had syphilis or gonorrhea (circle which one(s)?	____	____ 16.
	When _____		
16a.	Was it treated?	____	____ 16a.
17.	How many times have you been pregnant? _____		
18.	Are you Rh negative?	____	____ 18.
	a. If yes, have you ever received RhoGam?	____	____ 18b.
	b. Have you had any children with an Rh problem that needed special treatment?	____	____ 18b.
	Please explain _____		
19.	Have you ever had a a) miscarriage? Date _____	____	____ 19a.
	b) stillbirth? Date _____	____	____ 19b.
	c) abortion? Date _____	____	____ 19c.
	d) baby that died shortly after birth? Date _____	____	____ 19d.
	e) death of a child	____	____ 19e.
20.	Have you had twins, triplets, etc.?	____	____ 20.
	If yes, when were they born? _____		
20a.	Are they still living?	____	____ 20a.
21.	Is there a blood relationship between you and the baby's father? (For example, first cousins)	____	____ 21.
22.	Was there any vaginal bleeding during this pregnancy?	____	____ 22.
	Explain _____		
23.	Did you have a viral infection (for example, shingles, chicken-pox, red measles, mumps, Herpes Simplex-Genital) during this pregnancy?	____	____ 23.
	Explain _____		

24. Have you had the German Measles (Rubella)? ____ ____ 24.
When? _____
25. Did you have the German Measles during this pregnancy? ____ ____ 25.
26. Were you exposed to German Measles during this pregnancy? ____ ____ 26.
27. Did you have an undiagnosed rash during this pregnancy? ____ ____ 27.
28. Did you have a vaginal infection during this pregnancy? ____ ____ 28.
28a. When? _____ Was it treated? ____ ____ 28a.
29. Did you have a urinary infection during this pregnancy? ____ ____ 29.
29a. When? _____ Was it treated? ____ ____ 29a.
30. Was your blood pressure high during this pregnancy? When? _____ ____ ____ 30.
31. Did you have any accidents or illnesses during this pregnancy? ____ ____ 31.
Explain _____
32. Did you take any education for parenthood or Lamaze classes? ____ ____ 32.
33. Would you like to be contacted by a Community Health Nurse after you go home? ____ ____ 33.

RELEASE OF INFORMATION

In the interest of improved maternal and infant care, I _____
print mother's name

hereby give permission for release of any and all information contained in the "Missoula City-County Health Department and University of Montana Speech, Hearing and Language Clinic Survey of the Newborn Infant," Parts "A" and "B," to the following only:

1. University of Montana Speech, Hearing and Language Clinic
2. Missoula City-County Health Department and/or your local Health Department

I also give permission for release of information contained in the home visit report(s) by a community health nurse to the maternity nursing staff of Community Hospital.

Signed: _____ Date: _____

TO BE FILLED OUT BY NURSE

PART "B"

Birth Weight_____ Classification (circle) SGA AGA LGA

		YES	NO
1.	Does the mother have a medical history that would indicate at-risk status (e.g., diabetes, high blood pressure, heart condition, obesity, malnourished, etc.)? Explain _____	____	____ 1.
2.	How long did the mother's active labor last: Primip._____ Multip._____		
2a.	Was the second stage prolonged?	____	____ 2a.
2b.	Was labor induced? Explain _____	____	____ 2b.
3.	Were forceps used to deliver the baby?	____	____ 3.
3a.	Were there any complications?	____	____ 3a.
4.	Did the mother hemorrhage during labor and/or delivery?	____	____ 4.
5.	Were there any complications re: the placenta?	____	____ 5.
	a) abruptio	____	____ 5a.
	b) placenta praevia	____	____ 5b.
6.	Were there other complications in labor and delivery? Explain _____	____	____ 6.
7.	Was the baby born by Caesarean section: Why? _____	____	____ 7.
7a.	Is this a repeat C-section?	____	____ 7a.
8.	Was the baby born breech?	____	____ 8.
9.	Other comments: _____		9.

Delivery Room Nurse _____
(NAME)

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		YES	NO
10.	Was the baby in distress during the labor, birth process of immediately after delivery? Explain _____	____	____ 10.
11.	Were there any apparent complications at birth	____	____ 11.
	a) apgar score _____ at 5 minutes		
	b) Cyanosis	____	____ 11b.
	c) Asphyxia	____	____ 11c.
	d) neurological abnormalities	____	____ 11d.
	e) other, Explain _____		
12.	Is the baby premature? or postmature? (Circle and explain) _____	____	____ 12.
	_____		
	_____		
13.	Was there an ABO incompatibility, an Rh problem or elevated bilirubin that required special medical treatment for the baby (e.g., transfusions)?	____	____ 13.
14.	Does the baby have any other health or medical problems: e.g., physical disorder or congenital anomaly? Describe _____	____	____ 14.
15.	Has the baby received any non-routine medications since birth? Name _____	____	____ 15.
16.	Is there a feeding problem? Is the mother breast or bottle feeding? (Circle)	____	____ 16.
17.	Other comments _____		
	_____		
	_____		
	Nursery RN (name) _____		

ASSESSMENT OF RISK STATUS:

AT RISK _____ ____ ____

CHN (name) _____

_____ Grade school area

1. Infant's name _____
2. Birth date _____
3. Father's name _____
4. Father's age _____
5. Pediatrician _____
6. Mother's name _____
7. Mother's age _____
8. Home address _____
9. Obstetrician _____
10. Maternal status Grav. _____ Para. _____

APPENDIX B

PERMISSION FOR USE OF QUESTIONNAIRES, COUNTY HEALTH DEPARTMENT

MISSOULA CITY-COUNTY
HEALTH DEPARTMENT
301 West Alder · Missoula, Montana 59802 · Ph. (406) 721-5700

DECEMBER 13, 1984

LINDA GEIGER
2240 FOOTHILLS DRIVE
MISSOULA, MT 59803

DEAR LINDA:

PLEASE ACCEPT THIS LETTER AS WRITTEN PERMISSION TO USE OUR SURVEY FORMS.

I WOULD BE VERY INTERESTED IN READING YOUR THESIS WHEN COMPLETED. LET ME KNOW IF I CAN BE OF FURTHER ASSISTANCE.

SINCERELY,

DENNIS LANG
DIRECTOR OF HEALTH SERVICES

APPENDIX C

PERMISSION FOR USE OF QUESTIONNAIRES, UNIVERSITY OF MONTANA'S SPEECH, HEARING AND LANGUAGE CLINIC

University of Montana
Communication Sciences and Disorders • Missoula, Montana 59812 • (406) 243-4131

December 14, 1984

Linda Geiger
2240 Foothills #1
Missoula, MT 59801

Dear Ms. Geiger:

By this letter, I am authorizing access to the Hospital Survey of the Newborn Infant forms in the custody of the Missoula City-County Health Department, with the understanding that records will not be removed from the Health Department, and that confidentiality will be maintained and identity will be protected.

Thank you for the copy of your proposal and I wish you every success in your project.

Sincerely,

Robert B. Chaney, Jr., Ph.D.
Audiologist

RBC/tm

cc: Dennis Lang
Missoula City-County Health Dept.
Missoula, Montana 59801

APPENDIX D

HOSPITAL CONSENT

Missoula Community Hospital

GRANT M. WINN, EXECUTIVE DIRECTOR

January 22, 1985

Linda Geiger
2240 Foothills, #1
Missoula, Montana

Dear Linda,

I am in receipt of your letter requesting access to the birth logs from the Obstetrical Department at Community Hospital from 1974 to the present. In addition, access to the medical records of patients meeting the criteria you have set is requested.

Access to these sources is granted providing the confidentiality of these records is maintained and no attempt is made to contact patients identified through your review of records.

Please coordinate this activity through Marietta Cross, OB Supervisor and Janice Haag, Director of Medical Records.

Please let me know if I can be of further assistance. I wish you success in your pursuits.

Sincerely,

Tana J. Casper, RN
Director, Nursing Service

TJC/dr
cc: M. Cross
J. Haag

APPENDIX E

INTAKE FORM - HOSPITAL SURVEY OF THE NEWBORN INFANT

Intake Form

Hospital Survey of the Newborn Infant

1. Infant's birthdate. ____ ____ ____ ____ ____ ____

2. Infant's weight. ____ ____ ____ ____

3. Education: Mother _____

4. Education: Father _____

Section A: To be completed by mother.

29 5. Was ther any vaginal bleeding during pregnancy? _____

30 6. Was your blood pressure high during this pregnancy? _____

32 7. Did you take any education for parenthood or Lamaze? _____

33 8. Would you like to be contacted by a CHN? _____

Section B; to be completed by the nurse.

9. Birth weight classification. SGA AGA LGA

1 10. Does the mother have a medical history that would indicate at risk status.
(e.g. diabetes, high blood pressure, heart attack, obesity)_____

2 11. How long did the mother's active labor last?_____

2a 12. Was the second stage prolonged? _____

2b 13. Was labor induced? _____

3 14. Were forceps used to deliver the baby? _____

4 15. Did the mother hemorrhage during labor? _____

5 16. Were there any complications re: the placenta _____
a. abruptio b. placenta previa

6 17. Were there any complications in labor & delivery? _____

7 18. Was the baby born by Caesarean section? _____

8 19. Was the baby born breech? _____

10 20. Was the baby in distress during the labor, birth process or immediately after delivery? _____

Maternal Record

Infant's Birthdate_____

31. Membranes ruptured spontaneously _____

32. Labor induced.
    a. elective _____

33. First stage labor _____

34. Second stage labor _____

35. Third stage labor _____

36. Presentation and position _____

37. Spontaneous delivery. _____

38. Forceps. _____

39. Lacerations _____

40. Est. Blood Loss. _____

41. Medications _____

42. Anesthesia ____None ____Local ____Pudenadal
    ____Paracervical ____SAB ____Caudal
    ____Epidural

43. Breast or Bottle. _____

44. Length _____

45. EDC _____

46. Apgar at one minute _____

47. Meconium _____

48. EGA _____

49. Sex _____

50. Mother's occupation _____

51. Father's occupation _____

11 21. Apgar score at 5 minutes. _____ _____
a. cyanosis
b. asphyxia
c. neurological abnormalities
d. other_____

12 22. Is the baby premature or postmature? _____

13 23. Was there an ABO incompatibility, an RH problem or elevated bilirubin that required special tx. _____

14 24. Does the baby have any other health or medical problems. _____
Describe._____

15 25. Has the baby received any non-routine meds? _____

16 26. Is there a feeding problem? _____

27. Is the mother breast or bottle feeding? _____

28. Mother's age. _____ _____

29. Father's age. _____ _____

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