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THE RELATIONSHIP BETWEEN AGE APPROPRIATE EDUCATIONAL LEVEL AND BARRIERS TO PRENATAL CARE OF RURAL LOW INCOME PREGNANT WOMEN

presented by

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has been accepted towards fulfillment
of the requirements for

Masters degree in Nursing

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PhD
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Date 3-26-98

DATE DUE	DATE DUE	DATE DUE

THE RELATIONSHIP BETWEEN AGE APPROPRIATE EDUCATIONAL LEVEL AND BARRIERS TO PRENATAL CARE OF RURAL LOW INCOME PREGNANT WOMEN

By

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE OF NURSING

College of Nursing

1998

ABSTRACT

THE RELATIONSHIP BETWEEN
AGE APPROPRIATE EDUCATIONAL LEVEL
AND BARRIERS TO PRENATAL CARE OF
RURAL LOW INCOME PREGNANT WOMEN

By

Christa L. Holland

The purpose of this study was to identify the most frequently reported barriers by age appropriate educational level and to determine if there were differences in the number of reported barriers to age appropriate educational level of rural low income pregnant women. Pender's Health Promotion Model (1995) provided the conceptual framework. Secondary data collected by Omar, Schiffman, and Bauer (1995) were used. Age appropriate educational level was categorized as: (a) less than high school diploma 18 years of age or younger, (b) less than high school diploma 19 years of age and older, (c) high school diploma, and (d) post secondary education. Data analysis found that pregnant women with less than a high school diploma and at least 19 years of age found transportation to be the most frequently identified barrier, while pregnant women with a high school diploma or more education reported inability to pay for prenatal care. The economic barrier was the type of barrier most commonly reported for rural low income pregnant women. The study found no association between the educational level of pregnant women and the number of reported barriers to prenatal care. Information from this study can assist the APN working with rural low income pregnant women in efforts to decrease barriers to prenatal care for these women.

Dedicate to those who have
unconditionally given
their love over the past two years

ACKNOWLEDGMENTS

I first need to thank Mildred A. Omar, PhD, RNC, my thesis chair, for her patience and wisdom. I would also like to thank my committee, Jacqueline Wright, MSN, RN, and Rachel F. Schiffman, PhD, RN.

I must admit, it is rather exciting knowing how close to being done I am and looking back over two and a half years of my life thinking who helped me reach this point. First, Amy Montgomery who made me realize how short life is. Secondly, my guardian angel Joan Predko, PhD, RN. Finally, I need to thank my parents and my best friend, without whom none of my dreams would ever come true. Mom and Dad, you are so incredibly special, thank-you for your love and support over the years. I love you. Tamara, you have been my rock, always there when I need you. Thank-you.

With the conclusion of this paper, comes to an end a special period of my life, it has been one heck of a learning experience and I would like to thank everyone at the Michigan State University College of Nursing. GO GREEN!!

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Introduction

Background of the Problem

Rural low income women often have limited access to prenatal care and receive less than adequate prenatal care (Curry, 1989; Harvey & Faber, 1993; McClanahan, 1992). Adequate prenatal care has been associated with increased birth weight, decreased incidence of pre-term deliveries, and decreased infant and maternal mortality (Johnson, Primas, & Coe, 1994). The inability of rural low income women to obtain prenatal care has been associated with barriers (Scupholme, Robertson, & Kamons, 1991). Three general types of barriers to prenatal care have been identified in the literature: attitudinal, organizational, and economic (Burks, 1992; Curry, 1989; Joyce, Diffenbacher, Greene, & Sorokin, 1983; Maloni, Cheng, Liebl, & Maier, 1996; St. Clair, Smeriglio, Alexander, Connell, & Niebyl, 1990; Zambrana, Dunkel-Schetter, & Scrimshaw, 1991); these barriers have been reported to decrease the utilization of prenatal care for low income pregnant women (Harvey & Faber, 1993). Barriers to receiving prenatal care have been related to educational level (Aved, Irwin, Cummings, & Findeisen, 1993; Harvey & Faber, 1993; Kotelchuck, 1994; Sable, Stockbauer, Schramm, & Land, 1990; Zambrana et al., 1991). There is limited literature, however, about barriers to prenatal care utilization for rural low income pregnant women. The purpose of this study was to describe barriers to prenatal care by age appropriate educational level of rural low income pregnant women and to explore differences in the number of barriers among age appropriate educational levels of these women.

Some studies have shown that less educated pregnant women perceive more barriers and are less likely to receive prenatal care, these are studies primarily of urban women (Lia-Hoagberg, Rode, Skovholt, Oberg,

Berg, Mullett, & Choi, 1990; Sable et al., 1990; Young, McMahon, Bowman, & Thompson, 1989); however, the literature does not directly explain how pregnant women's educational level affects their perceived barriers to prenatal care. Perhaps with higher levels of education, pregnant women report fewer barriers because education increases problem solving skills and critical thinking. Increased problem solving skills may allow both rural and urban low income pregnant women to overcome financial and organizational barriers to prenatal care. Critical thinking skills are a composite of attitudes, knowledge, and skills that are an indispensable component in decision making for rural low income pregnant women when faced with barriers to prenatal care (Miller, 1992).

Many rural low income pregnant women are without health insurance or may not have the financial resources which can produce a financial barrier to prenatal care (Curry, 1989; Goldenberg, Patterson, & Frees, 1992; Harvey & Faber, 1993; Maloni et al., 1996; McClanahan, 1992; McDonald & Coburn, 1988; Young et al., 1989). Living in a rural community often presents other barriers to prenatal care, such as having a limited number of prenatal care providers (McClanahan, 1992). Limited numbers of prenatal care providers have been identified as an organizational barrier to prenatal care for rural low income pregnant women (Harvey & Faber, 1993; Joyce et al., 1984; McClanahan, 1992). As a consequence of few prenatal care providers, women often must travel great distances for their prenatal care, and this can produce an additional financial barrier for rural low income women with limited funds for gasoline or car maintenance (Harvey & Faber, 1993; Maloni et al., 1996; McClanahan, 1992). Attitudinal barriers include fear of doctors or lack of knowledge of the importance of prenatal care for rural low income pregnant women (Curry,

1989; Johnson et al., 1994; Lapierre, Perreault, & Goulet, 1995; Lia-Hoagberg et al., 1990; Maloni et al., 1996; Sable et al., 1990; Young et al., 1989).

The literature suggests education plays a significant role in determining if pregnant women will receive prenatal care (Aved et al., 1993; Curry, 1989; Harvey & Faber, 1993; Joyce et al., 1984; McDonald et al., 1988; Zambrana et al., 1991). The educational level of rural low income pregnant women may influence the means in which barriers to prenatal care are comprehended and managed (Burks, 1992; Harvey & Faber, 1993). If the ability to overcome barriers is based on education, then pregnant teens or women who have less education may lack the skills to overcome barriers to prenatal care. In a study investigating barriers to prenatal care for low income women, Aved et al. (1993) reported that pregnant women with a high school diploma were more likely to be successful in acquiring prenatal care than pregnant women with less education. The literature did not report the types of barriers to prenatal care based on the educational levels. Most of the studies noted that pregnant women with more education reported fewer barriers to prenatal care (Aved et al., 1993; Lia-Hoagberg et al., 1990; Joyce et al., 1984; Passannante, Espenshade, & Weiss, 1994).

A Michigan Department of Public Health survey (1989) reported that pregnant women who had trouble finding a prenatal care physician were younger and less educated. Of the studies which described barriers to prenatal care, higher levels of education were related to the pregnant women's ability to overcome barriers (Harvey & Faber, 1993; McClanahan, 1992; McDonald & Coburn, 1988; Sable et al, 1990; Scupholme et al., 1991; Zambrana et al., 1991); however, some authors made no link between educational level and prenatal care utilization (Johnson et al., 1994). Cooney (1985) associated a higher educational level with greater knowledge about good health practices and

receiving prenatal care. McDonald and Coburn (1988) and Aved et al. (1993) reported that pregnant women's knowledge, beliefs, and attitudes, which are related to educational level, play an important part in acquiring prenatal care services.

The advanced practice nurse (APN) has become an important provider in the delivery of health care. The APN is able to collaborate with other health professionals with the potential for decreasing barriers to prenatal care for rural low income pregnant women. State and federal initiatives have supported the use of advanced practice nurses in rural areas. Advanced practice nurses have the ability to provide prenatal care services to rural low income pregnant women. Information regarding the educational level of rural low income pregnant women and the association it may have with barriers to prenatal care for this population can assist APNs in developing interventions to decrease barriers to prenatal care for rural low income pregnant women.

Statement of the Problem

International concern has focused on decreasing infant and maternal mortality by providing prenatal care to all women beginning in the first trimester. While the United States has stated the goal of adequate prenatal care utilization for all pregnant women, the statistics reflect that there has been a lack of improvement in pregnant women obtaining adequate prenatal care (USDHHS, 1990). Inadequate prenatal care has been associated with barriers to prenatal care (McClanahan, 1992). Studies report rural communities have increased barriers to prenatal care and have limited access to health care (Curry, 1989; McClanahan, 1992; Sable et al., 1990). Rural pregnant women have been reported to have later entry into prenatal care as compared to urban women (McManus & Newacheck, 1989). The educational

level of rural low income pregnant women may be one factor related to identified barriers to prenatal care. Harvey and Faber (1993) reported that pregnant women with less education were more likely to cite barriers to prenatal care, while Aved et al. (1993) reported that pregnant women with a high school diploma were more successful in overcoming barriers and obtaining prenatal care. However, little is known about the association between barriers to prenatal care and educational level for rural low income pregnant women.

In a rural community in Michigan, maternal reasons for not seeking prenatal care were examined by Omar, Schiffman, and Bauer (1995); however, the association between barriers and age appropriate educational level was not reported. Factors that inhibit access to prenatal care for rural low income women need to be better understood to design interventions that will decrease barriers to prenatal care. If the educational level of rural low income pregnant women is associated with barriers to receiving prenatal care, it is important to understand this association in order to enhance success in reducing the barriers to prenatal care for this population.

Research Questions

The research questions were: (1) What is the most frequently identified barrier by age appropriate educational level for rural low income pregnant women? (2) What type of barrier is most frequently reported by age appropriate educational level of rural low income pregnant women? (3) Is there an association between the number of reported barriers identified and the age appropriate educational level of rural low income pregnant women?

Significance of the Study

Discovering the type of barrier to prenatal care in each educational level provides information regarding the impact educational level has on

barriers to prenatal care for rural low income pregnant women. By identifying an association between the number of reported barriers to prenatal care and educational levels, the impact pregnant women's educational levels have on their barriers to prenatal care can be recognized. By studying educational levels and barriers to prenatal care for rural low income pregnant women in one rural community, information is provided which enables health care providers to further understand barriers to prenatal care for women in their community and can assist in the development of interventions to decrease barriers to prenatal care.

Conceptual Framework

Conceptual Definition of Variables

This section includes the conceptual definition for each of the study variables. Secondly, the conceptual framework using the Health Promotion Model of Pender is described. Conceptual definitions of the variables of age appropriate educational level and barriers to prenatal care are based on a synthesis of existing literature and the conceptual framework of the Health Promotion Model (HPM) (Pender, 1996). First, the conceptual definitions are presented for age appropriate educational level and barriers to prenatal care. Second, these definitions are applied to the theoretical model of the Health Promotion Model (Pender, 1996).

Age Appropriate Educational Level

Education and educational level are not commonly defined concepts in research or the literature. Education is the process of learning, acquiring reasoning, and knowledge (Webster's, 1989). Educational level has been defined according to the grade of education attained, given in years. Higher levels of education increase a person's problem solving abilities, inductive reasoning, and critical skills (Miller, 1992). Research has continually

categorized the level of education by documenting how many years of school a person has received. Cooney (1985) defines education by the years of school completed, and refers to it as "not only formal instruction but also the extent of exposure to middle class American values" (p. 988).

A high school diploma is a standard that indicates a marker reached in the learning process of a woman's life. Women who are 18 years or less without a high school diploma need to be considered differently than pregnant women 19 years and older that do not have a high school diploma. The younger women have not yet had the opportunity to accomplish the set standards to achieve a high school diploma, they may still be in high school, and may not have attained those skills that are provided through formal education. In addition, women younger than 19 years of age, may not have the informal skills of gaining education through life's experience, which women 19 years and older without a high school diploma may have attained. Therefore, educational level must be assessed by not only the level of formal education that pregnant women have attained but also by their age and if it is appropriate for that educational level.

For this study, age appropriate educational level was defined as the appropriate level of education based on a pregnant woman's age. Age appropriate educational level refers to a person being a certain age at a particular level of education. It is assumed that with higher levels of education the more knowledge, problem solving skills, and critical thinking skills a pregnant woman will have.

Types of Barriers to Prenatal Care

Barriers are considered to be obstacles or impediments for pregnant women in receiving prenatal care (Harvey & Faber, 1993; Reis, Robinson, Anderson, Mills-Thomas, 1992; Scupholme et al., 1991). The literature

extensively defined barriers to prenatal care for pregnant women (Aved et al., 1993; Cooney, 1985; Goldenberg et al., 1992; Higgins, Murray, & Williams, 1994; Poland, Ager, Olson, & Sokol, 1987; Zambrana et al., 1991). The literature used a multitude of different words to define barriers such as: factors, deterrents, variables, and problems (Cooney, 1985; Hansell, 1991; Poland, Ager, Olson & Sokol, 1990; Sable et al., 1990; St. Clair et al., 1990). Barriers can be classified by type, which include: financial, organizational, medical, sociocultural, personal attitudes, situational, sociodemographic, psychosocial, economic, emotional, behavioral, internal or external (Hansell, 1991; Harvey & Faber, 1993; Higgins et al., 1994; Maloni et al., 1996; Melnikow & Alemagno, 1993; Omar et al., 1995; Passannante et al., 1994; Poland et al., 1987; Sable et al., 1990; Scupholme et al., 1991; St. Clair et al., 1990). The various authors did not offer a consistent list of types of barriers. In this study, types of barriers were defined as economic, organizational, and attitudinal.

Economic Barrier. Economic barriers have been defined by researchers as obstacles leading to the inability to pay for health care services (Harvey & Faber, 1993; Sable et al., 1990). Meikle, Orleans, Leff, Shain, and Gibbs (1995) found the economic barriers to prenatal care such as lack of finances and little or no health insurance were the main barriers for not receiving prenatal care. Joyce et al. (1983), Johnson et al. (1994), and Higgins et al. (1994) used the term external barriers to define economic factors which included lack of financial resources or insurance coverage, and inadequate access to transportation and child care. Transportation is considered an economic barrier for rural low income pregnant women because it takes money to own and maintain and run a car (Omar et al., 1995). Lack of child care is also an economic barrier (Johnson et al., 1995) based on lack of funds to pay for child care and

office/clinic restrictions which do not allow children to come to prenatal visits. In this study, the economic barrier to prenatal care for rural low income pregnant women was defined as the lack of financial resources making it difficult to pay for prenatal care, obtain child care and/or transportation that the pregnant woman perceived as an obstacle(s) to receiving prenatal care.

Organizational Barrier. Organization barriers include the woman's inability to access prenatal care based on the characteristics of the prenatal care system (Curry, 1989; Maloni et al., 1994; McClanahan, 1992; Passannante et al., 1994; Scupholme et al., 1991). Availability of prenatal care, limited clinical hours, difficulty with appointment scheduling, staff attitudes, and ineffective communication are all factors included in organizational barriers to prenatal care (Harvey & Faber, 1993; Higgins et al., 1994; Kieffer, Alexander, & Mor, 1992; Lee & Grubbs, 1995; Lia-Hoagberg et al., 1990; Maloni, et al., 1996; Scupholme et al., 1991). Harvey and Faber (1993) describe difficulty getting off from work or school as an organizational barrier due to inconvenient and limited office hours. The organizational barrier was defined in this study as characteristics of the prenatal care delivery system which may result in fear of being reported to the police, difficulty scheduling prenatal appointment, not knowing where to go for prenatal care, and difficulty getting time off from work or school.

Attitudinal Barrier. Attitudinal barriers are personal factors that influence whether a pregnant woman will seek prenatal care (Maloni et al., 1996; McClanahan, 1992). Inability to accept the pregnancy, lack of knowledge concerning pregnancy, inadequate social supports, failure to notice the signs of pregnancy are attitudinal factors that hinder access to prenatal care services (Augustyn & Maiman, 1994; Maloni et al., 1996; McClanahan, 1992; Young et

al., 1989). Poland et al.'s (1987) study revealed that negative personal attitudes about being pregnant, the importance of prenatal care, and health professionals were attitudinal barriers for poor women accessing prenatal care. Johnson et al. (1994) refer to a woman's attitudes, beliefs, and values as internal factors that influence her decision to utilize prenatal care. Attitudinal barriers also include denial of the pregnancy, depression, fear about the pregnancy, and feeling that prenatal care is unimportant (Curry, 1989; Harvey & Faber, 1993; Lia-Hoagberg et al., 1990; Meikle et al, 1995; Sable et al., 1990). Goldenberg et al. (1992) found that women's attitudes toward past experiences with health care and efficacy of prenatal care may influence the timing of initiation into prenatal care. Rural low income pregnant women may not obtain prenatal care due to the fact that they dislike physicians or the health care system (Aved et al., 1993; Curry, 1989; Poland et al., 1987). Attitudinal barriers that rural low income pregnant women are faced with in obtaining prenatal care were defined in this study as personal factors including perception that prenatal care was not necessary earlier in pregnancy, personal problems that the pregnant woman may report, and dislike of the physician or health care staff.

Theoretical Model

In this study, the Health Promotion Model (HPM) (Pender, 1996) was used to describe the association between the variables of age appropriate educational level and frequency and type of barriers to prenatal care. The Health Promotion Model was developed by Pender in 1982 and revised in 1996. Health promotion focuses on efforts by an individual to approach or move toward a positive state of health and well-being (Pender, 1996).

"The HPM is an attempt to depict the multidimensional nature of persons interacting with their environment as they pursue health" (Pender,

1996, p.53). The framework integrates a number of theories within a nursing perspective of holistic human functioning. The framework is used in research to predict the overall health promoting lifestyles and specific behaviors of individuals.

In the model (Figure 1) there are three major concepts: (a) Individual Characteristics and Experiences; (b) Behavior-Specific Cognitions and Affect, and (c) Behavioral Outcome. Each concept contains variables that directly impact the concept and influence the outcome. The variables in the HPM are described below.

Individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes are factors that affect or are relevant influences on a population's particular health promoting behaviors. The ability to recognize the interrelationships between the factors and their influence on the outcome of the health behavior allows researchers to explain, predict, and alter health promoting behaviors.

Individual Characteristics and Experiences

Prior related behaviors have both direct/automatic and indirect/influences that affect the likelihood of engaging in health promotion (Pender, 1996). Prior experience with prenatal care has a direct effect on if rural low income pregnant women will achieve prenatal care. If prior experiences with prenatal care were positive than it is likely that the pregnant women will obtain prenatal care; however, if it was a negative experience than they may not be willing to engage in prenatal care.

Personal factors include biological, psychological, and sociocultural aspects of the person (Pender, 1996). In this study, personal factors include the rural low income pregnant women's age appropriate educational level.

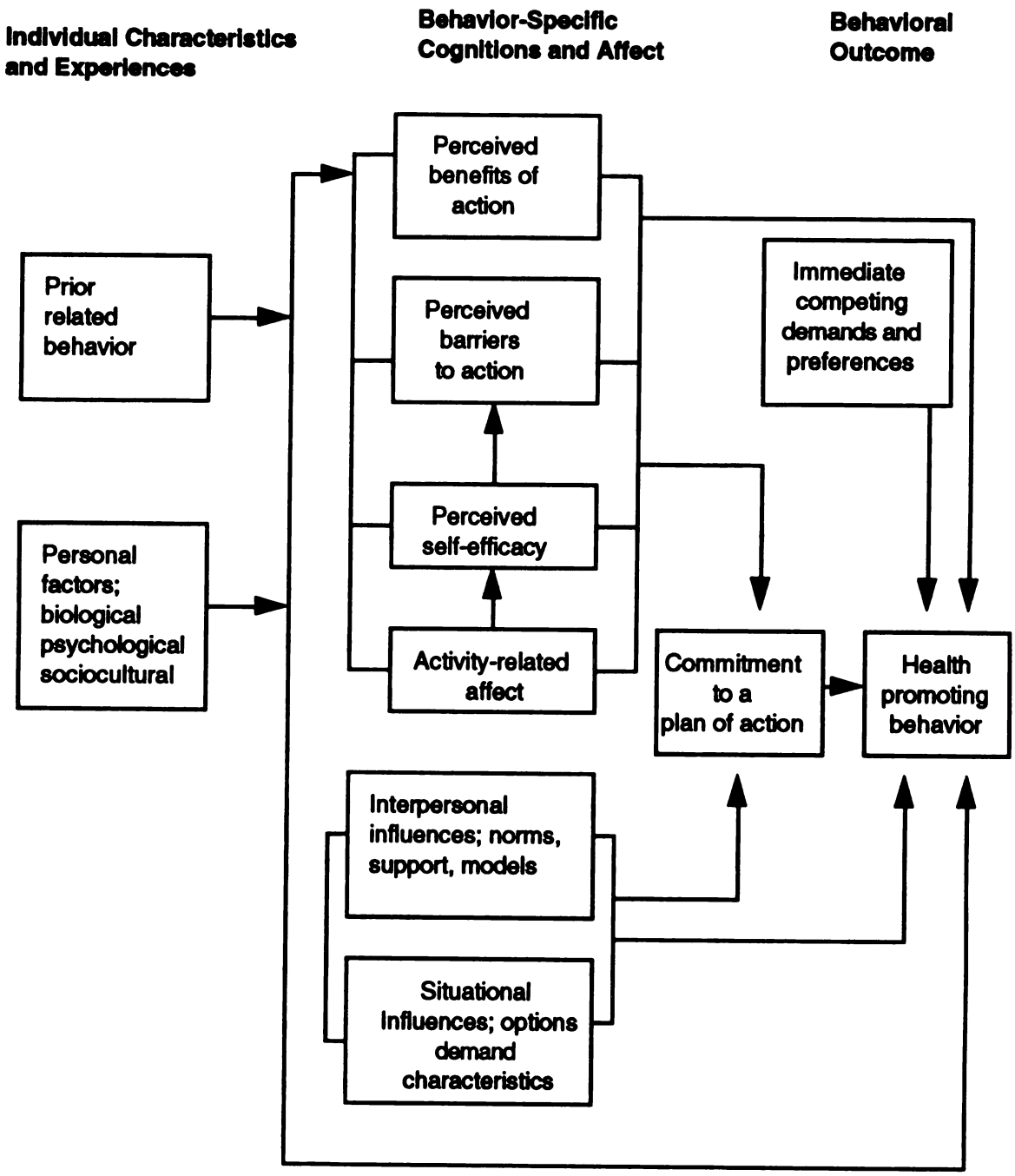

Figure 1. Health Promotion Model (Pender, 1996)

Behavior-Specific Cognitions and Affect

Perceived benefits of action are intrinsic and extrinsic beliefs about the effectiveness of recommended preventive actions and affect the individual's perceived value of early detection (Pender, 1996). This is the belief by rural low income pregnant women that reaching prenatal care is a benefit for themselves and their babies.

Perceived barriers to action are parallel to perceived benefits, exercising a direct influence on the inclination to engage in health-promoting behavior (Pender, 1996). The barriers to receiving prenatal care for rural low income pregnant women are in this study referred to as economic, organizational, and attitudinal barriers. The barriers are influenced by the age appropriate educational level of the rural low income pregnant women.

Perceived self-efficacy is an individual's accountability for his or her own health (Pender, 1996). The women's self efficacy is their belief that they can overcome the barriers and obtain prenatal care.

Activity-related affect refers to the subjective states that occur before, during, and after a behavior (Pender, 1996). Activity-related affect is interpreted as the feelings that the rural low income women experience prior to prenatal care and during the pregnancy.

Interpersonal influences are defined as norms, or expectations of significant others, social support, or instrumental and emotional encouragement, and modeling learned through observations (Pender, 1996). Interpersonal influences are the expectations or thoughts of others toward the rural low income pregnant women which influence if these women will engage in prenatal care.

Situational influences are perceptions of available options, demand characteristics, and aesthetic features of the environment (Pender, 1996).

Situational influences include living in a rural area and also being low income for the women of this study.

Behavioral Outcomes

Immediate competing demands and preferences are behaviors that consciously intrude on the course of action and may affect the health-promotion activity (Pender, 1996). Immediate competing demands and preferences refers to environmental contingencies that rural low income pregnant women have little control over such as clinic hours, family care responsibilities, or work.

Commitment to a plan of action refers to a decision to carry out specific actions and identification of specific strategies to succeed with the plan (Pender, 1996). Rural low income pregnant women make a decision to engage in prenatal care and identify certain behaviors that will help them reach their health promoting behavior of prenatal care.

Health-promoting behavior is the outcome or result of health promotion activities. The health-promoting behavior in this study is the rural low income pregnant women obtaining prenatal care.

Application of the Health Promotion Model to Barriers of Prenatal Care

In the application of the study variables the major concepts of the model have not been altered. However, the variables within each concept have been replaced with the variables under investigation in this study, which include barriers to prenatal care and age appropriate educational level (Figure 2).

Individual Characteristics and Experience. The concept of Individual Characteristics and Experiences includes the variable of age appropriate educational level of the pregnant woman. In the model, age appropriate educational level is directly associated with perceived barriers to prenatal care

for rural low income pregnant women. In this study, the age appropriate educational level is being studied to determine if it is a predictor of barriers for rural low income pregnant women.

Behavior-Specific Cognitions and Affect. Within Behavior-Specific Cognitions and Affect include the perceived benefits, barriers, and beliefs regarding obtaining prenatal care. Perceived benefits of prenatal care (having a healthy baby), self-efficacy (perceived skills and competence to engage in prenatal care), and situational influences are not variables under study; however, as displayed in the model they do directly affect perceived barriers to prenatal care for rural low income pregnant women.

Barriers are considered impediments to achieving the health promoting behavior. Rural low income pregnant women's perceived barriers to prenatal care include economic, organizational, and attitudinal.

In the implementation of the HPM, the direct association between age appropriate educational level with economic, organizational, and attitudinal barriers to prenatal care for rural low income pregnant women is identified. By utilizing the HPM the APN can determine the potential for rural low income pregnant women with different educational levels to experience barriers to prenatal care. The HPM allows the APN to assess the influence of education on barriers to prenatal care and develop interventions that will modify behavior and assist rural low income pregnant women overcome barriers to prenatal care.

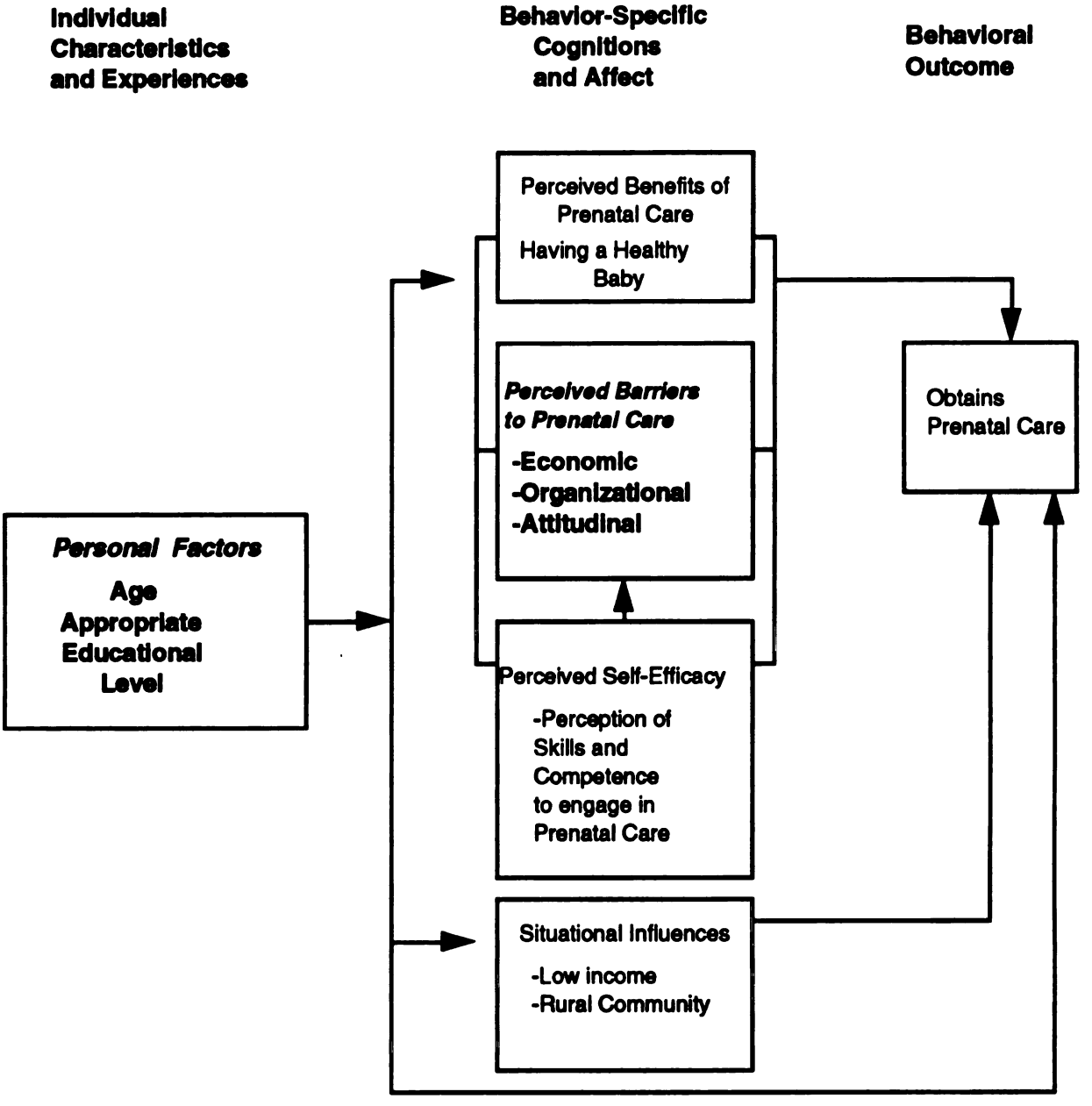

Figure 2. Educational Level and Barriers to Prenatal Care: Application to the Health Promotion Model (Pender, 1996)

Review of Literature

The research was reviewed on age appropriate educational level and barriers to prenatal care for pregnant women which included rural, urban, and low income pregnant women. Research was limited in describing barriers to prenatal care based on the age appropriate educational level of the pregnant women, especially for rural low income women. Barriers to prenatal care on the other hand have been extensively documented in the literature; however, most of the literature described barriers of urban low income pregnant women in receiving prenatal care (Aved et al., 1993; Curry, 1989; Johnson et al., 1994; Joyce et al., 1983; Maloni et al., 1996; Poland et al., 1987); only a few studies investigated barriers rural women face (Harvey & Faber, 1993; Nesbitt, Connell, Hart, & Rosenblatt, 1990; Omar, et al., 1995).

Age Appropriate Educational Level and Barriers

An exhaustive literature review was done on age appropriate educational level and its effects on barriers to prenatal care for rural low income pregnant women in obtaining prenatal care. No specific research studies were found which took into account pregnant women's age appropriate educational level. Studies consistently grouped pregnant women into different educational levels; however, they did not indicate if the age of the pregnant women was appropriate for educational levels.

The literature did report that less educated pregnant women were found to indicate more financial barriers to prenatal care (Sable et al., 1990). Pregnant women with less education were three times more likely to report barriers to receiving prenatal care (Harvey & Faber, 1993; Sable et al., 1990). Meikle et al. (1995) found a significant association between pregnant women who had less than a high school education and financial barriers. The more education a pregnant woman had, fewer barriers to prenatal care were

reported (Harvey & Faber, 1993; Sable et al., 1990). Donabedian and Rosenfield (1961) in their study with urban mothers concluded that higher education could offset the barriers of low income. Research found that low income pregnant women whether urban or rural with inadequate prenatal care were less likely to be high school graduates and those who received inadequate prenatal care reported facing more barriers than women who received adequate prenatal care (Braveman, Bennett, Lewis, Egerter, & Showstack, 1993; Harvey & Faber, 1993; Lia-Hoagberg et al., 1990; McDonald & Coburn, 1988; Sable et al., 1990; Zambrana et al., 1991). In these studies the age appropriate educational level was not reported. Research studies have left a gap in differentiating between the age appropriate educational levels and barriers to prenatal care (Harvey & Faber, 1993; Lia-Hoagberg et al., 1990; Sable et al., 1990).

It is unclear in the literature if pregnant women with less than a high school diploma are 18 years or younger and have achieved the appropriate level of education for their age, or if they are 19 or older and have not received a high school diploma. Without considering the age appropriate educational level a deficit exists in the literature since it is unclear whether pregnant women with the same educational level but different ages identify the same barriers to prenatal care or handle the barriers in the same manner. Therefore, interventions to assist rural low income pregnant women to overcome barriers to prenatal care need to be specific for age appropriate educational levels .

Low Income and Barriers

The literature has described various economic, organizational, and attitudinal barriers experienced by low income women in rural and urban communities (Aved et al., 1993; Burks, 1992; Cooney, 1985; Harvey & Faber,

1993; McClanahan, 1992; McDonald & Coburn, 1988; Poland et al., 1987; Sable et al., 1990). The majority of the studies were performed in urban areas (Aved et al., 1993; Lia-Hoagberg et al., 1990; McCormick, Brooks-Gunn, Shorter, Holmes, Wallace, & Heagarty, 1989; Meikle et al., 1995; Scupholme et al., 1991); only three studies clearly stated that they sampled rural low income pregnant women in their research (Harvey & Faber, 1993; Omar et al., 1995; Sable et al., 1990).

Harvey and Faber (1993) found that three-fourths of the rural low income pregnant women in their study (n = 236) who received inadequate prenatal care experienced barriers to care in more than one category. Sable et al. (1990) found that women who received inadequate prenatal care were three times more likely to report financial, organizational, and attitudinal barriers to acquiring prenatal care. Passannante et al. (1994) indicated that attitudinal barriers were cited by more than half of the respondents (n = 93) and the remaining participants (n =74) identified financial or organization barriers as the reason prenatal care was not obtained.

Economic barriers that were identified by rural low income pregnant women included lack of finances to pay for prenatal care, inability to miss work for prenatal appointments due to financial restraints, lack of money for child care to attend prenatal care appointments, and lack of finances for transportation to obtain prenatal care (Harvey & Faber, 1993; Sable et al., 1990). Rural low income pregnant women indicated that difficulty paying for care was the major obstacle to prenatal care and transportation difficulties due to limited financial resources (Harvey & Faber, 1993, Maloni et al., 1995).

In the literature, organizational barriers can play a significant role in detouring low income pregnant women from obtaining prenatal care. Organizational barriers for low income rural women included fragmented,

uncoordinated care, inconvenient location, not knowing where to go for prenatal care, long waiting times, negative staff attitudes, limited appointment times, difficulty scheduling appointments, and inflexible rules regarding bringing children to appointments (Harvey & Faber, 1993; Maloni et al., 1995; Sable et al., 1990). Clinic hours are routinely scheduled during the day which can hinder working mothers or students in attending prenatal visits (Maloni et al., 1995). Rural low income pregnant women reported that previous experience in clinics, long waits, staff attitudes, fear of being reported to the police, and inconvenient hours were barriers to prenatal care (Harvey & Faber, 1993; Maloni et al., 1995; Omar et al., 1995; Sable et al., 1990). Women stated that being unable to find a prenatal care provider was a major organizational barrier to prenatal care (Sable et al., 1990).

Attitudinal barriers, which Curry (1989) defined as experiences, attitudes, and beliefs, were found in the literature to be significant barriers to receiving prenatal care for rural pregnant women (Harvey & Faber, 1993; McDonald & Coburn, 1988; Sable et al., 1990). Johnson et al. (1994) refer to attitudinal barriers to seeking prenatal care as a lack of motivation, knowledge deficit, fear, and fatigue. Depression, denial of pregnancy, and unplanned pregnancy were attitudinal barriers to prenatal care for rural low income pregnant women (Harvey & Faber, 1993; Maloni et al., 1995; Sable et al., 1990). Pregnant women's attitudes towards health professionals and previous experiences with the health care system were perceived as barriers to prenatal care (Harvey & Faber, 1993; Maloni et al., 1995; Omar et al., 1995; Sable et al., 1990; Young et al., 1989).

Research has been thorough in examining economic, organizational, and attitudinal barriers to prenatal care for urban low income pregnant women (Aved et al., 1993; McCormick et al., 1989; Scupholme et al., 1991).

The literature has identified that both urban and rural low income pregnant women experience some of the same barriers to prenatal care. However, because research studies of rural low income pregnant women and barriers to prenatal care are limited (Harvey & Faber, 1993; Omar et al., 1995; Sable et al., 1990), it is impossible to draw conclusions regarding barriers to prenatal care and possible solutions to these barriers for rural low income pregnant women without further investigation.

Critique of the Literature

Very limited literature was found which reported the association between barriers to prenatal care and age appropriate educational level for rural low income pregnant women. Most of the current research focused on adequacy of prenatal care related to educational level. Also, the majority of research had urban low income pregnant women as their study population (Aved et al., 1993; Johnson et al., 1994; Poland et al., 1990). It was also noted that the research which did consider the variables, barriers to prenatal care and age appropriate education level, did not thoroughly explain the association between age appropriate educational level and barriers to prenatal care for pregnant women (Cooney, 1985; Harvey & Faber, 1993; Maloni et al., 1995; McDonald & Coburn, 1988; Poland et al., 1987).

The literature lacked clarification regarding educational level and if the appropriate age for the pregnant women was taken into consideration for the outcomes of the studies (Burks, 1992; Harvey & Faber, 1993; McDonald & Coburn, 1988). Most of the research acknowledged that education did have an effect on the utilization of prenatal care by pregnant women (Maloni et al.,1995; McDonald & Coburn, 1988; Scupholme et al., 1991; Young et al., 1989); however, the research did not interpret how the various educational levels affected utilization of prenatal care. Some studies reported that pregnant

women with lower educational levels reported more barriers to prenatal care, but again, age appropriate educational level was not taken into consideration, nor was the association between educational level and barriers to prenatal care explained (Aved et al., 1993; Harvey & Faber, 1993; Meikle et al., 1995; Joyce et al., 1983).

The majority of the research studies included demographic characteristics about the sample which included age, parity, level of education, race, married, and insurance information (Aved et al., 1993; Meikle et al., 1995; Melnikow & Alemagno, 1993; Scupholme et al., 1991); however, a few studies did not provide demographic information (Poland et al., 1990; Sable et al., 1990).

The literature was extensive in identifying barriers to prenatal care for pregnant women. Each author, however, categorized the barriers to prenatal care in different ways; therefore, barriers that were classified as organizational in one study were called structural barriers in another. This can be seen in Harvey and Faber's (1993) study defining transportation problems as an organizational barrier, while Lia-Hoagberg et al. (1990) identified transportation as a structural barrier. The inconsistency between studies on the names of barriers was confusing. Terms to classify barriers were multiple, for example: financial, economical, attitudinal, sociodemographic, psychological, structural, internal, external, organizational, system, and situational barriers (Aved et al., 1993; Curry, 1989; Goldenberg et al., 1992; Harvey & Faber, 1993; Lia-Hoagberg et al., 1990).

Most of the research studies used urban low income women for their populations (Aved et al., 1993; Cooney, 1985; Lia-Hoagberg et al., 1990; Meikle et al., 1995; Petitti, Coleman, Binsacca, & Allen, 1990; Poland et al., 1987; Poland et al., 1990). Some studies did not indicate if they used rural or urban populations or did not report the income for the pregnant women (Johnson

et al., 1994; Melnikow & Alemagno, 1993; Scupholme et al., 1991) and some studies used urban and a rural populations combined (Burks, 1992; Sable et al., 1990). The literature lacks in specific investigations of barriers for rural low income pregnant women.

Sample size was adequate for most studies; however, there was a wide variation in sample size ranging from 15 (Johnson et al., 1994) to 600 (McCormick et al., 1989). Some studies used hospital or vital statistical records, providing a larger sample and more data; however, the researchers had to assume that the hospital data was accurate (Braveman et al., 1993; Cooney, 1985; Hansell, 1991; McDonald & Coburn, 1988; Nesbitt et al., 1990). Limited information was provided regarding sample selection making it difficult to determine how participants were included in the studies (Meikle et al., 1995; Poland et al., 1990; Poland et al., 1987; Sable et al., 1990). In most of the studies, questionnaires were used to ascertain barriers and educational level, however, frequently no sample of the questionnaire was provided which limited one's ability to specifically determine barriers (Aved et al., 1993; Harvey & Faber, 1993; Scupholme et al., 1991). Lack of reliability and validity of instruments used was a common deficiency in some studies (Aved et al., 1993; McCormick et al., 1989; Sable et al., 1990).

The literature that exists lacks information about rural low income pregnant women, their barriers to prenatal care, and the association of age appropriate educational level with barriers. This study adds to the knowledge about age appropriate educational level and its association on the number and type of barriers to prenatal care of low income pregnant women who live in rural areas. Exploration of the association between age appropriate educational level and the types of barriers to prenatal care, APNs can understand barriers to prenatal care that rural low income pregnant women

face. Understanding the association between age appropriate educational level and types of barriers to prenatal care may assist APNs with developing interventions for rural low income pregnant woman to assist them in overcoming economical, organizational, and attitudinal barriers to prenatal care.

Methods

The methods section describes the research design, sample, operational definitions, instruments, and procedures for the protection of human subjects.

Design

The research design was a descriptive study of rural low income pregnant women's age appropriate educational level and barriers to prenatal care through a secondary analysis of data previously collected by Omar et al. (1995). The original study done by Omar et al. (1995) examined barriers, expectations, and patient satisfaction as predictors of prenatal care utilization and maternal and infant outcomes in a rural community. Questionnaires were distributed between June 1994 through July 1995. This was a prospective study with both a survey component and a chart review component. Field procedures for the original study are in Appendix D.

Sample

The secondary study utilized the same sample as the original study by Omar et al. (1995). The original study sample included 61 low income women who met the following criteria: (a) third trimester of pregnancy attending at least three prenatal visits, (b) eligible for the Women, Infants, and Children (WIC) program, (c) able to read, write, and understand English, and (d) residents of the rural county under study. Of the 62 pregnant women initially

approached to participate in the original study, 61 of the women agreed, resulting in a 98% participation rate which was the final sample for this study.

Operational Definitions

Age Appropriate Educational Level. Age appropriate educational level was identified by the pregnant women on the Patient Satisfaction with Prenatal Care (PSPC) instrument (Omar & Schiffman, 1992). Respondents indicated less than high school, some high school, high school graduate, some college, college graduate, or beyond. Respondents indicated their age in years. For the secondary analysis, the educational level was operationalized into four categories: (1) less than high school diploma and 18 years of age or less, (2) less than high school diploma and 19 years of age and older, (3) a high school diploma and 19 years of age and older, and (4) any post secondary education and 19 years of age and older. Age appropriate educational level was operationally defined by the number of years of schooling completed within a specific age category. Eighteen years and younger was considered an age appropriate educational level if the pregnant women had either some high school or a high school diploma due to the fact this is the average age of completion or near completion of high school in society. Pregnant women 19 years and older were considered an age appropriate educational level if they had at least a high school diploma or post secondary education.

Barriers to Prenatal Care. Barriers to care were operationalized in the primary study by the Ten-Item Checklist (Richwald, Rhodes, & Kersey, 1987) (Appendix A). The types of barriers were organized into three categories based on related characteristics. The descriptive questions on the Ten-Item Checklist (Appendix A) were categorized into the three types of barriers as follows: (a) economic- item 3, item 5, and item 6, (b) organizational- item 2, item 4, item 7, and item 9, and (c) attitudinal- item 1, item 8, and item 10.

Due to the fact that each type of barrier had a different number of corresponding questions the types of barriers were weighed. For example, for a woman to be identified as having an economic barrier, she needed to respond either to item 3 or item 6 on the Ten-Item Checklist. Organizational barriers were assigned if item 4, item 7, or both item 2 and 9 were selected. To be considered as having an attitudinal barrier, item 1 or both items 8 and 10 needed to be identified. The pregnant women were asked to identify all the barriers that applied.

Instruments

The Ten-Item Checklist (Richwald et al., 1987) (Appendix A), and the Patient Satisfaction with Prenatal Care (PSPC) instrument (Omar & Schiffman, 1992) (Appendix B) were distributed to the pregnant women. For the secondary analysis, the data from the Ten-Item Checklist, the educational level, and age were gathered from the PSPC instrument for this study. The Ten-Item Checklist (Richwald et al., 1987) was formulated to assess barriers to prenatal care. The instrument does not have a reported reliability or validity (Omar et al., 1995).

The Patient Satisfaction with Prenatal Care (PSPC) Instrument (Omar & Schiffman, 1992) is an 108 item, five scale instrument designed to assess a client's motivation to seek prenatal care, satisfaction with prenatal care, and expectations of prenatal care. The instrument includes a section containing demographic items. The investigator used only the educational information and age of the women obtained from the demographic section of the PSPC in this secondary study.

Procedures for Protection of Human Subjects and Approval of UCRIHS

The original study was approved by the Michigan State University Committee on Research Involving Human Subjects (UCHRIS) (Appendix C).

There were no identified psychological, social, physical, economical, or legal risks for the subjects in the secondary study due to the fact that no further data were collected. The participants remained completely anonymous in the secondary study. Data were coded in the original study and the researcher did not have access to data that could potentially identify any of the participants in the original study. Data were provided by code number only. Approval by the University Committee on Research Involving Human Subjects was obtained for this study prior to data analysis (Appendix D).

Data Analysis

The research questions and the variables involved in this study were analyzed using the statistical SPSS program. Descriptive statistics were used to describe the sample as a whole and also in each of the four age appropriate educational levels by race, age, number of children, and marital status.

Research question #1: **What are the most frequently identified barriers by age appropriate educational level?** Frequencies were calculated to identify the barriers that were most frequently reported by pregnant women according to the categories of age appropriate educational level.

Research question #2: **What type of barrier is most frequently reported by age appropriate educational level by rural low income pregnant women?** The educational levels were coded into four categories; the barriers were categorized into three types. To answer this research question, criteria were established for each type of barrier as mentioned previously. The original data analysis plan was for a cross tabulation with Chi square analysis of the four age appropriate educational levels by the three categories of types of barriers. Due to the fact that there were only two participants who had less than a high school diploma and were 18 years of age or less, the final analysis was with three age appropriate educational levels by three barrier types. The

number of women reporting types of barriers in each of the three age appropriate educational levels was identified and in each type of barrier the number of women that reported the barrier was calculated. To arrive at the percentage the total number of rural low income pregnant women in each type of barrier was divided by the total number of women that reported any of the three types of barriers this was done separately in each educational level. The barrier with the highest percentage over 50% was accepted as the most frequently reported type of barrier.

Research question #3: **Is there any association between the number of reported barriers identified and the age appropriate educational level of rural low income pregnant women?** Educational level was categorized and the statistical procedure one way analysis of variance (ANOVA) was used to identify if there was an association between the number of reported barriers and the three age appropriate educational levels of rural low income pregnant women. The 0.05 level of significance was accepted.

Assumptions

There were four assumptions to this study. First, it was assumed that the participants were truthful about reporting their educational level. The second assumption was that the data had been collected and entered accurately.

Thirdly, it was assumed that all potential subjects were given the opportunity to participate in the original study and lastly, that participants understood the instructions and asked questions if they did not understand the questions or instructions.

Limitations

1. The sample used in the primary study was a convenience sample which was limited to those participants that chose to take part in the

study. Women who chose to participate may differ from those subjects who declined participation.

2. The lack of validity and reliability of the Ten-Item Checklist may have an impact on the results of the secondary analysis such that the Checklist may not capture the barriers to prenatal care of rural low income women.

Results

Demographic Characteristics

The sample consisted of 61 subjects recruited for the primary study in one rural community (Omar et al., 1995). The majority of the rural low income pregnant women were white (87%, n = 52), married (75%, n = 45), with a mean age of 24 years (SD = 5, range 15-41 years). Number of pregnancies ranged from 0 to 5 with a mean of 2 (SD = 1.26), and most of the women had at least one living child with a range from 1 to 4 children (SD = 1).

Age Appropriate Educational Level

Less than high school diploma and under 18 years of age. In this category there were two subjects whose average age was 15.5 years (SD = .7); neither of the participants indicated having living children. One of the participants was white and the other was Hispanic; one woman was single and the other was separated.

Less than high school diploma and 19 years of age or older. Ten women comprised this group with their ages ranging from 19 to 37 years, with the mean being 24 years of age (SD = 6). Three of the women (30%) were single, two divorced (20%), and five were married (50%). The number of living children ranged from 0 to 4 with the average being 2 children (SD = 1.2). Number of pregnancies varied from 1 to 5 with the average being 3 (SD =

1.1). One woman in this group was Hispanic (10%), eight were white (80%), and one indicated Other (10%).

High school diploma. Twenty-five participants in this group ranged in ages from 18 to 34 with the mean being 22 years of age (SD = 3.6). Four were single (16%), 20 were married (80%), and 1 was separated (4%). Number of living children averaged 1 (SD = .57) with the number of pregnancies ranging form 0 to 5 with the average being 2 (SD = 1.1). Two of the participants were Hispanic (8%), one was Native American (4%), and 22 were white (88%).

Post secondary. In this category there were 24 women whose ages ranged from 18 to 41 with an average of 25.5 years (SD = 5.6). Two women indicated they were single (8%), while 20 were married (92%). The range of living children was 1 to 3, with a mean of 1.0 (SD =.82). The number of pregnancies ranged from 0 to 5 with an average of 2 (SD = 1.1). In this group 22 participants were white (92%), one Native American (4%), and one Hispanic (4%).

Results Related to Research Questions

The research results are reported for each of the research questions undertaken in this analysis and the results are discussed.

Research Question #1. **What is the most frequently identified barrier by age appropriate educational level for rural low income pregnant women?**

Each of the participants was placed in one of the four age appropriate educational levels (Table 1). In the first age appropriate educational level, pregnant women 18 and younger with less than a high school diploma, there were no reported barriers to prenatal care. Pregnant women with less than a high school diploma and 19 years of age or older identified the transportation barrier most often. Rural low income pregnant women with a high school

Table 1

Frequency of Identified Barrier by Age Appropriate Educational Level for Rural Low Income Pregnant Women (N=61)

Barriers	Educational Level							
	1 (n=2)		2 (n=10)		3 (n=25)		4 (n=24)	
	n	%	n	%	n	%	n	%
†1 I didn't think prenatal care was necessary (earlier in the pregnancy)	0	0	0	0	0	0	0	0
ø2 I didn't know where to go	0	0	0	0	2	8	1	4
•3 I didn't know how I would pay for prenatal care	0	0	2	20	4	16	5	21
•4 I couldn't take time of from work or school	0	0	0	0	2	8	3	13
ø5 I couldn't find someone to watch the children	0	0	0	0	1	4	2	8
•6 I didn't have a way to get to the doctor or clinic	0	0	4	40	1	4	3	13
ø7 I had trouble scheduling an appointment	0	0	0	0	3	12	2	8
†8 I don't like doctors, clinics, or hospitals	0	0	1	10	0	0	2	8
ø9 I was afraid I would be reported to the police if I went to get prenatal care	0	0	0	0	0	0	0	0
†10 I had personal problems	0	0	2	20	0	0	0	0

Note. Educational Levels were represented by 1-4. 1 = 18 years or younger without a high school diploma; 2 = 19 years or older without a high school diploma; 3 = High school diploma; 4 = Post secondary; • = Economical barrier; ø = Organizational barrier; † = Attitudinal barrier.

diploma or post secondary most often reported that paying for the prenatal care was a barrier (Table 1).

Research Question #2. **What type of barrier is most frequently reported by age appropriate educational level by rural low income pregnant women?**

Only rural low income pregnant women who reported barriers were included in this analysis. Of the women that did report barriers to prenatal care ($n = 21$), the type of barrier most frequently identified by each age appropriate educational level was the economic barrier. Some women who had a high school diploma or any post secondary education also indicated the organizational barrier to prenatal care. Only one woman with an educational level of less than high school and 19 years or older identified the attitudinal barrier to prenatal care. Since only women that reported barriers were used in the analysis, the percentages in the columns do not add up to 100% due to the fact that a rural low income pregnant woman may have reported not only an economic barrier but that same woman may have reported an organizational barrier (Table 2).

Research Question #3. **Is there an association between the number of reported barriers identified and the age appropriate educational level of rural low income pregnant women?**

This question was answered by using one way analysis of variance (ANOVA). Results revealed there was no significant association between the variables, age appropriate educational level and the number of barriers, $F(2, 59) = .62$, $p = .59$; therefore, the number of reported barriers to prenatal care by rural low income pregnant women was not associated with age appropriate educational level.

Table 2

Type of Barrier Most Frequently Reported by Age Appropriate Educational Level by Rural Low Income Pregnant Women (N=21)

	Barriers		
	Economic	Organizational	Attitudinal
AAEL	f	f	f
Less than HS Diploma≥ 19 yrs of age (n = 5)	5	0	1
High School Diploma (n = 8)	5	4	0
Post Secondary (n = 8)	7	4	0

Note. AAEL = Age appropriate educational level; HS = High school; n = Number of subjects who reported a barrier to prenatal care.

Table 3

Means and Standard Deviations of Number of Reported Barriers by Age Appropriate Educational Level (N=59)

AAEL	n	M	SD
Less than HS Diploma≥19 yrs of age	10	.90	1.10
High School Diploma	25	.52	0.87
Post Secondary	24	.75	1.26

Note. AAEL = Age appropriate educational level; HS = High school.

Discussion

Overall, the subjects who participated in this study were fairly homogeneous. The majority of the subjects were married with a mean age of 24 years. Interestingly, 80% of the women had at least a high school education and half of these women had an educational level beyond a high school diploma. This is a somewhat different picture of rural low income women as compared to literature involving low income urban women (McCormick et al., 1989; Melnikow & Alemagno, 1993; Petitti et al., 1990; Poland et al., 1987); women who participated in this study were older, married, and more highly educated. These may be women who have chosen to live in a rural area and represent a different population of women than previous literature has reported. The women in this study were basically low-risk multiparious women who attended prenatal care. Previous research has shown women with higher levels of education are more likely to receive prenatal care (Sable et al., 1990).

One unexpected finding of this study was that few of the rural low income pregnant women in any age appropriate educational level actually reported any barriers to prenatal care. And although the educational level, less than a high school diploma and under 18 years of age, only had two participants, surprisingly this group did not report any barriers to prenatal care. Interestingly, pregnant women with post secondary education reported the highest variation of different types of barriers, i.e., seven different barriers as compared to pregnant women with a high school diploma, who reported six different barriers, while pregnant women with less than a high school diploma reported four different barriers to prenatal care. This may be due to the possibility that women with more education may have more barriers with respect to employment issues, such as trouble scheduling prenatal

appointments, unable to take time off from work, and not having a babysitter. All three groups of women reported not knowing how to pay for prenatal care and transportation as barriers; this would be consistent for this population, i.e., low income (Harvey & Faber, 1993).

Most Frequently Identified Barrier and Most Frequently Reported Type of Barrier

Since research questions 1 and 2 describe the most frequently identified barrier and the most frequently reported type of barrier these are discussed together. Discussion for the three age appropriate educational level groups which identified barriers is also provided.

Question #1 asked about the most frequently identified barrier by age appropriate educational level. It was observed in this study that there were relatively few barriers reported by any of the rural low income pregnant women by age appropriate educational level. The first educational level, less than a high school diploma 18 years of age or younger, did not report any barriers to prenatal care. It was found that pregnant women with less than a high school diploma 19 years or older reported transportation most often, while pregnant women with a high school diploma or post secondary education reported that the inability to pay for prenatal care was their most often. Research question #2 asked what was the most frequently reported type of barrier in each age appropriate educational level. Women in the other three age appropriate educational levels most often reported the economic barrier to prenatal care. This is consistent with the literature (Harvey & Faber, 1993).

Transportation was the primary barrier for pregnant women with less than a high school diploma 19 years or older. Perhaps this group of women may not have the finances to support owning an automobile since results

indicated that only one of the women worked outside the home and held a part-time position.

The inability to pay for prenatal care was the most frequently identified barrier to receiving prenatal care for the women with a high school diploma or post secondary education. The majority of these women worked outside of the home and worked full-time. Sixty percent of pregnant women with a high school diploma and 58% of pregnant women with post secondary education worked outside the home; 44% of the women with a high school diploma indicated working full-time, and 21% of women with post secondary education working full-time. Cooney (1985) reported that educational level represented an economic factor and played a key role in employment. This may be a similar factor in this study, such that pregnant women with higher levels of education were more likely to be employed. Although the majority of the pregnant women with high school diplomas and post secondary education indicated that they had full-time jobs, they still indicated the economic barrier as the primary barrier to prenatal care.

Rural communities may not offer health care benefits and/or provide the same salary scale offered in urban settings. Employed rural women even though they have a high education level, may have lower salaries and minimum health care coverage. Sixty percent of the women with a high school diploma in this study had Medicaid coverage and 63% of the women with post secondary education also had Medicaid coverage. Forty percent of the the women with a high school diploma indicated having private insurance, while 38% of pregnant women with a post secondary education indicated they also had private insurance. Only one woman with a post secondary education indicated self pay as a method of prenatal care payment. Supposedly, with higher levels of education come better paying jobs and

better benefits; however, in this study the women with higher educational levels still had difficulty paying for prenatal care.

Even though some of the working women with a high school diploma or post secondary education had private health insurance, not all women did; and even if they reported having private medical insurance, it was not deemed sufficient to cover the cost of prenatal care. These women indicated that the economic barrier inability to pay for prenatal care was the primary barrier to receiving prenatal care. Perhaps this was due to copayments or deductibles associated with private insurances. It is difficult, however, to draw generalizations due to the fact that each age appropriate educational level had a small number of participants; further analyzes with larger samples may yield more information.

An item of interest is that pregnant women with less than a high school diploma and 18 years or younger did not report any barriers; however, there were only two participants in this educational level. Perhaps one reason these two women did not report economic barriers was due to the fact that these participants were 15 and 16 years of age and may have been supported by their guardians. This group also did not report any organizational or attitudinal barriers to care. This could be a result of the low number of participants but could also be due to positive family/home/school support. These young women may not have faced the barriers to prenatal care older women faced, due to the fact they may have been taken to their prenatal visits, were adequately covered by Medicaid, did not have other children or employment, so scheduling and child care issues were not present. These two women may also have received positive support and attention from their prenatal care providers, making this a positive experience.

Association Between Educational Level and Number of Barriers

The third research question explored an association between age appropriate educational level and the number of barriers to prenatal care. The findings did not support an association between the number of barriers and age appropriate educational level; perhaps no association occurred since the number of participants in each age appropriate educational level was small. With more participants in each educational level an association may have been found. Sable et al. (1990) and Harvey and Faber (1993) in their studies found that less educated pregnant women were three times more likely to report barriers to prenatal care. However, in this study it was found that few women reported barriers, and the educational level with less than a high school diploma and 18 years of age or younger did not report barriers to prenatal care. Another consideration for lack of an association may be the nature of the instrumentation used in the primary study. The Ten-Item Checklist may not have tapped the appropriate barriers to prenatal care for rural low income pregnant women or women may not have understood completely what the item was referring to, and may not known that they could write in their own barriers. In addition, this sample may not have had the multitude of barriers to prenatal care compared to those pregnant women that did not obtain prenatal care. An indication for further study with inclusion of a qualitative component may provide additional insight into any association between age appropriate educational level and perceived barriers to prenatal care for rural low income pregnant women.

Perhaps study limitations may have affected the results. Using a secondary data analysis the sample utilized was small for the research undertaken, and the numbers of participants in each educational level varied. The respondents did not report many barriers to prenatal care in any of the

educational levels which decreased the size of the study; for example, the first educational group was excluded in the analysis of this study. Often research with rural populations poses a problem for an adequate sample since numbers are small often making it difficult to obtain adequate numbers for meaningful analysis. A larger sample may have provided different results. Additionally, the Ten-Item Checklist, though used in other studies, was without adequate reliability and validity. As indicated previously the instrument, itself, may have been flawed nor captured the true barriers for rural low income women or women may not have been sure what was being asked by the Ten-Item Checklist.

Conceptual Framework

The Health Promotion Model (Figure 2) provided an excellent conceptual framework for this study. It guided the investigation of the barriers to prenatal care for rural low income pregnant women and the association between barriers to prenatal care and age appropriate educational level. However, following the analysis of the data, modifications are suggested to better explain the findings of the study in terms of the association between the variables under investigation (Figure 3).

In this rural community not many of the women reported barriers to prenatal care; however, the women in the three age appropriate educational levels that did report barriers identified the economic barrier most frequently. Different economic barriers were selected by the women based on their age appropriate educational level. Rural low income pregnant women with less than a high school diploma 19 years or older selected the transportation barrier most often, while those with a high school diploma or post secondary education reported the inability to pay for prenatal care most frequently.

It was discovered in this study that age appropriate educational level also reflected certain situational influences, such as employment and insurance coverage. Pregnant women with higher levels of education were more likely to be employed with health insurance. Although all pregnant women in this study indicated some form of medical coverage including Medicaid or private insurance, the economic barrier still remained the most frequently identified barrier for low income pregnant women in this rural community. Since age appropriate educational level was not found to influence barriers, other factors need to be considered, perhaps it is a part of other situational factors that may have a direct relationship with barriers to prenatal care. Prior related behavior and biological, psychological, and sociocultural personal factors were added to the model to display the complex association of individual characteristics and experiences on economic barriers.

Implications for the APN in Primary Care

The APN must be aware of the multitude of factors that play a key role in barriers to prenatal care for rural low income pregnant women, one may be age appropriate educational level. The APN in the role of assessor can utilize information obtained physically, psychosocially, and demographically to identify those rural low income pregnant women who have barriers to prenatal care. Appropriate assessment of any economic barrier for all women, regardless of educational status, is indicated and includes assessment of employment, finances, health insurance, child care, and transportation. Assessment of other available economic support from family members, the community, or local churches is also indicated. Based on the assessment the APN is able to develop a plan to minimize economic barriers to prenatal care. Information regarding Medicaid and WIC as well as community resources can be provided along with assistance for applying for available programs

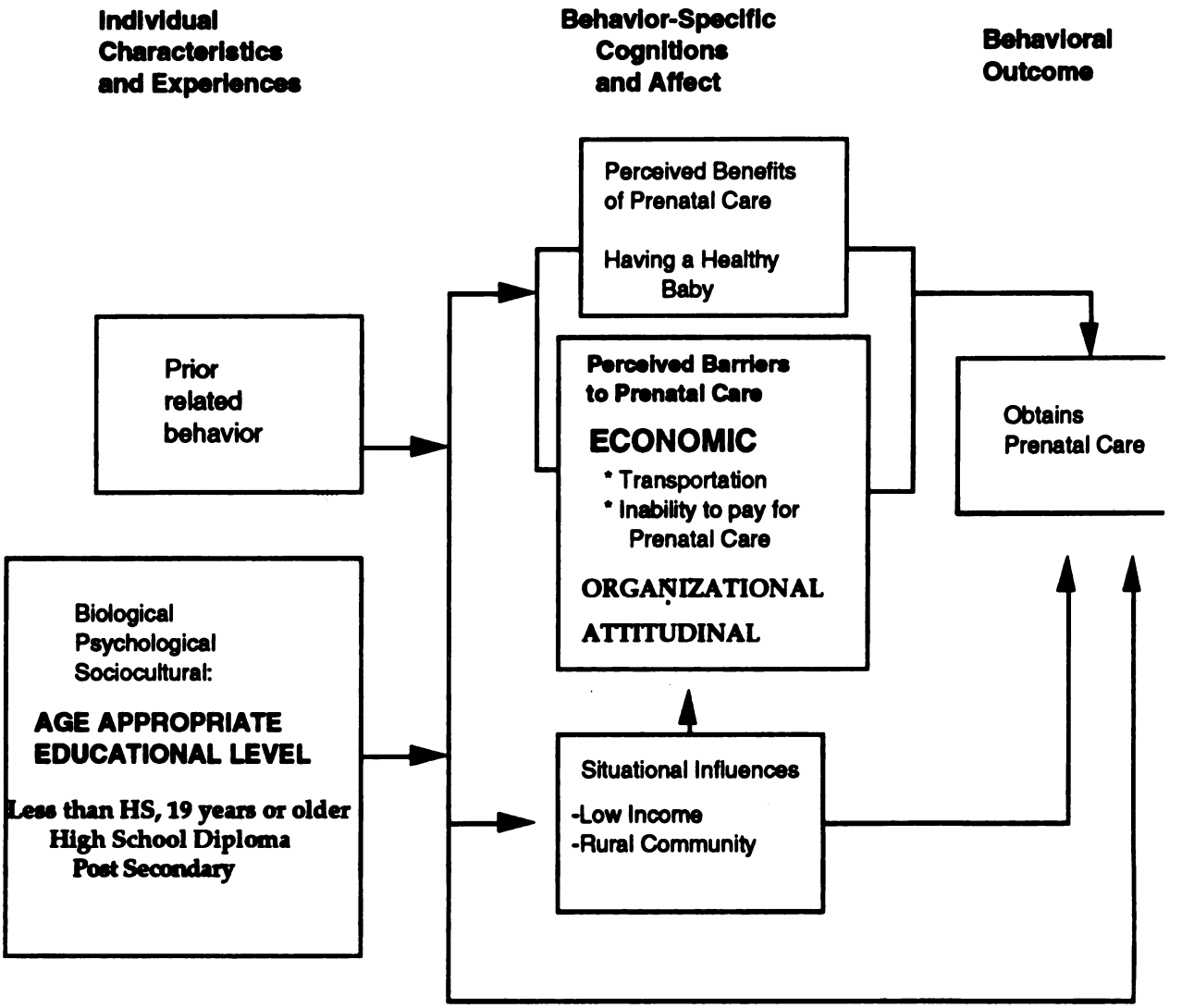

Figure 3. Modification of the Health Promotion Model Based on Study Findings: Application to the Health Promotion Model for Rural Low Income Pregnant Women (Pender, 1996)

within the community. Barriers of transportation need to be assessed with alternative options provided, such as carpools within the community and the expansion of prenatal care services at various sites within the community.

Rural communities are in need of APNs to be change agents and to develop programs that will decrease barriers to prenatal care. In this study it was found that pregnant women from all but one of the age appropriate educational levels were concerned with the economic barrier to prenatal care. The APN has the opportunity to mobilize resources with community leaders and activate a plan to decrease barriers to prenatal care for pregnant women in the community such as cooperative child care, transportation assistance through the local church, and civic organizations and the provision of accessible prenatal care services within the rural community for all women.

There is clearly a need for a comprehensive and multidisciplinary approach to overcome barriers to prenatal care for rural low income pregnant women. The APN alone can not assume responsibility for changing an entire community; however, as a leader in the community, the APN has the opportunity to have a direct impact on decreasing the barriers of prenatal care for rural low income pregnant women. As a role model for the health care community, the APN can initiate steps to investigate barriers to prenatal care. While few low income pregnant women in this community identified any barriers to prenatal care, those who did reported the economic barrier most frequently. This knowledge allows the APN the opportunity to share with other community leaders information as to where further assistance is needed and allows the health care community the opportunity to develop ways to alleviate the economic barrier for low income pregnant women of all educational levels in this rural community. Evaluation is needed of the

effectiveness of implemented programs and policies to assess if the goal of decreasing barriers to prenatal care is accomplished.

Implications for Research

While this study failed to demonstrate an association between age appropriate educational level and the number of barriers to prenatal care, previous studies have linked lower educational levels with inadequate prenatal care (Sable et al., 1990). This study found that few rural low income pregnant women who did attend prenatal care identified barriers. Although the sample of low income pregnant women reported that they had Medicaid or private insurance coverage, the economic barrier to prenatal care was still the most frequently reported barrier. The failure of the present study to find an association may be in part due to the small sample size in general and the even smaller number of subjects who actually reported barriers to prenatal care. In addition, there was no comparison between reported barriers to prenatal care and age appropriate educational level for rural low income pregnant women that received prenatal care and those women that did not receive prenatal care. Few rural low income pregnant women in this study reported barriers to prenatal care. Further research needs to be done to develop an understanding of why certain women in this community reported barriers to prenatal care and others did not.

The APN needs more information about barriers to prenatal care and which women are most likely to report barriers. One recommendation is to expand the assessment to include: (1) support systems, (2) if prenatal care was considered needed, (3) its importance and why, (4) the benefits of prenatal care, (5) self-concept, and (6) expectation of access to prenatal care in the rural community. The Ten-Item Checklist needs to be reevaluated; it may not have ideally identified barriers for the rural low income pregnant women in

this community. Although the women were given an opportunity to write in any barrier that may not have been included, the women may not have been able to specifically identify in writing their barriers to prenatal care.

The issues of transportation and inability to pay also need to be further investigated. For example, transportation issues such as road conditions, travel distance, travel time, availability of adequate transportation, weather, and condition of automobile need to be included in the assessment. Payment issues such as insurance deductibles and copays, as well as the women's willingness to accept and receive outside support from federal and local organizations needs to be assessed. Perhaps a qualitative study where rural low income pregnant women are interviewed individually regarding barriers to prenatal care may better capture their perceived barriers to prenatal care and better understand the complex economic and transportation issues of rural populations. By tapping into other facets of information, the APN may be able to predict which women are more likely to report barriers to prenatal care, and by acknowledging this possibility can institute a plan of care to assist rural low income pregnant women to overcome barriers to prenatal care.

Educational level and its true impact on barriers need to be further investigated. Education plays a major role in pregnant women's lives, it impacts their jobs, available resources, and their attitudes regarding self worth and importance of prenatal care (Cooney, 1985; Harvey & Faber, 1993; Johnson et al., 1994). In order to better understand barriers to prenatal care and if rural low income pregnant women will obtain prenatal care, further research is needed on education and its influence on other aspects of rural low income pregnant women's lives. With further investigation of educational levels affect on prenatal care, the APN has the ability to gather information and

design programs aimed at women of all educational levels to enroll in prenatal care early.

Summary

The following conclusions can be drawn from this study:

A. In this rural community, low income pregnant women with less than a high school diploma, 19 years of age or older reported transportation to prenatal care as the most frequently identified barrier to prenatal care, while pregnant women that had an high school diploma or post secondary education most often indicated inability to pay for prenatal care as the primary barrier to prenatal care.

B. Low income pregnant women in this rural community most frequently reported the economic barrier as the main type of barrier to prenatal care.

C. No association between the women of age appropriate educational levels and the number of reported barriers was found.

In summary, three of the age appropriate educational levels identified the economic barrier most frequently. The educational level of less than a high school diploma, 18 years of age or younger did not report any barriers to prenatal care. Although educational level was not found to be associated with the number of barriers to prenatal care, it may indirectly affect the economic barrier to prenatal care. Pregnant women with less than a high school diploma 19 years and older were less likely to be employed and were most likely to be on Medicaid. They reported the transportation barrier most frequently possibly because they lacked the financial resources to pay for expenses such as transportation to prenatal care. Pregnant women with

higher levels of education were more likely to be employed but still 60% qualified for Medicaid and while the other 40% had private insurance, they still reported the inability to pay for prenatal care as a major barrier. By further investigating the economic barriers for rural low income pregnant women in all age appropriate educational levels, the APN with other health care professionals and community leaders, can develop programs to decrease economic barriers. By decreasing economic barriers to prenatal care, the APN is promoting access to prenatal care and insuring a better chance for rural low income pregnant women to have less complicated pregnancies and healthy infants.

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APPENDIX A

Ten Item Checklist

Subject #: _____ Date: _____

[THE PATIENT IS HANDED LIST OF 10 ITEMS BELOW]

1. There are some reasons women (do not get prenatal care) (get prenatal care late in their pregnancy) in the United States. After I've read them all to you, I'd like you to tell me which ones, if any, kept you from getting complete care during this pregnancy.

   You may choose more than one. If none of these reasons or concerns explain your situation or if you had other reasons or concerns, please tell me after I've read the list. [READ ALL AND CHECK ALL THAT APPLY]

_____ITEM 1 I didn't think prenatal care was necessary (earlier in the pregnancy).

_____ITEM 2 I didn't know where to go.

_____ITEM 3 I didn't know how I would pay for prenatal care.

_____ITEM 4 I couldn't take time off from school or work.

_____ITEM 5 I couldn't find someone to watch the children.

_____ITEM 6 I didn't have a way to get to the doctor or clinic.

_____ITEM 7 I had trouble scheduling an appointment.

_____ITEM 8 I don't like doctors, clinics, or hospitals.

_____ITEM 9 I was afraid I would be reported to the police if I went to get prenatal care.

_____ITEM 10 I had personal problems.

2. Are there any other reasons that kept you from getting prenatal care earlier?

_____

_____

3. Of all the reasons you've chosen [READ ITEMS HAS CHOSEN] which <u>single one</u> is the <u>most</u> important reasons or concern? [WRITE ITEM #] _____. For each reason or concern you gave, I'm going to ask you some more questions. Let's start with the reason you felt was most important [NAME REASON] [TURN TO PAGE OF ITEM NAMED AS MOST IMPORTANT, THEN CONTINUE WITH REST OF ITEMS CHECKED.]

Subject #_____

ITEM 2 I didn't know where to go.

1. Did you try to find out about getting prenatal care (earlier) through any of the following: [READ AND CHECK YES OR NO]:

   1. _____ Friends or family
      _____ NO _____ Yes
   2. _____ Telephone book
      _____ No _____ Yes
   3. _____ Telephone information
      _____ No _____ Yes
   4. Health clinic _____ No _____ Yes
   5. Church _____ No _____ Yes
   6. School _____ No _____ Yes
   7. Did you try to find out about prenatal care in any other way?
      _____ No _____ Yes

   [IF YES, WRITE EXPLANATION]:
   _____

2. Did you hear about prenatal care through any of the following [READ AND CHECK YES OR NO]:

   1. (8) Radio or TV _____ No _____ Yes
   2. (9) Church _____ No _____ Yes
   3. (10) Newspaper _____ No _____ Yes

(11) Did you hear about prenatal care from any other source?
_____ No _____ Yes

[IF YES, WRITE SOURCE]: _____

Subject #_____

ITEM 1 I didn't think prenatal care was necessary.

1. I'm going to read some possible reasons that may explain why women (receive prenatal care late in their pregnancy) (don't think it is necessary to get prenatal care). Which ones explain why you didn't think prenatal care was necessary (earlier)?

[READ AND CHECK ALL THAT APPLY]

_____1. I was in good health prior to and during this pregnancy.

_____2. I had no problems in a previous pregnancy.

_____3. I didn't think prenatal care would improve my health or the health of my baby.

_____4. I thought that prenatal care could harm me or my baby.

_____5. Since having a baby is a natural and normal event, I didn't think I needed prenatal care.

Do any of those reasons explain why you didn't think prenatal care was necessary (earlier)? [WAIT FOR WOMAN'S ANSWER]

2.(6) Are there any other reasons that may explain why you didn't think it was necessary to get prenatal care (earlier)? _____ No _____ Yes [IF YES, WRITE REASON]:

_____

_____

_____

Subject # _____

ITEM 3 I didn't know how I would pay for prenatal care.

1. Did you think that prenatal care would cost too much and that you didn't have enough money for prenatal care? _____ No _____ Yes [IF YES, READ A AND B BELOW]

   A. How much did you think it would cost for a single prenatal visit?

   [WRITE AMOUNT] $ _____

   B. How much do you think you could have afforded for a single prenatal visit? [WRITE AMOUNT] $ _____

2. Were you aware of any of the following ways to get prenatal care without having cash for it? Were you aware of: [READ AND CHECK YES OR NO]

   1. Medicaid _____ No _____ Yes

   2. Were you aware of private doctors who take delayed payments? _____ No _____ Yes

   3. Were you aware of the city public assistance where you are not charged?

   _____ No [NO FURTHER QUESTIONS]

   _____ Yes [IF ANSWER TO "ABILITY TO PAY" PLAN IS YES:]

   I'm going to read some of the reasons people do not pursue the medicaid plan. Please tell me which apply to you [READ AND CHECK ALL THAT APPLY]

_____ A. (4) I didn't know how a person qualifies for Medicaid.

_____ B. (5) The process for applying for medicaid was long and complicated.

_____ C. (6) I couldn't get an appointment to fill out the forms.

(7) Are there any other reasons that you didn't pursue application for Medicaid? _____ No _____ Yes

[IF YES, WRITE WOMAN'S REASON:] _____

_____

_____

Subject # _____

ITEM 4 I couldn't take time off from work.

1. I'm going to read some possible reasons why some women may not be able to take time off from work to get prenatal care. Which ones explain why you could not take time off from work for your prenatal care? [READ AND CHECK ALL THAT APPLY]

_____ 1. My boss wouldn't allow me to take time off for any reason.

_____ 2. If I took time off from work, I would lose money.

_____ 3. I was afraid I would lose my job.

_____ 4. A member of my family wouldn't allow me to take off from work.

Do any of these reasons explain why you could not take time off from work? [WAIT FOR WOMAN'S ANSWER]

2. Are there any other reasons that may explain why you couldn't take time off from work to get prenatal care? _____ No _____ Yes [IF YES, WRITE REASON]

_____

_____

_____

3. Did you try to find prenatal care that was available in the evening or on a weekend? _____ No _____ Yes

[Explanation:] _____

_____

_____

Subject 3_____

ITEM 5 I couldn't find someone to watch the children.

1. Who usually watches the children when you have to go out? [READ AND CHECK ALL THAT APPLY]

_____ 1. Family member
_____ 2. Relative or neighbor
_____ 3. Babysitter
_____ 4. Day care center
_____ 5. No one is usually available

[IF YES, SKIP TO #3]

2. Was this person or these people available to watch the kids while you went for prenatal care?

_____ 1. No (6) [NO FURTHER QUESTION, SKIP TO QUESTION 3]

_____ 2. Yes [IF YES]:

Was this person available but you could not afford to pay him/her while you went for prenatal care?

_____ 1. (7) No, payment was not a problem.

_____ 2. Yes, they were available but I could not afford to pay.

[EXPLANATION] _____

3. (8) If the clinic had an area where someone would watch your children during your visit, would you have gone for prenatal care?
_____ 1. No _____ 2. Yes

Subject #_____

ITEM 6 I didn't have a way to get to the doctor or clinic

1. What is your usual means of transportation? [READ AND CHECK ALL THAT APPLY]:

_____ 1. Own car or family car
_____ 2. Borrowed car
_____ 3. Taxi
_____ 4. Bus or other public transportation
_____ 5. Walking
_____ 6. Other [EXPLAIN]:

_____

2. I'm going to read you some possible reasons why women don't have transportation to the doctor or clinic for prenatal care. Which ones explain why you did not have a way to get to the doctor or clinic during your pregnancy? [READ AND CHECK ALL THAT APPLY]

_____ 1. (7) I don't have a car

_____ 2. (8) The person that usually takes me was not available.

_____ 3. (9) As far as I know, there is no public transportation to the doctor or clinic from where I live.

_____ 4. (10) I don't think it's safe to use public transportation.

_____ 5. (11) Public transportation takes too much time.

_____ 6. (12) I don't think it's safe to walk to the doctor or clinic.

_____ 7. (13) It costs too much to use a bus.

Do any of these reasons explain why you could not get to the doctor or clinic? [WAIT FOR WOMAN'S ANSWER]

3. Are there any <u>other</u> reasons that you didn't have transportation to get to the doctor or clinic for prenatal care? _____ No _____ Yes [IF YES, WRITE REASON]:

_____

_____

Subject _____

ITEM 8 I don't like doctors, clinics, or hospitals

1. I'm going to read some possible reasons that may explain why women don't like clinics, doctors, or hospitals and so, don't go for prenatal care (early in their pregnancy). Which ones explain why you did not go (earlier)? [READ ALL AND CHECK ALL THAT APPLY]

   _____ 1. I don't like the long waits for care.

   _____ 2. I find doctors and nurses are unpleasant.

   _____ 3. I don't like to go to male doctors for prenatal care.

   _____ 4. People don't understand me in the doctor's office or clinic.

   _____ 5. I am afraid of doctors or nurses, or clinics, or hospitals.

   _____ 6. I've had a bad experience in the past from a doctor, clinic, or hospital.

   Do any of these reasons explain why you did not obtain prenatal care (earlier)? [WAIT FOR WOMAN'S ANSWER]

2. (7) Are there any other reasons that may explain why you don't like clinics, doctors, or hospitals? _____ No _____ Yes [IF YES, WRITE REASON]:

   _____

   _____

Subject # _____

ITEM 7 I had trouble scheduling an appointment.

1. I'm going to read some possible reasons why women may have trouble scheduling an appointment for prenatal care. Which ones applied to you during this pregnancy? [READ ALL AND CHECK YES OR NO]

   1. I couldn't find a phone number to call. Does this apply to you? _____ Yes _____ No

   2. I called on the phone but couldn't get through to the right person. Does this apply to you? _____ Yes _____ No

   3. I called for an appointment and was told that the next scheduled appointment was far in the future. Does this apply to you?

      _____ Yes _____ No [IF YES, READ ALL AND CHECK A,B,C,OR D AND E]:

   a. So I didn't make an appointment. Is this what happened? _____ No ___ Yes

   b. So I made an appointment but forgot about it. Is this what happened? _____ No _____ Yes

   c. I made the appointment but my baby was born first. Is this what happened? _____ No _____ Yes

   d. Other [EXPLAIN]: _____

   e. How far in the future was the appointment?

      _____ weeks or _____ months [WRITE NUMBER OF WEEKS OR MONTHS]

4. I was told I needed to schedule an appointment for financial screening first and I didn't want to do that. Does this apply to you? _____ Yes _____ No

5. I was told I was too far along in pregnancy to be seen. Does this apply to you? _____ Yes _____ No

6. There was no prenatal care available on weekends or evenings when I could go. Does this apply to you? _____ Yes _____ No.

7. Are there any other reasons that may explain why you had trouble scheduling an appointment for prenatal care? _____ Yes _____ No

   [IF YES, WRITE OTHER REASON(S)]: _____

   _____

Subject # _____

ITEM 9 I was afraid I would be reported to the police if I tried to get prenatal care.

1. I'm going to read some possible reasons that may explain why women are afraid they would be reported to the police if they tried to get prenatal care. Which ones explain why you did not get prenatal care? [READ AND CHECK ALL THAT APPLY]

_____ 1. If I signed up for prenatal care the police could find out my address.

_____ 2. I have been on drugs.

_____ 3. I have been in trouble before.

Do any of these reasons explain why you were afraid you would be reported to the police if you tried to get prenatal care? [WAIT FOR WOMAN'S ANSWER]

2. (4) Are there any other reasons that may explain why you were afraid you would be reported to the police if you tried to get prenatal care?

_____ No _____ Yes [IF YES, WRITE REASON(S)]:

_____

_____

_____

Subject #_____

ITEM 10 I had personal problems.

1. I'm going to read you some possible personal problems that may prevent women from getting prenatal care. Which ones explain why you did not obtain prenatal care? [READ ALL AND CHECK ALL THAT APPLY]

_____ 1. I was too depressed during my pregnancy to get care.

_____ 2. I was too embarrassed by my pregnancy to get care.

_____ 3. I didn't want to have this baby and this kept me from getting care.

_____ 4. I had a problem with alcohol or drugs that kept me from getting care.

_____ 5. I didn't want other people to know I was pregnant.

_____ 6. I felt too sick to go out and get prenatal care.

Do any of these reasons explain the personal problem that kept you from getting prenatal care? [WAIT FOR WOMAN'S ANSWER]

2. (7) Are there any other personal problems that may have prevented you from getting prenatal care? _____ No _____ Yes [IF YES, WRITE OTHER REASON(S)]:

_____

_____

_____

APPENDIX B

98. Counting this pregnancy, how many times have you been pregnant?_____

IF YOU ANSWERED "1", SKIP TO QUESTION #99; IF YOU ANSWERED 2 OR MORE, ANSWER QUESTIONS 98A AND 98B.

98a. If you have been pregnant more than once, did you seek prenatal care at this office/clinic for any of these pregnancies?
_____No _____Yes

98b. How many living children do you have? _____

99. How did you make your first prenatal appointment?

_____ by telephone
_____ in person
_____ other (please specify)_____

100. From the time you called or went to the office/clinic, how long did you wait for your first appointment? Identify the amount of time closest to the time you waited. Please check only one category.

_____ less than one week _____ two weeks _____ four weeks
_____ one week _____ three weeks _____ more than 4 weeks. How many___?

101. How far along in your pregnancy were you when you came for your first prenatal visit (Check only one)

_____ 1-3 months
_____ 4-6 months
_____ 7-9 months

102. How many weeks pregnant are you now?_____

103. Identify the amount of time closest to the total amount of time you usually spend at your clinic or office visit.

_____ less than 15 minutes _____ 31 minutes to 45 minutes _____61 minutes to 2 hours
_____ 15 minutes to 30 minutes _____ 46 minutes to 60 minutes _____ more than 2 hours

104. Check the one that best describes how many times have you been to the office/clinic for prenatal care.

_____ 1-5 times
_____ 6-10 times
_____ 11 or more times

PLEASE CONTINUE ON THE NEXT PAGE

Now, we would like to know a little more about **you**. Please remember that all responses are **confidential** at no time will the researchers release any information linking you to the survey. For each statement, please check the response that best describes **you**. **Please answer all the questions.** Thank you for your help with this project.

---

92. **Age** _____ **(in years)**

93. **Race (check only one)**

_____ Asian
_____ Black
_____ Hispanic
_____ Native American
_____ White (Non-Hispanic)
_____ Other (Please Specify)_____

94. **Mark the highest level of education you have completed (check only one):**

_____ Less than high school
_____ Some high school
_____ High School Graduate/GED
_____ Some College/Technical School
_____ College Graduate
_____ Post College

95. **Mark the response which currently describes your marital status (check only one):**

_____ Single
_____ Divorced
_____ Married
_____ Separated
_____ Widowed
_____ Other (please specify)_____

96. **Are you working outside the home?**

_____ No
_____ Yes If yes, _____ Fulltime
_____ Parttime

97. **What kind of insurance do you have? (Check all that apply)**

_____ Medicaid
_____ Private Insurance
_____ Michcare
_____ None (Self Pay)

PLEASE CONTINUE ON NEXT PAGE

APPENDIX C

MICHIGAN STATE
UNIVERSITY

March 1, 1995

TO: Mildred Omar
A230 Life Sciences Bldg.

RE: IRB#: 94-151
TITLE: BARRIERS, EXPECTATIONS, AND PATIENT SATISFACTION AS PREDICTORS OF PRENATAL CARE UTILIZATION AND MATERNAL AND INFANT OUTCOMES IN BENZIE COUNTY, MICHIGAN
REVISION REQUESTED: N/A
CATEGORY: 1-C
APPROVAL DATE: 03/01/95

The University Committee on Research Involving Human Subjects'(UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

OFFICE OF
RESEARCH AND GRADUATE STUDIES

University Committee on Research Involving Human Subjects (UCRIHS)

Michigan State University
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517/355-2180
FAX: 517/432-1171

APPENDIX D

MICHIGAN STATE
UNIVERSITY

February 20, 1997

TO: Mildred A. Omar
A-230 Life Sciences

RE: IRB#: **97-088**
TITLE: THE RELATIONSHIP BETWEEN EDUCATION LEVEL AND PERCEIVED BARRIERS TO PRENATAL CARE OF RURAL LOW INCOME PREGNANT WOMEN
REVISION REQUESTED: N/A
CATEGORY: 1-E
APPROVAL DATE: 02/19/97

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Christa L. Holland

OFFICE OF
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University Committee on Research Involving Human Subjects (UCRIHS)

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APPENDIX E

Field Procedures

The following procedures were used in the original study by Omar, Schiffman, and Bauer (1995) for data collection with the rural low income pregnant women.

1. Subjects were recruited from Benzie County Health Department, the Grand Traverse County Health Department, prenatal providers in Benzie county, Manistee county, and Grand Traverse county, and childbirth education classes.
2. Subjects were approached by the data collector either in the waiting room at their WIC appointment or by telephone. The project was explained and informed consent obtained. Consent to access both the mother's and infant's hospital medical records were obtained from the low income women at the time of entry into the study.
3. Following written consent, the women then completed the questionnaire packet either on-site at one of the recruitment sites or during a home visit.
4. The data collector:
   (a) assisted subjects to complete the Ten-Item Checklist, the PSPC instrument, and the Maternal Self-Report Health and Prenatal Care Utilization Survey.
   (b) answered subjects' questions for clarification of instructions and meaning of words only.
   (c) recorded expected date of delivery for anticipated chart review.

(d) dispersed a cash incentive of $10.00 to each subject following completion of the questionnaire packet.

5. The Data collector identified when subjects had delivered and recorded: (a) hospital subject delivered, (b) date of delivery, and (c) outcome of delivery.

6. A chart review was conducted to collect variables from the subjects' and infants' records.