

Nausea and vomiting of pregnancy
by Meredith Joann Robbins

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University
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Abstract:
This study was conducted for the purpose of identifying and describing effective and ineffective interventions used to reduce or alleviate the discomfort of nausea and vomiting of pregnancy (NVP). Environmental factors which aggravate or reduce the discomfort of NVP were also identified. The study was conducted during a four-month period in 1990.

Study participants included 92 pregnant women in the first twenty weeks of pregnancy who had experienced NVP at least once during the pregnancy. Participants were accessed through seven clinics providing prenatal care to women in all trimesters of pregnancy.

In addition to demographic questions, data were obtained by utilization of the Fatigue and Nausea Questionnaire, Part II. Demographics and the Nausea and Fatigue Part Il questions were descriptively analyzed for the entire sample. Chi-Square statistical analyses were calculated to identify a potential relationship between the environmental factors of husband, family, friend, employer, and co-worker support and the degree of NVP experienced by the study respondents.

Findings from the study revealed that lying down, getting more rest, and eating small frequent meals were the most commonly utilized effective relief measures. Precipitating factors occurring with the most frequency included odors, hunger, and fatigue. No statistically significant relationships were identified between family and friend support, stress, and social habits and the degree of nausea and vomiting experienced by the respondents during pregnancy.

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APPROVAL

of a thesis submitted by

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This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citation, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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VITA

Meredith Joann Robbins was born on October 31, 1955 to Melvin Everett Baker and Ruth Marilyn Baker. She was raised in a rural community in Montana supported by agriculture and the railroad industry. She graduated from Laurel Public Schools in 1973, and from Montana State University College of Nursing, Bozeman, in March, 1977, with a Bachelor of Science Degree in Nursing.

Joann married Roger Leo Robbins in 1977 and has two children, Sarah Ruthann and Nicholas Alexander. At the time of this printing their ages are eleven and five respectively.

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ABSTRACT

This study was conducted for the purpose of identifying and describing effective and ineffective interventions used to reduce or alleviate the discomfort of nausea and vomiting of pregnancy (NVP). Environmental factors which aggravate or reduce the discomfort of NVP were also identified. The study was conducted during a four-month period in 1990.

Study participants included 92 pregnant women in the first twenty weeks of pregnancy who had experienced NVP at least once during the pregnancy. Participants were accessed through seven clinics providing prenatal care to women in all trimesters of pregnancy.

In addition to demographic questions, data were obtained by utilization of the Fatigue and Nausea Questionnaire, Part II. Demographics and the Nausea and Fatigue Part II questions were descriptively analyzed for the entire sample. Chi-Square statistical analyses were calculated to identify a potential relationship between the environmental factors of husband, family, friend, employer, and co-worker support and the degree of NVP experienced by the study respondents.

Findings from the study revealed that lying down, getting more rest, and eating small frequent meals were the most commonly utilized effective relief measures. Precipitating factors occurring with the most frequency included odors, hunger, and fatigue. No statistically significant relationships were identified between family and friend support, stress, and social habits and the degree of nausea and vomiting experienced by the respondents during pregnancy.

CHAPTER 1

INTRODUCTION

Nausea and vomiting in the first trimester of pregnancy is accepted as common and viewed as one of the "discomforts" experienced by at least one half of all pregnant women (Fairweather, 1968; MCA, 1969; Biggs, 1975; Jarnfelt-Samsioe, Samsioe, Velinder, 1983; Alley, 1984; & Dilorio, 1988). Nausea and vomiting of pregnancy (NVP) is self limiting, generally terminates by the end of the twelfth week of gestation, and appears to be a uniquely human characteristic (Fairweather, 1968). Characterized by a disturbance in appetite and reaction to food, NVP may be accompanied by headache, loss of appetite, sleepiness, inertia, fatigue, irritability, dizziness, constipation, change in libido, gastric bloating and painful, swollen breasts. Usually manifested by morning symptoms, thus the lay term "morning sickness", NVP can persist throughout the day (Burrow & Ferris, 1975; Krupp & Chatton, 1975; Voda & Randall, 1982; Bobak, Jensen & Zalar, 1989).

Treatment of NVP is based primarily on nonpharmacological therapies (Dilorio, 1988); however, Voda and Randall (1982) state that totally successful strategies that are nonpharmacologic are unknown. According to Hellman, Pritchard and Wynn (1971), treatment of NVP seldom results in complete relief. Biggs (1975) states that unsuccessful identification of treatment options of NVP can be attributed to a failure in defining the concept. He attributes this lack of precision in defining NVP to the many physiological and psychological changes that occur during pregnancy and may be responsible for NVP. In addition, there are pathological causes of nausea and vomiting that may be seen

in both the pregnant and nonpregnant woman (Biggs, 1975).

A dearth of research examining NVP has been found by those investigating this phenomenon and most information found has focused on hyperemesis gravidarum, which is not the focus of this study. Hyperemesis gravidarum is defined as severe and dangerous vomiting leading to weight loss, dehydration and ketosis (Klebanoff, Koslowe, Kaslow & Rhoads, 1985; A.R.P. Walker, B.F. Walker, Jones, Verdi & C. Walker, 1985). Identifying means to alleviate or greatly reduce the distress of NVP is essential if nursing approaches are to be supportive and effective for pregnant women. This study is designed to identify and describe the most effective measures used by pregnant NVP to control women during the first trimester of pregnancy.

Problem Statement

Depending upon the theoretical perspective from which it is viewed, NVP may be linked to physiological, psychological and sociocultural causes. Voda and Randall (1982) found that NVP originates out of a sickness-disease framework. In addition, they established that the incidence, prevalence, degree of misery, discomfort, pain, workloss and economic impact of NVP are not substantiated in the literature. Dilorio (1985) likewise found a lack of documentation on the effects of NVP on work attendance and work productivity.

Significance

Fairweather (1968) states that 50% of healthy women who live in industrialized societies experience NVP during the first trimester of pregnancy. NVP may be mild to severe; however, women experiencing NVP are usually able to eat and drink enough to prevent dehydration, ketosis and electrolyte imbalance (Dilorio, 1988). But acidity of the

mouth produced by recurrent vomiting in pregnancy may lead to an increased incidence of dental caries in the pregnant woman. In addition, more serious complications of NVP can include aspiration pneumonia, mucosal tears at the gastroesophageal junction, severe hemorrhage and esophageal rupture (Burrow & Ferris, 1975). Prior to 1983, Bendectin was the drug of choice for women suffering moderate to severe NVP. Claims that Bendectin was responsible for causing birth defects in infants born to women using the drug were never demonstrated; however, the manufacturer withdrew it from the market due to high legal fees associated with defending its product (Dilorio, 1985). Women were left with using suggestions made by friends and family in a trial and error fashion, keeping those that helped and discarding those that were ineffective.

When NVP interferes with a woman's ability to perform usual tasks, it sometimes necessitates her taking time away from work. Alley (1984) discovered that 20 of 39 (51%) pregnant women interviewed had to leave some to all usual daily activities undone because of NVP as did 12% of pregnant women surveyed by Jarnfelt-Samsioe et al. (1983). Family irritability can increase as other family members must assume additional responsibilities previously held by the woman, especially if those around the woman believe that NVP is psychologically induced and she is not "visibly" pregnant. If benefits to cover such a disability are not covered by employee insurance, the woman's income may be decreased thus affecting the family's standard of living. For the woman employed outside the home, financial and family stress can be intensified. Iatrakis, Sakellaropoulos, Kourkoubas and Kabounia, (1988) determined that one factor contributing to the severity of NVP was lack of communication between the woman and her husband which can be magnified during times of financial stress and change. Semmens (1971) observed that women experiencing NVP believe that their husbands were upset by the pregnancy and

this compounded the intensity of communication and financial problems. Maintaining a stable marital relationship may become difficult for women with NVP, especially as expenses increase because of medical bills, maternity clothes and supplies for the expected child (Lipkin, 1974).

Starks (1984) emphasized that it is critical to identify when uncomplicated NVP becomes intractable. However, the schedule of prenatal visits recommended by the American College of Gynecologists (ACOG, 1988) does not allow for identification of women who have crossed this critical point since the initial visit is recommended to be as early as possible in the first trimester, and additional visits every four weeks apart. Also, according to the Institute of Medicine (IOM, 1988), there is a practice of asking women to wait until at least two menstrual periods have been missed before scheduling a prenatal visit. Designed to provide prenatal care to women who have progressed passed the spontaneous abortion (miscarriage) point, this policy causes delays in the onset of care for the majority of women who do not spontaneously abort. Many women experience the distress and discomfort of NVP without assistance from a health care provider who could be offering various treatment interventions.

Because early NVP does not threaten the immediate well-being of the woman or fetus and in fact may indicate a more favorable outcome to pregnancy, i.e. decreased risk of spontaneous abortion, fetal anomalies, neonatal/perinatal death and ectopic pregnancy (Guttmacher, 1954; Medalie, 1957; Speert & Walford, 1963; Yerushalmy and Milkovich, 1965; Brandes, 1967; and Petitte, 1986), it tends to be dismissed with the reassurance that the pregnancy is progressing normally. In fact, Medalie (1957) actually stated that if a pregnant woman complained of NVP, he rejected her as being a potential spontaneous aborter, and was only put on guard by those who stated they felt "perfect".

Unfortunately, this dismissal does not meet the needs of the pregnant woman who endures the discomfort and distress of NVP for an average of 3.2 months with its effects on normal activities (Biggs, 1975). Many women state "...it's all I can do to get through eight hours of work. To come home and face dinner and housework is more than I can handle", (David & Doyle, 1976 p. 1945).

Grimm and Venet (1966) asserted that it is difficult to ascertain whether a woman is highly anxious because she is experiencing NVP or the reverse. Pregnancy can mean nausea and vomiting to some women, and lay people may encourage this notion by communicating how dreadful one is expected to feel (Rosen, 1955). However, research in the area of psychophysiologic disorders indicates that the percentage of women who experience NVP is too high to be caused solely by emotional disorders. Maxmen (1986) emphasized that psychosocial factors can launch, aggravate or perpetuate physical diseases, process or symptoms. Such factors may well be important in relation to NVP.

Nursing Intervention

The failure to identify a specific cause of NVP has resulted in unstructured treatment approaches. Most nonpharmacologic treatments for NVP have been ascertained informally from women who have attempted various interventions and found them effective (Dilorio, 1988). Brucker (1988) stated that there are still many instances in which nonpharmacologic approaches are inadequate. Unfortunately, as NVP is most apparent in the first trimester of pregnancy, pharmaceutical interventions with medications such as Compazine and Phenergan occur within the most teratogenic period for humans. The health care provider and the pregnant woman are faced with weighing the risk benefit ratio to determine which option is best for both the mother and the fetus.

According to Bernard (1980), nursing is influenced by studying individual and

family adaptation to wellness and illness, including effective and ineffective means of coping with illness such as NVP. Physical, biological, psychological and sociocultural environments are all involved in maintaining healthy or unhealthy states. A thorough assessment can identify a broad range of factors which may influence a pregnant woman's health status and functioning. Physical conditions, stress in the environment, cultural values and support afforded the individual need to be included in the nursing assessment. In order for nursing to provide client centered care to pregnant women, it is essential to identify factors which aggravate and factors which alleviate NVP. The present study will focus on identifying these factors from the pregnant woman's perspective in order to develop a knowledge base regarding appropriate nursing interventions for women who experience the discomfort of NVP. Most studies in the literature focus on a specific hypothesized etiology of NVP and specific treatment directed at that proposed causative factor. Interestingly, most researchers conclude that what has been found is insufficient to account for the many causes and treatments of NVP, and additional unidentified factors are most likely involved. Dilorio (1985) states that very few research studies have been conducted to determine the effectiveness of interventions used to reduce or eliminate the symptoms of NVP. She further concludes that studies done raise some questions about the effectiveness of common measures used. Three articles were identified as being done by nurse researchers (Alley, 1984; Dilorio, 1985; and Dilorio, 1988) with two of them (Alley, 1984 & Dilorio, 1985) describing NVP and attempted interventions by women who had experienced NVP. These studies used questionnaire/interview schedules that allowed women to choose descriptions of NVP and actions taken to alleviate symptoms that had been identified in the literature. In addition, open ended questions were provided to allow women to describe interventions not

identified in the literature. The present study will attempt to identify effective and ineffective nonpharmacologic interventions used by women experiencing NVP in addition to identifying environmental factors which tend to aggravate or alleviate the distress and discomfort of NVP.

Purpose

The purpose of this study was to identify measures used by women to reduce the discomfort of NVP during the first trimester of pregnancy. Specific objectives were to: (1) identify and categorize effective nonpharmacologic interventions, (2) identify and categorize ineffective nonpharmacologic interventions, (3) identify environmental factors which appear to aggravate or perpetuate NVP, and (4) identify environmental factors which appear to reduce or alleviate the discomfort of NVP.

Definition of Terms

Conceptual Definitions

Nausea and Vomiting of Pregnancy (NVP) - symptoms common during the first twelve weeks of gestation characterized by a disturbance in appetite and an adverse reaction to food. Unlike hyperemesis gravidarum, body weight, hydration and electrolytes are not affected by NVP.

Effective Nonpharmacologic Interventions - measures, not including prescriptive medication, attempted by the woman experiencing NVP in the first trimester of pregnancy, which alleviate NVP, partially or completely. The relief of NVP may be temporary or permanent.

Ineffective Nonpharmacologic Interventions - measures, not including prescriptive medication, attempted by the woman experiencing NVP in the first trimester of pregnancy which are ineffective in alleviating NVP partially or completely.

Environmental Factors which Exacerbate and/or Perpetuate NVP - conditions present in the familial, social and work environment of a woman during the first trimester of pregnancy which appear to exacerbate NVP or cause its continuance.

Environmental Factors which Reduce the Discomfort of NVP - conditions present in the familial, social and work environment of a woman during the first trimester of pregnancy which aid in alleviating NVP, partially or completely.

Operational Definitions

Nausea and Vomiting of Pregnancy - uneasy or overwhelming feeling of wanting to vomit or actually vomiting as reported on the Nausea and Fatigue Questionnaire by women who have experienced NVP in the first trimester of pregnancy. This feeling is reported as having occurred at any time and for any duration during the first trimester of pregnancy.

Effective Nonpharmacologic Interventions - measures, not involving prescriptive medication, found to be helpful in alleviating NVP, partially or completely, as reported on the Nausea and Fatigue Questionnaire by women who have experienced NVP in the first trimester of pregnancy.

Ineffective Nonpharmacologic Interventions - measures, not involving medication, which did not alleviate NVP, as reported on the Nausea and Fatigue Questionnaire by women who have experienced NVP in the first trimester of pregnancy.

Environmental Factors which Aggravate and/or Perpetuate NVP - circumstances present in the familial, social and work environment which exacerbate or cause the continuance of NVP as reported on the Nausea and Fatigue Questionnaire by women who have experienced NVP in the first trimester of pregnancy.

Environmental Factors which Reduce the Discomfort of NVP - circumstances present in the familial, work and social environment which appear to alleviate NVP partially or completely, as reported on the Nausea and Fatigue Questionnaire by women who have experienced NVP in the first trimester of pregnancy.

Assumptions

1. NVP is an uncomfortable, life-disrupting, potentially damaging symptom often accompanying pregnancy during the first trimester.

2. No one intervention alleviates NVP in all women.

3. It is possible to identify a set of nonpharmaceutical interventions which will assist the majority of pregnant women in reducing NVP.

4. During the process of responding to a questionnaire, women are able to describe with reasonable accuracy those interventions found effective and those interventions found ineffective in reducing NVP during their first trimester of pregnancy.

CHAPTER 2

LITERATURE REVIEW

The phenomenon of NVP has long been under-researched. Although many authors have identified and recorded characteristics of NVP, virtually no data are available concerning its cause and course (Voda & Randall, 1982). In addition, the available literature indicates no true agreement as to the etiology of NVP, although many theories exist. The reported incidence varies within different cultures and appears related to norms and values. The following literature review is divided into sections discussing historical information regarding NVP, its incidence, physiological factors, sociocultural and familial factors, treatment and the summary of overall consequences of NVP.

History

A literary reference to NVP was recorded on papyrus as early as 2000 B.C. The Greek physician, Soranus, stated that if the fetus were male, its movements were slower and more sluggish. In addition, the woman moved with little ease and had a strong inclination to vomit. Pregnant women were also viewed as being affected with vomiting at various intervals or meals, experiencing heaviness, dizziness, headache, an abundance of "raw humors", pallor, the appearance of undernourishment and constipation (Fairweather, 1968). Soranus determined that these symptoms set in around the fortieth day of pregnancy and persisted for about four months (Schulman, 1982). According to Voda and Randall (1982), Soranus' views remained highly influential until the 16th century. During the 17th and 18th centuries various stomach humoral theories were proposed by

French, German and English physicians. Vomiting was viewed as a protective mechanism, ridding the patient of superfluous food, and in this manner preventing increased turgor of visceral blood vessels. Another theory proposed that vomiting rid the body of decomposed and undigested foods. Uterine stretching was also blamed as being responsible for NVP.

During the 19th century, the study of frequent and sustained vomiting resulting in hyperemesis gravidarum had priority. It was not until the 20th century that psychological, psychosomatic and sociocultural factors of both "morning nausea" and hyperemesis gravidarum were considered in research. Hyperemeis gravidarum described as declining during both World Wars, according to studies done in Germany. The decline was attributed to a different psychosocial environment prevailing in the war years as contrasted with the post war years, and was related to the husband's being out of the home because of combat (Robertson, 1946). Fitzgerald (1956) concluded that the reduction of NVP was unlikely to be related to the rationing of food during the war years as improvement in NVP began in 1940 before war time food policies had their greatest effect on diet. Fairweather (1968) concluded that the decrease in NVP during war times and when food was scarce could be explained partially by the fact that during such times more carbohydrates were consumed. However, he stated that the decrease was mainly due to a psychological factor. His attitude implied that when times were difficult, "more important problems" than pregnancy related disorders "occupied a woman's mind".

Early Psychological and Physiological Theories

Early research on NVP, conducted principally by male physicians, focused primarily on psychic factors with few researchers attributing NVP to physiological factors. Unfortunately, today many women are still treated according to these biased, unscientific theories and receive no relief from the discomfort of NVP. Deutch (1945) stated that the fetus lives parasitically on the mother, exploiting her body. In this respect, the fetus can be bothersome both physically and psychically to the woman. Deutch (1945) described vomiting and cravings during pregnancy as expressions of conflicting wishes. Vomiting was the unconscious wish to expel the child, whereas craving food was the unconscious wish to keep and nourish the baby. A lack of NVP was considered to indicate a denial of pregnancy especially in masculine, aggressive women. Deutch (1945) concluded that pregnancy permitted a woman to rationalize actions that would otherwise seem absurd. Somatic sensations normally tolerated became a signal for expulsion, with the oral route being one of the modes chosen.

Robertson (1946) hypothesized NVP to be a physiological expression of an underlying emotional state equated with sexual disgust. Aversion, frigidity, and an undue attachment of the woman to her mother were reported to correlate in increasing degrees with the severity of NVP among 100 women studied. Bertling and Greensboro (1948) concluded that there was a common, unnamed, psychogenic factor involved in NVP and dysmenorrhea (painful menstruation). According to the authors, neither phenomena could be explained anatomically or physiologically. Rosen (1955) concluded that NVP was produced by a common physiological stimulus existing in pregnant women which could be triggered by psychological factors. He stated that a stable and happily married woman desirous of having a child would not have this operative stimulus. A

compensated, schizoid character, finding gratification in marriage and pregnancy would, according to Rosen (1955) also be free of NVP. Rosen (1955) further asserted that a woman having reactions such as severe anxiety would direct her psychic energy away from NVP. Women whose symptoms of nausea and vomiting varied greatly from one pregnancy to another were described as having different levels of emotional stress at the time. Those with slight or no symptoms were viewed as having little stress with which they could not cope, while those with severe symptoms were viewed as having severe stress (Rosen, 1955).

Attitudes that influenced beliefs about NVP through the early 1960's were drawn generally from a male perspective envisioning women as hysterical and suggestive. Rejection of the pregnancy was often cited as the cause of NVP without an adequate explanation for those women who had actually planned and wanted the pregnancy. Because physiological explanations were not readily apparent, writers and clinicians appeared to blame a woman's psychological state for NVP.

While psychological factors were being held responsible for NVP, a few progressive researchers were attempting treatment aimed at possible physiological factors. Finch (1940) concluded that NVP was due to an allergic reaction of the woman to the secretion of her own corpus luteum of pregnancy. He described a program of desensitizing the woman by administering graduated doses of progestin in oil intradermally. Finch (1940) hypothesized that intradermal testing could be done prior to pregnancy to determine a woman's sensitivity to her own corpus luteum secretions and thus predict the probability that she would develop NVP.

Willis, Winn, Morris, Newsom and Massey (1942) described the intramuscular use of vitamins B1 and B6 as the most therapeutic agents used for NVP because of their

practical and economical use in the office setting. Relief was found more often with vitamin B6 than B1, with no untoward effects. They concluded that almost complete relief was gained by administering these vitamins in varying doses and at various intervals.

In spite of these approaches, Smith (1950) asserted that it was time to strip the syndrome of NVP of its terrors and superstitions and frankly tell the patient NVP was of an emotional origin. He found that psychological treatment released emotional tension, but it did not necessarily convince the patient of her subconscious rebellion against the pregnancy and her true desire for an abortion. King (1955) asserted that it was not the treatment but the way in which it was delivered that eliminated NVP. Reassurance, sympathy and support were responsible for the most therapeutic effects obtained.

In the late 1950's and into the 1960's and 1970's investigators started to dispute earlier findings and hypotheses. Coppen (1959) rated 50 primiparae on the basis of psychiatric interview and personality questionnaire. No difference was found between those with vomiting and those without in relation to neurotic symptoms, sexual functioning, attitudes toward pregnancy, extraversion, or emotionally disturbing events during the pregnancy. Schaefer and Manheimer (1960) found very low correlations between attitudes toward childbearing, anxiety symptoms and NVP. Schaefer and Manheimer (1960) concluded that the data could not support the hypotheses that nausea and vomiting during early pregnancy were signs of psychological maladjustment.

Experts writing for the Maternity Center Association (MCA, 1969) concluded that societal expectations play an important role in NVP. They stated that among primitive cultures which do not expect NVP, very few if any, pregnant women reported NVP. Women who reported NVP stated that all through their lives their digestive systems had been upset by things that went wrong at home, school or work (MCA, 1969). The MCA

emphasized that all NVP is not emotionally or culturally based. Changes in body chemistry as a basis for NVP were noted (MCA, 1969).

Uddenberg, Nilsson and Almgren (1970) investigated the influence of mental and environmental conditions, attitudes and personality characteristics on nausea during pregnancy. Women with pronounced nausea were more often found to be unwed when the child was born, had less frequently planned their pregnancy, and more often admitted that the pregnancy was unwelcome. They also reported sexual disturbances during pregnancy, sometimes to the point of disgust. Those with pronounced NVP were also over-represented among those who had a high perceived similarity with their mother. Women with moderate nausea were more frequently married, had more often planned the pregnancy, had a positive attitude towards it, and reported the least sexual adaptation difficulties. Women without nausea held an intermediate position between the pronounced and moderate nausea groups. Women with a low degree of nausea identified more with their fathers, and those who reported no nausea reported relating more easily with boys than girls as children. Finally, women who worked full time outside the home were most often found to be without any nausea. From these findings, Uddenburg et al. (1970) concluded that moderate nausea is probably physiologically founded and of little psychological significance, while severe nausea is a psychologically induced exaggeration of the "normal" nausea of pregnancy.

Wolkind and Zajicek (1978) found that women with NVP identified with the culturally held female role, felt closer to their mothers and husbands and desired to breastfeed. However, no correlation was found between attitudes toward pregnancy and the incidence of physical symptoms. For those women with prolonged NVP there appeared to be little support from husbands or parents. Wolkind and Zajicek's findings

(1978) suggest a complex model in which physiological changes are incorporated into a woman's psychological set and cultural values.

Incidence

Research indicates that the incidence and severity of NVP can be correlated with many factors. Gravidity, health habits, desire for pregnancy, and race have been associated with the presence or absence of NVP. According to Fairweather (1968), 50% of healthy women living in industrialized societies experience NVP during the first 10 to 12 weeks of pregnancy.

Jarnfelt et al. (1983) found that 70% of 244 Swedish women delivering in the years 1980 and 1981 experienced NVP, with half experiencing the peak of NVP in the morning, 7% in the evening, and 36% experiencing NVP the entire day. NVP was associated with a higher rate in twin pregnancies and a lower rate in spontaneous abortion. Most women experienced NVP for three months, but some suffered throughout the entire pregnancy. The duration of NVP tended to decrease with the number of pregnancies per woman. Jarnfelt et al. (1983) also found that women who could not tolerate oral contraceptives experienced NVP at a higher frequency and longer duration than those who had no side effects associated with birth control pills.

Alley (1984) found that 36 of the 39 low-income women attending a prenatal clinic reported NVP. For most women (28), NVP persisted from one to four hours per day. NVP generally started in the first and second months of pregnancy and lasted for several weeks. Twenty-five of the women interviewed had experienced NVP with a previous pregnancy.

Dilorio (1985) investigated the incidence and characteristics of NVP among 78 pregnant teenagers and the measures used by these teenagers to control symptoms. Fifty-six percent of the teenagers studied experienced NVP; white teenagers were more likely to experience NVP than black teenagers. Early morning was the most common time to experience NVP; however, 20% experienced NVP the entire day. Fifty percent stated that smells were most likely to precipitate the distressing symptoms. Smoke and fatty foods were also reported to be bothersome to the participants. Subjects who had stated that they desired the pregnancy were found to be more likely to experience NVP than those who stated they had not desired the pregnancy.

Klebanoff, Koslowe, Kaslow and Rhoads (1985) found NVP to be a common event of early pregnancy for 9,098 women attending a perinatal project. Vomiting and nonvomiting groups were compared on baseline characteristics such as age, race, gravidity, smoking, education, twinning, and 20 other characteristics known to be risk factors for pregnancy outcome or for NVP. Fifty-two percent of all women were found to have vomited on at least one occasion by 16 weeks gestation. NVP was more common among primigravidas, young women, women with less education, nonsmokers, blacks, and heavy women. Many factors associated with NVP were found to be related to each other. Whites, in comparison with blacks, were more likely to smoke, have 12 or more years of schooling, and to be young primigravidas. Increasing age was strongly protective against NVP for whites, whereas age had little effect on NVP among blacks. White primigravidas were considerably more likely to experience NVP than were white multigravidas, but gravidity exerted significantly less effect among blacks. In addition, women who experienced NVP in one pregnancy were found more likely to experience it in a subsequent pregnancy. Klebanoff et al. (1985) concluded that racial differences in

the frequency of NVP could be accounted for by geographic or socioeconomic differences. The presence of NVP was reported as a favorable risk factor for pregnancy outcome in this study. Interestingly, infants of mothers experiencing NVP were not of low birth weight and had a prolongation of gestation of approximately 1.5 days (Klebanoff et al. 1985).

Physiological Factors

Recently, several researchers have proposed physiologic explanations contributing to NVP which appear to have greater validity and are becoming more widely accepted. Biggs (1975) suggests that gastric hypofunction may be a factor in the onset of NVP. A delay in emptying of food from the stomach, decreased gastric acidity, and decreased effectiveness of the cardiac sphincter at the opening of the stomach are considered to assume contributing roles.

Burrow and Ferris (1975) state that several allergic causations have been proposed as contributing to NVP, but a specific allergen has not been named. Corpus luteum secretion, semen of the spouse, protein substances from the placenta and human chorionic gonadotropin hormone (hcG) are a few candidates listed as potential allergens. Kauppila, Huhtaniemi and Ylikorkala (1979) proposed that the hypothalamic vomiting center is sensitive to increasing levels of hcG and that vomiting begins when the individual vomiting threshold concentration of hcG is reached. The apparent function of hcG is to maintain the corpus luteum during early pregnancy. Its production begins very early in pregnancy and can precede implantation (William, 1976).

Little and Hook (1979) discovered that NVP occurred less frequently in women who were both regular drinkers and smokers. Alcohol and tobacco use were both

necessary for the decreased rate of NVP and these habits were more important prior to pregnancy than after conception. Soules, Hughes, Garcia, Livengood, Prystowsky and Alexander (1980) measured levels of hcG and 17-hydroxyprogesterone (17-OHP) in women with normal and abnormal pregnancies. The incidence and severity of NVP in relation to these hormone levels were subsequently compared. No obvious correlation could be found between the concentrations of hcG and 17-OHP and the severity of NVP. In a study of patients with molar pregnancies (a developmental anomaly of the placenta in which the chorionic villi convert into a mass of clear vesicles [Williams, 1976]) no significant difference in levels of hcG and 17-OHP could be found when comparing those women with and without NVP. From this study, the authors concluded that the etiology of NVP is still unknown.

Bobak, Jensen and Zalar (1989) state that high levels of hcG or hypoglycemia may contribute to NVP. They note that hypoglycemia is secondary to the 24-hour-a-day fetal and maternal body functions, especially after a period of fasting. Depue, Bernstein, Ross and Henderson (1987) found substantially elevated estradiol levels in women with excessive vomiting (hyperemesis gravidarum). Younger women, women in their first pregnancy, and those with higher body weight were found to be at increased risk of developing hyperemesis gravidarum. Mean levels of total estradiol of women with hyperemesis gravidarum were 26% higher than those of control subjects. Women with excessive nausea and vomiting were also found less likely to smoke during pregnancy. Because smokers have been shown to have lower levels of endogenous estrogens than nonsmokers, the authors concluded that the "protective" effect of cigarette smoking may be related to reduced estrogen levels.

In spite of competing hypotheses, some researches still attempt to associate NVP with "hysterical" female characteristics. Depp and Eschenbach (1989) state that women prone to spastic stomach, with anorexia and nausea prior to pregnancy, could have a more difficult time with NVP. They concluded that emotional factors such as unhappiness, immaturity, and fear are frequently present in women with extensive NVP, although they cite no data to support their hypothesis.

Sociocultural and Familial Factors

The reported incidence of NVP can vary widely among cultures and even among subcultures within the same country (Voda & Randall, 1982). Louw (1966) studied NVP in African women and assumed prior to the study that NVP did not occur among these women. He discovered, however, that the women had never been questioned. When the women were interviewed, approximately 40% complained of either nausea or nausea and vomiting. Louw (1966) concluded that pellagra, which is very common in the area, was involved in NVP. In addition, many women attended the witch doctor, who may have given them emetics used to rid the body of evil demons. The emetics may have contributed to the nausea and vomiting which continued long into the pregnancy. Additionally, these people were described as a placid group; Louw (1966) concluded that neurosis was not implicated in their NVP.

Minturn and Weiher (1984) found that women living in cultures where the main food substances were rice, meat and milk products had a higher rate of NVP than women living in societies using maize as the main food substance. When maize was studied more closely, it was not found to be higher in vitamin B6 or any other medically known ingredient that could be related to NVP. NVP was also lower in societies where the diet

included more green vegetables and higher levels of fat intake. An association between NVP and the type and intensity of agriculture, settlement pattern and community size, could not be found. No correlation could be found between the need for a woman to work to support the family economy and the presence or absence of NVP. In addition, the presence of food cravings, and cultural food taboos were not found to be associated with the presence or absence of NVP. Minturn and Weiher (1984) concluded from this study of cultural diets, employment values, food cravings and food taboos, that NVP was not a universal symptom of pregnancy but a condition influenced by diet.

Minimal literature exists which examines the effects of NVP on family functioning. Research on family dynamics often focuses on high-risk pregnancies and is thus of limited value in understanding NVP in relation to family dynamics. According to Baker (1967), the first three months of pregnancy are characterized by considerable emotional lability and anxiety for many women. Stress in a relationship often occurs during this period. Anderson, Camacho and Stark (1974) state that if the woman is not feeling well, the partner may be required to take on more responsibility which can add stress to the relationship. Any pregnancy symptoms, including nausea and vomiting, may be exaggerated, consciously or unconsciously, in order to test the partner's concern. Baker (1967) states that partners who closely identify with the woman tend to suffer with her. Some cultures allow for this while western cultures often ridicule the partner's distress and anxiety and use this sensitive area as the subject of mockery.

Treatment

In contrast to earlier recommended treatment of NVP, David and Doyle (1976) state that telling a woman that NVP is not all psychologic and is self-limiting can often be

reassuring. They also suggest taking the iron supplements, usually prescribed during pregnancy, at night or waiting until the second trimester to start taking them as helpful. Zechnich and Hammer (1982) emphasized that for some women it is essential that the individual be told NVP does not have to accompany pregnancy. An illustrative case presented by these authors involved a woman who was admitted for the third time during her second pregnancy because of persistent vomiting. When interviewed by a resident, the woman confided that she believed that vomiting throughout pregnancy was inevitable. She had vomited throughout her first pregnancy and her mother had vomited with all three of her pregnancies. When she was told by the resident that NVP was not an inevitability of pregnancy, the vomiting stopped.

Midwinter (1971) suggested that having the husband dispense tea, toast and sympathy to his wife before she got out of bed did much for psychological as well as metabolic health. Burrow and Ferris (1975) recommended regular visits by the woman to her health care provider, not only to determine signs of nutritional problems, but also for its potential therapeutic effect.

According to Biggs (1975), the development of antihistamines (Bendectin) which depress the emetic center and reduce vomiting gave rise to drug prescribing for NVP. In spite of Bendectin being removed from the market due to litigation, Brucker (1988) states that this remedy can still be obtained by combining the same exact ingredients now sold over-the-counter. Other nonprescriptive drugs are available to pregnant women which are combinations of sugar and phosphoric acid. Their efficacy has never been demonstrated and there has been no indication that they are teratogenic (Brucker, 1988).

According to Alley (1984), when women were asked how they learned of alleviating interventions to deal with NVP, only 3 out of 36 stated that a nurse had supplied the

information; most (28) had learned of actions through friends and relatives. Dry carbohydrates (toast, crackers, pretzels, potato chips), clear liquids, carbonated drinks, water, juices and various antacids were among interventions tried. Alley (1984) concluded that not all women benefit from the usual recommendations and emphasized that the health care provider must not assume that the same approaches will be helpful to all women. Women must be encouraged to report lack of relief so other supportive treatments can be suggested.

Dilorio (1985) found that 46% of pregnant women questioned stated that lying down was more effective than other measures tried for NVP. Twenty-six percent found eating crackers to be most effective, a few drank soda, and 9.1% took Bendectin while it was still obtainable. Dilorio (1988) stated that telling women their symptoms are of psychological origin is not helpful. She found conveying this to a pregnant woman may disrupt the relationship between patient and health care provider. She suggested that the woman be encouraged to keep a diary listing the time of onset and duration of each episode of NVP. In addition, activities or factors precipitating the symptoms and interventions that appear to help should be noted. Reviewing the diary assists the individual woman in choosing the most helpful interventions. Dilorio (1988) encouraged the use of one intervention at a time, with a given woman, to determine its effectiveness.

Summary

The existing literature reveals that NVP is considered to have varying etiologies as well as a variety of treatments, none of which has proven to be universally effective. Initially, many writers proposed that NVP was not normal, was associated with culture and norms, and linked to psychological illness or emotional factors. As more research was

completed and data collected, NVP became viewed as a normal component of the first trimester of pregnancy, with more emphasis placed on physiological causes. This acceptance of the phenomenon of NVP as normal and a positive sign of good fetal outcome has resulted in little initiative for substantive research to investigate interventions for alleviating the distress it causes. Most pregnant women accept NVP as a normal occurrence of pregnancy and attempt to live with it until it resolves. However, NVP can have serious consequences in relation to the disruption it causes in a woman's normal activities of daily living i.e. work, family dynamics and a positive sense about self and the pregnancy. In addition, physical consequences such as dental caries, gastric mucosal tears and hemorrhage from these tears can result. Women may also endure psychological distress and the disruption of significant relationships, especially when family, community, or health care provider attitudes convey that NVP symptoms are the result of emotional instability, conflicts about the pregnancy, or fabrication.

Conceptual Framework

The prenatal period is a time of preparation physically, psychologically and socioculturally for the pregnant woman. Health care is important at this time, not because pregnancy is an illness, but because such care allows for early detection and treatment of disorders that may arise. Responses to pregnancy, including nausea and vomiting, are complex in nature and include physiological, psychological, sociocultural and environmental factors. The nursing profession has a role in assisting women to deal with the nausea and vomiting which may accompany pregnancy through the promotion of self care.

Pregnancy is a normal state which has increasingly been associated with medical intervention and at times, treated as an illness. The symptoms of nausea and vomiting, which frequently accompany pregnancy, are now being redefined as "normal". The evaluation of the seriousness of the nausea and vomiting of pregnancy (NVP) by the pregnant woman, her family, friends and co-workers, depends upon their value orientations (Diamond & Jones, 1983). Nursing sees as its role the support of women in their attempts to deal with NVP through self-care.

From the literature reviewed, NVP appears to be a set of symptoms involving (1) physiological factors, (2) environmental factors, (3) sociocultural values, and (4) psychological factors all interwoven to form a complex behavior (Wolkind & Zajicek, 1978). These four concepts and their following explanation are presented visually on the model in Figure 1.

Physiological alterations may initiate changes leading to NVP. Smoking and alcohol consumption have the potential of augmenting these symptoms. Environmental factors in the form of interpersonal relationships, physical stimuli, community events, and weak support systems may intensify the unpleasant physiological alterations which accompany pregnancy and which may lead to NVP. Lack of support and understanding from the father of the child, parents and other family members, as well as employers and fellow employees can exacerbate a woman's symptoms and decrease her ability to cope. In addition, intrapersonal psychological factors including thoughts, feelings, and the personal demand to deal with NVP can amplify the symptoms of NVP (Mitchell & Betrus, 1987). The societal expectations of appropriate behavior and successful coping with pregnancy as a "wonderful time of life" can complicate a woman's ability to deal with NVP.

Because of self-induced and societal pressure to adapt, women experiencing NVP often attempt to relieve their symptoms by using numerous coping strategies. The individual suffering from NVP usually seeks help from both informal resources such as family and friends and the formal health care system. A variety of interventions suggested by friends and family as well as professionals are usually tried and evaluated by the pregnant woman. Over time, the woman attempts to develop her own personal approaches and uniquely suited combinations of strategies.

Orem (1980) defines the attempts to help oneself in relation to health as "self care". In the case of the woman experiencing NVP, self care involves initiating and performing activities on her own behalf to maintain life, health and well being. If these self care activities are not effective and a dependence upon others evolves, the woman moves from the position of self care agent to that of patient or receiver of care (Marriner, 1986). The woman experiencing NVP often turns to a health care professional, and within the context of Orem's theory that health care professional is a nurse who is termed the "nursing agency". The nurse provides guidance, support, and education in helping the woman to overcome her self care deficit. Miller (1983) states that with this guidance, support, and knowledge, the woman becomes aware of various alternatives for coping with NVP and the anticipated consequences of each. Pfister-Minogue (1983) stresses that the woman experiencing NVP not only needs to be aware of various options available but must know how to make them fit into her own lifestyle. Self-monitoring and the ability to detect and interpret physical, psychological, environmental and societal cues contributing to symptoms of NVP allows the woman to take appropriate actions to control the symptoms. Nursing's role involves the provision of individualized assessment for each woman. From this assessment, the woman is helped to develop strategies

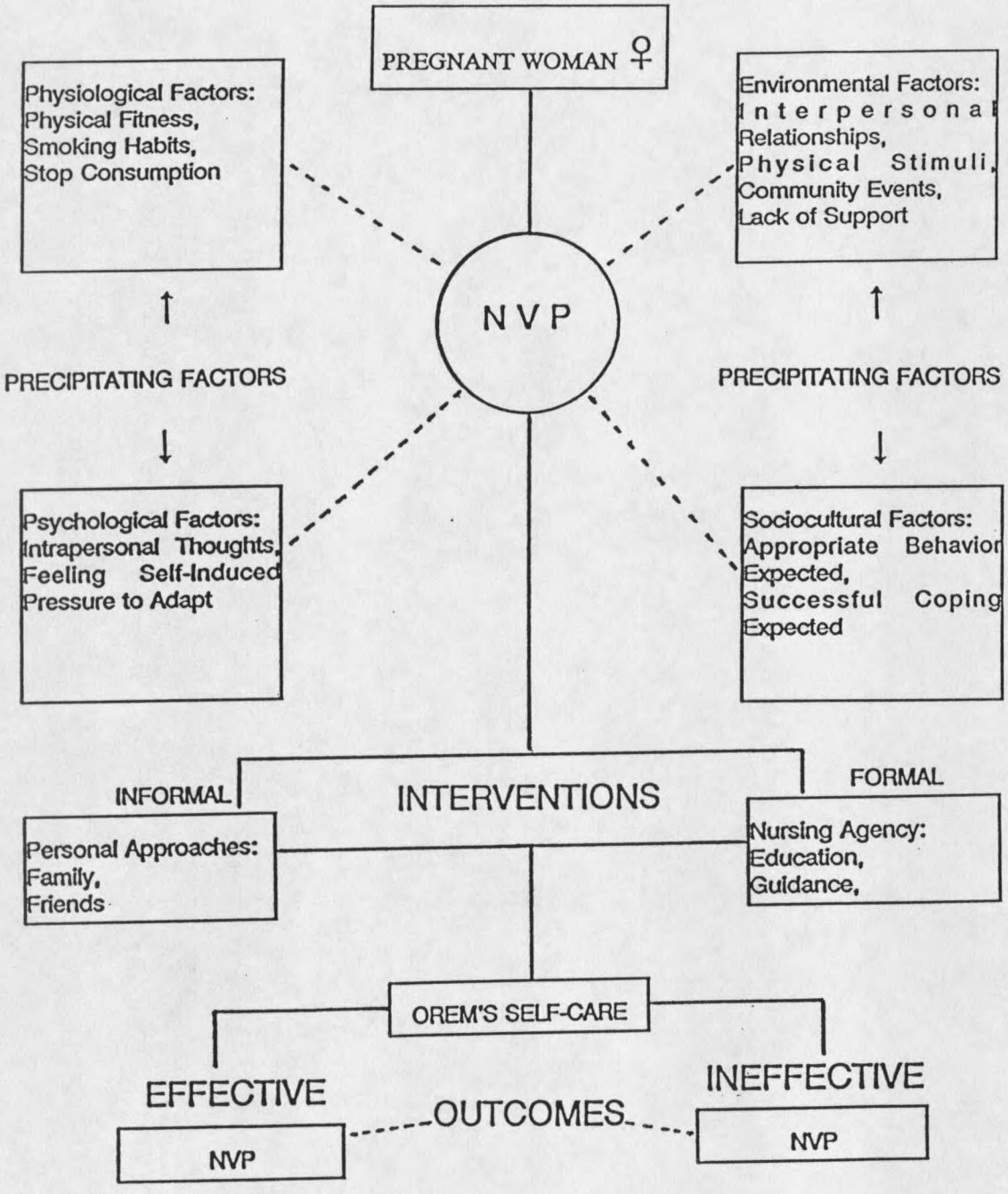


Figure 1. Application of Orem's Self-Care Theory to NVP (Robbins, 1990)

appropriate to her environment and lifestyle and to her psychological and sociocultural resources. Thus, with the help of the nursing agency, the woman can learn therapeutic self care, cope with NVP, and return to the self care agent role (see Figure 1).

CHAPTER 3

METHODOLOGY

This study was descriptive and exploratory and aimed at building an organized data base about effective and ineffective nonpharmacologic interventions used by women who have experienced NVP in the first trimester of pregnancy. Environmental factors which appear to aggravate or perpetuate, as well as environmental factors which reduce or alleviate NVP are described. The investigation of interventions and significant environmental factors influencing NVP was conducted with women who experienced NVP in the first trimester of pregnancy.

This study: (1) identified and categorized effective nonpharmacologic interventions, (2) identified and categorized ineffective nonpharmacologic interventions, (3) identified environmental factors which appeared to aggravate or perpetuate NVP, and (4) identified environmental factors which appeared to reduce or alleviate NVP.

Sample

Target Population. The target population for this investigation consisted of women who experienced NVP at least once during the first trimester of pregnancy. The accessible population for this investigation were those women receiving prenatal care from clinics providing such services in the major populations centers of Montana.

Sample Size. The sample was purposive and convenient. This type of sample was suitable for the purpose of establishing a beginning-level descriptive data base about

NVP. The sample included women who were in the first twenty weeks of gestation and experienced NVP at least once during the first trimester of pregnancy. Preliminary data about patient census at the study clinic sites indicated that approximately 450 women in the first twenty weeks of gestation would use the clinics during a three month period (M. Costello, B. Tucker, T. Wicks, B. Hidalgo, L. Glover, personal communication, February 1990). Based on the literature, between 50 and 80 percent of these women were expected to experience NVP at least once in the first trimester (n = 225 to 360). Four hundred questionnaires were distributed to the five clinics with a projected return rate of 50%. 202 questionnaires were distributed to women who met the study criteria. 108 were returned and 92 were adequately completed to allow inclusion in the study.

Location of Study

The study was conducted in three Montana metropolitan communities of between 30,000 and 70,000 population. Participants for the study were accessed through five clinics providing prenatal care to pregnant women in these communities.

Criteria for Inclusion in Study. Women who were eligible to participate in the study met the following criteria: (1) attended one of the five clinics providing prenatal care to women in the designated metropolitan area, (2) were within the first twenty weeks of gestation, and (3) had experienced NVP at least once in the first trimester of pregnancy as a result of pregnancy.

Data Collection Procedure

Potential study participants were contacted by the registered nurse responsible for doing the initial physical and social obstetrical history in each of the designated

clinics. Those women meeting the study criteria were given written information describing the study including the purpose, risks and benefits, and an assurance of anonymity. Data were collected by a questionnaire completed by the participant in an environment of her choosing and returned within two weeks of receipt. Upon completion, the respondent returned the questionnaire in a stamped, addressed envelope which had been provided to her by the College of Nursing, Montana State University, Great Falls, Montana. Questionnaires were distributed from June 5, 1990 to September 30, 1990.

Human Subjects Protection. This study was reviewed and approved in writing by the Montana State University College of Nursing Human Subjects Review Committee and the appropriate committees for each clinic used in the study. A written explanation of the study was provided to women agreeing to complete the questionnaire. The participant was assured that neither consent nor refusal to complete the questionnaire affected the care she was currently receiving at the clinic or would receive in the future. Data were collected anonymously (see Appendix A; Explanation of Study and Consent Form). Completing the questionnaire and returning it to the investigator indicated the individual's consent to take part in the study.

Instrument and Measures

Questionnaire. The questionnaire included 20 background questions created by the investigator and Part 2 of the Fatigue and Nausea During Pregnancy Questionnaire (Dilorio, 1989). Background questions addressed basic demographics as well as prenatal and routine health habits. Age, parity, weeks of gestation, marital status, education, race, smoking habits, alcohol consumption and employment status outside the home were of particular interest since previous studies had indicated that they may have an effect on

NVP. General environmental factors in relation to familial and social support were also addressed. In addition, environmental stresses present at school, home and work, before and during pregnancy were addressed in relation to their effect on NVP.

The Fatigue and Nausea Questionnaire (Dilorio, 1989) was developed to determine how many and to what degree women suffer from NVP. The participant is asked to respond to factors that may or may not bring on nausea and the frequency and intensity of the experience. In addition, the participant is asked to rate the amount and intensity of nausea based upon recall from the previous day. The instrument also allows women to indicate factors most likely to precipitate NVP and interventions which appear to help most in relieving NVP. A five point Likert format is used for rating 32 intervention items. The individual indicates measures used and rates each from "made me feel worse" to "total relief". The questionnaire includes open-ended questions and the participant is asked to state in her own words factors that helped to alleviate NVP. Verbal and written permission was obtained from Dilorio to utilize Part 2 of the Fatigue and Nausea Questionnaire (see Appendix B). Part 2 of the Fatigue and Nausea During Pregnancy Questionnaire was based on previous work showing a relationship between the presence of NVP and the factors identified in the questionnaire; thus it is believed to have "apriori" content and face validity (C. Dilorio, personal communication, February 1990). It was developed to be congruent with the Pearson-Byers Fatigue Schedule (1953) developed at the United States Air Force Academy, Texas. The two forms are similarly scaled in order to allow for correlation of patterns of fatigue and nausea. The Cronbach's alpha for the Precipitating Factors and Relief Measures section (Part 2) of the Fatigue and Nausea During Pregnancy Questionnaire is reported to be .78. (C. Dilorio, personal communication, April 1990). Instruments for the measurement of NVP with more

established psychometric properties did not currently exist at the time of the study.

Data Analysis

Descriptive Analysis of Demographics. Data obtained through the Background Questions included: (1) basic demographic characteristics (eg. age, race), (2) educational background, (3) employment status, (4) occupation, (5) due date, (6) gravida, para status, (7) social health history (smoking and alcohol), (8) experience of current illness, (9) support of family, friends, co-workers and supervisors, and (10) use of medications. Frequency distributions were calculated for this background data. Data were tabled and, where appropriate, analyzed in order to establish means, ranges and percentages.

Analysis of General Environmental Factors. A mean score of NVP was calculated from the Nausea and Fatigue Questionnaire. The chi-square statistic was then used to examine the association between the degree of NVP and the woman's family, environment and social environment, as reported in the Background Questions.

A mean score was calculated for each general environmental factor on Part 2 of the Nausea and Fatigue Questionnaire (Dilorio, 1989) to indicate its frequency and intensity in relation to precipitating factors and NVP. The association between specific background variables, namely smoking behavior, drinking behavior, general stress level, and the occurrence of NVP were measured by the use of chi square. The chi square statistical test was also used to examine the association between factors causing nausea before pregnancy and factors causing nausea during pregnancy.

Analysis of Effective and Ineffective Nonpharmacologic Interventions. Measures used to relieve NVP were analyzed descriptively to show the percent of women using each measure. Mean scores indicating mild (3), moderate (4), or total relief (5), related to each measure were calculated. Percentages were calculated to indicate measures which were reported to make women feel worse or gave no relief.

Data from open ended questions were summarized in order to identify additional relief measures utilized, the efficacy of these relief measures, and sources of NVP information used by respondents.

CHAPTER 4

FINDINGS

Data collection began in June 1990 and was finalized in September 1990. During the data collection period, two additional data collection sites were added in order to increase the potential sample size. These sites were comparable to the originally designated sites, thus a total of seven sites were utilized. Summer vacations and an unforeseen leave of absence of a health care provider led to a decrease in the number of available clients and a slower data collection process than had initially been anticipated.

Two hundred and two questionnaires were distributed to pregnant women believed to meet the study criteria. Of the 202 questionnaires distributed, 108 (53%) were returned. Ninety-two of those returned met the study criteria, as outlined by the researcher, which included: (1) attended one of the five clinics providing prenatal care to women in the designated metropolitan area, (2) were within the first twenty weeks of gestation and (3) had experienced NVP at least once in the first trimester of gestation as a result of pregnancy. The study sample consisted of these 92 respondents.

Sample

The average age of those responding was twenty-five years with the range being 17 to 34 years. Ninety-six percent (n=85) of the respondents stated they were Caucasian, four percent (n=3) indicated they were Native American, and one percent (n=1) listed "other" as race.

In regards to marital status, seventy-six percent (n=70) of the study subjects indicated they were married; eleven percent (n=10) stated they were single and lived alone; nine percent (n=8) lived with the father of their baby, but stated they were not married to him; two percent (n=2) were divorced, and two percent (n=2) listed "other" with regards to marital status.

Eight percent (n=7) of those responding indicated having less than a high school education. Thirty-four percent (n=31) stated they had completed only high school. Forty-one percent (n=37) indicated they had attended college, and thirteen percent (n=12) stated they had attended and completed college.

Fifty-one percent of the respondents (n=47) reported that they had planned the current pregnancy whereas forty-eight percent (n=44) stated that the pregnancy was unplanned. Twenty-seven percent (n=25) of all respondents indicated that this was their first pregnancy. The remaining seventy-three percent (n=67) stated they had experienced two or more pregnancies, with six of these individuals having experienced one, two or three abortions, either spontaneous or induced. One respondent listed the current pregnancy as her tenth.

Fifty-three percent (n=49) of the respondents indicated that they were employed outside the home. Of these, sixteen percent worked less than twenty hours; thirty-one percent worked twenty to thirty-nine hours; forty-one percent worked forty hours, and twelve percent worked more than forty hours in a week. Sixty-three percent of all participants (n=57) believed their income to be sufficient to live comfortably while thirty-seven percent (n=33) did not. Two persons did not provide a response to this question.

Eighty-nine percent (n=82) of the respondents indicated that they were in good health at the time of questionnaire completion. Eleven percent (n=10) of the study

respondents reported "cold-type" symptoms of stuffy nose, cough and sore throat not associated with nausea and vomiting of pregnancy (NVP). This question was asked to insure that the respondent did not have an illness that could cause nausea and vomiting unrelated to pregnancy.

Sixty-eight percent of the respondents (n=62) reported taking no medications while thirty-one percent (n=30) stated they were taking some type of medication, the most common being prenatal vitamins. Four study respondents indicated they were taking anti-emetic medications prescribed for them by their private physician.

The average score of NVP reported by study respondents at the specific time of questionnaire completion was 1.7. A score of one represents no NVP symptoms. Two indicates mild NVP symptoms that the respondent is aware of, but can continue with usual activities. Three on the scale indicates moderate symptoms, and four represents severe symptoms which render the person unable to continue with activities or concentrate.

Nonpharmacologic Interventions

The relief measures reported by respondents were analyzed according to the interventions most often used and the amount of relief experienced when the measure was used. Amount of relief was reported on a scale of one to five with a Relief Score (RS) of one indicating, "made me feel worse" and a RS of five indicating "total relief" (see Table 1).

Table 1. Relief Measures Used

	Relief Measures Used	Percentage of Respondents	Intensity of Relief[a]
1.	Lying down	90	3.6
2.	Getting more rest	86	3.7
3.	Eating dry toast and crackers	77	3.1
4.	Eating several small meals	77	3.6
5.	Avoiding "bad" smells	74	3.5
6.	Avoiding greasy foods	63	3.1
7.	Eating bland foods	57	3.2
8.	Eating before bed	54	3.3
9.	Avoiding spicy foods	52	3.2

Note.
[a]Intensity of Relief = Relief Score (RS):
1.0 = least amount of relief
5.0 = total relief

Many respondents indicated that they used numerous relief measures. The number used by a single individual ranged from 0 to 21. An average of 12 relief measures were attempted per respondent. The relief measure being utlized reported by the most respondents (90%) was "lying down". Individuals instituting this relief measure reported that it resulted in mild to moderate relief (RS=3.6). The second most common

relief measure utilized (86%; RS=3.7) was "getting more rest". The next was "eating several small meals" (77%; RS=3.6) and "eating dry toast or crackers before getting out of bed in the morning" (77%; RS=3.1). Thus each of these measures resulted in mild to moderate relief. Seventy-six percent of the respondents indicated that "eating whenever they felt nauseous" helped to provide mild to moderate relief (RS=3.5). Foods listed as being eaten most by respondents to control NVP were dry foods such as crackers, toast, cereals and bread. Milk was the fluid of choice to be consumed when a respondent felt nauseous.

Other relief measures used less frequently for the symptoms of NVP, and the relief experienced were: avoiding bad smells (74%; RS=3.5), avoiding greasy or fried foods (63%; RS=3.1), eating bland foods (57%; RS=3.2), eating before bed (54%; RS=3.3) and avoiding spicy foods (52%; RS=3.2). Seventy-four percent of the respondents indicated that they attempted to "keep themselves busy" as a way to decrease NVP, but this appeared to provide little relief (RS=2.6). "Sharing the experience" (48%) and "having someone tell them that NVP was normal" (52%) were utilized or experienced by some respondents but without effectiveness as indicated by average relief scores of (RS=2.5) and (RS=2.0). Forty-four percent of the women reported receiving extra attention from their spouse in relation to NVP and this was reported to bring mild to moderate relief (RS=3.1).

Eleven percent of the study respondents indicated that they had used an over-the counter medication and received mild to moderate relief (RS=3.6). Interestingly, the medication of choice was Tylenol, a medication without any known action related to reducing nausea. Other medications used included Emmetrol, Mylanta, Maalox, Pepto Bismol and Tums. Additionally, eight percent had taken some type of prescription

medication, Compazine was the most commonly used, with mild relief (RS=3.2) reported. One respondent indicated that she took Bendectin (a drug now removed from the market) to treat her symptoms of NVP. She reported receiving no relief.

While only forty-two percent of the respondents avoided specific foods and drinks, those who did received mild to moderate relief (RS=3.5). Foods most commonly avoided included caffeine drinks, juices, tomato flavors and meat.

Forty-seven percent of the respondents reported avoiding cooking and indicated that they experienced mild to moderate relief (RS=3.3) when this was done. Additionally, forty percent of the study respondents avoided cigarette smoke in order to decrease NVP and received mild to moderate relief (RS=3.6). Thirty-seven percent of the respondents indicated that they had attempted to eat more acid foods and received no relief (RS=2.5). In addition, thirty-seven percent avoided taking vitamins in order to decrease NVP and received mild relief (RS=3.0).

Listed options which were not attempted by any respondents in this study included acupuncture and hypnosis. Other measures tried infrequently included avoiding riding in a car (23%), taking vitamins at bedtime (22%), drinking herbal tea (22%), avoiding liquids with meals (18%), taking extra B vitamins (13%) and acupressure (2%).

Recommendations for Relief

Open-ended responses related to relief measures paralleled ratings in the close-ended measures section of the questionnaire. Open-ended responses indicated that lying down to rest was utilized most often. The combined relief measures of eating grain products (crackers, toast, bread) and drinking liquids were described as being used with the second most frequency, followed by eating small amounts often. Nine respondents

indicated that vomiting was actually used as a nausea relief measure and five reported that no relief measures were helpful in easing their NVP.

When asked about what they would suggest to a friend suffering from NVP, respondents indicated that they would recommend numerous eating pattern alterations. Eating grain products (n=17), eating small frequent meals (n=17) and drinking liquids (n=10) were the three most common measures listed. In addition, avoidance of specific things such as disliked foods, thinking about NVP, odors and uncomfortable environments was recommended. Interestingly, three respondents recommended prayer to ease NVP, and four indicated the necessity of being patient and keeping one's "chin up" in dealing with NVP.

Respondents used personal trial and error by self most frequently (79%, n=73) in attempting to alleviate the distress of NVP. Thirty-one percent (n=29) used a friend as a resource, while twenty-five percent (n=23) used their mothers for advice. Nurses were used as a source of information by 23% (n=21) of the study respondents, and physicians were consulted by 21% (n=19) of the respondents. Other resources used by fewer than ten percent of the respondents included books (n=9), midwives (n=2), nurse practitioners (n=2), prenatal teachers (n=1), magazine articles (n=1) and pharmacists (n=1).

Environmental Factors

Social Habits

Seventy percent (n=63) of the respondents stated that they did not smoke prior to pregnancy, and eighty-six percent (n=77) of all respondents chose not to smoke during the current pregnancy. Thirty percent (n=27) of the respondents indicated that they had smoked prior to pregnancy with fourteen percent (n=13) continuing to smoke

during the current pregnancy. Nine of these thirteen respondents provided responses to the intensity of NVP section of the study questionnaire. Of these nine, four reported no symptoms of NVP and five reported only mild NVP symptoms. The literature had suggested that smoking might actually be associated with decreased NVP. Chi-Square analyses were conducted to examine the association between smoking behavior prior to and during the current pregnancy and the degree of NVP experienced. No statistically significant ($p<.05$) relationships were found.

Forty-four percent of all respondents (n=34) indicated that they did not drink alcohol prior to this pregnancy, and ninety-four percent (n=85) indicated they were not drinking during this pregnancy. Fifty-six percent (n=44) of all respondents stated that they had consumed alcohol at least once a month or less prior to pregnancy, and six percent (n=5) of all respondents stated that they continued to drink alcohol once a month or less during the current pregnancy. Of the five respondents who indicated they were drinking once a month or less during this pregnancy, three experienced no symptoms of NVP while two experienced mild symptoms of NVP. Chi-Square analyses failed to show a statistically significant ($p<.05$) relationship between drinking behavior either before or during pregnancy and the intensity of NVP experienced.

External Environment

Mean scores for the frequency and intensity of precipitating factors as reported on the Nausea and Fatigue Questionnaire were calculated. Frequency scores ranged from one to five with one indicating never, two indicating sometimes, three indicating often, four indicating most of the time and five indicating all of the time. Intensity scores varied from one to four with one indicating none and four indicating the greatest intensity. The NVP precipitating factors occurring with the most frequency included odors and

hunger with mean frequency scores of 3.3 and mean intensity scores of 3.0. Fatigue was rated as 3.1 in frequency and 2.6 in intensity by the respondents. Getting out of bed had frequency and intensity mean scores of 2.9 and 2.6 respectively. The mean scores of precipitating factors which occurred with less frequency and intensity are listed in Table 2.

Eighty-two percent of the study respondents (n=60) indicated that they experienced at least mild stress in their lives. Forty percent of these individuals (n=24) reported no symptoms of NVP at the time of questionnaire completion. Forty-two percent (n=25) reported mild NVP symptoms; fifteen percent (n=9) experienced moderate symptoms, and three percent (n=2) reported experiencing severe symptoms of NVP. Chi-Square analysis failed to indicate a statistically significant ($p<.05$) relationship between stress level and the intensity of NVP experienced by the study respondents.

The chi-square test was also used to examine the association between factors which were reported to have caused nausea before pregnancy and factors causing nausea during pregnancy. These factors were stress at school, stress at home and stress at work. No statistically significant ($p<.05$) relationships were found.

Family and Social Support

Ninety percent (n=80) of the study participants indicated that the father of the baby was supportive and helpful regarding the pregnancy. Examination of the association between the degree of NVP and the respondent's family environment revealed that forty-four percent (n=31) of those indicating partner support experienced no NVP at the time of questionnaire completion, while forty-two percent (n=30) experienced only mild NVP. Ten percent (n=7) of the study participants reporting partner support stated

they experienced moderate symptoms of NVP, and two percent (n=2) indicated that they experienced severe NVP. Ten respondents who indicated partner support did not answer the NVP severity question. Of the five study respondents who reported no partner support, two experienced no NVP; two experienced mild NVP, and one experienced moderate NVP.

Table 2. Mean Scores of Precipitating Factors

Precipitating Factors		Frequency			Intensity		
		Never	Some Times	Often	None	Mild	Moderate
1.	Getting out of bed		2.9			2.6	
2.	Indigestion		2.4			2.3	
3.	Headache		2.3			2.4	
4.	Thoughts of food		2.6			2.6	
5.	Vitamins		2.1		1.9		
6.	Eating		2.7			2.6	
7.	Exercise	1.8			1.8		
8.	Odors			3.3			3.0
9.	Fatigue			3.1		2.6	
10.	Stress		2.6			2.5	
11.	Driving		2.1		1.9		
12.	Hunger			3.3			3.0
13.	Feeling warm		2.5			2.4	
14.	Grocery shopping		2.2		1.9		
15.	Preparing meals		2.6			2.4	
16.	Other	1.7			1.8		

Seventy-seven percent of the study participants responding (n=69) stated that parental support was provided. Eight percent (n=7) indicated that parental support was not available, and fifteen percent (n=14) indicated that parents chose not to be involved. The majority (n=52) of those respondents receiving parental support suffered no or mild NVP symptoms at the time of questionnaire completion. Eight respondents receiving parental support reported suffering moderate NVP and one reported experiencing severe NVP. Eight respondents indicating parental support did not answer the NVP severity question. Of the seven respondents indicating no parental support available, one did not answer the NVP severity question; one reported experiencing no NVP, and the remaining five reported experiencing only mild NVP symptoms at the time of questionnaire completion. Of those respondents reporting noninvolvement of parents (n=14), two did not complete the NVP severity question; four indicated feeling no NVP; six felt mild NVP; one experienced moderate NVP, and one experienced severe NVP.

Eighty-four percent of the respondents (n=72) indicated that they felt they had the support and help of friends regarding their pregnancy. Forty-three percent (n=31) of these individuals suffered no NVP at the time of questionnaire completion, and forty-two percent (n=30) experienced mild symptoms of NVP. Thirteen percent (n=9) of the study respondents receiving friend support indicated feeling moderate NVP, and one percent (n=1) experienced severe NVP. One respondent with friend support did not answer the NVP severity question. Seven percent (n=6) of all respondents indicated either noninvolvement or no support from friends, with only one of these subjects reporting severe NVP.

Only forty-one percent of all employed participants (n=26) who answered the intensity of NVP question indicated that they felt their employer was supportive during this

pregnancy. Thirteen percent (n=8) reported their employer to be nonsupportive, and the remaining forty-six percent (n=29) indicated neither support nor nonsupport from their employer. Thirty-one percent (n=8) of those with supportive employers reported no symptoms of NVP; fifty-four percent (n=14) reported mild NVP symptoms; twelve percent (n=3) experienced moderate symptoms of NVP, and four percent (n=1) indicated severe symptoms of NVP at the time of questionnaire completion. Of the eight subjects reporting lack of support, four experienced no symptoms of NVP, and four reported mild NVP symptoms.

Fifty-eight percent of the study subjects (n=37) reported that they felt co-worker support during the current pregnancy. Eight percent (n=5) reported nonsupportive co-workers. Thirty percent of those feeling supported (n=11) experienced no symptoms of NVP; fifty-four percent (n=20) reported mild symptoms; fourteen percent (n=5) experienced moderate symptoms, and three percent (n=1) reported experiencing severe symptoms of NVP. Of the five respondents receiving no co-worker support, three experienced no symptoms of NVP and two experienced mild symptoms of NVP.

Chi-Square analyses were conducted to examine relationships between each type of environmental support and the severity of NVP experienced. No statistically significant ($p<.05$) relationships between environmental supports and the degree of NVP experienced by participatants in the study were found. Thus support and help from husband, family, friends, employer and co-workers did not appear to have an effect on the intensity of NVP experienced by respondents in this study.

CHAPTER 5

DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS

The theoretical framework used to guide this study was based upon the concept of self-care. The study assessed interventions implemented by women in an attempt to reduce the discomforts of nausea and vomiting of pregnancy (NVP). Elements investigated included precipitating factors and relief measures. In addition, general environmental factors perpetuating or alleviating symptoms of NVP were evaluated.

The following discussion provides an interpretation of the findings for the sample studied. Findings from this investigation are also related to previous relevant studies.

Effective Nonpharmacologic Interventions

No measure identified by study participants provided total relief from the discomfort of NVP, however, a large percentage of respondents received relief by lying down for a brief period. Getting more rest was the second most effective nonpharmacologic intervention identified, followed by eating several small meals and eating crackers or dry toast. These findings were similar to those identified by Alley (1984) and Dilorio (1985) though not in the same order of effectiveness. The foods of choice to be eaten by study respondents were consistent with those of previous studies (Brucker, 1988; Dilorio, 1985; Alley, 1984; David & Doyle, 1976) and included dry carbohydrates such as crackers, toast, cereal and bread. This would appear to support Bobak, Jensen and Zalar's (1980) assertion that hypoglycemia after a period of fasting may be a contributing factor to NVP.

Avoidance behaviors were another effective means of reducing the distress of NVP. Bad odors, food preparation, smoke, greasy foods and spicy foods were listed among elements to be avoided. These findings supported Dilorio's (1985) study in which pregnant teenagers indicated that smells, smoke and fatty foods exacerbated symptoms of NVP. Respondents in the present study indicated that drinks with caffeine were avoided in order to reduce symptoms, whereas in Dilorio's (1985) study, ingestion of caffeine products did not appear to affect respondents adversely. Additional foods avoided in an effort to reduce symptoms by respondents in the present study included those with tomato flavors, juices and meat.

Refraining from taking prenatal vitamins, or taking them at bedtime, was a relief measure also reported by study respondents to decrease symptoms of NVP. This issue has not been specifically addressed in previous studies. However, David and Doyle (1976) suggested taking iron supplements before retiring or delaying taking the supplement until the second trimester of pregnancy as a method of reducing NVP symptoms.

Although less than half of the respondents indicated that they believed that receiving extra attention from their spouses was a relief measure, those who did receive such attention reported mild relief as a result. The psychological benefit of receiving permission and acceptance to not feel well may have contributed to the relief experienced. This concurs with Midwinter's (1971) assertion that the husband's act of dispensing tea, toast and sympathy can be utilized as a means of reducing NVP. This approach affords not only psychological support but sustenance as well.

For a very small percentage of study respondents nothing was reported to be helpful except for the intervention of induced vomiting. A small percentage of Alley's

(1984) respondents also found induced vomiting to be the only means of relieving NVP. Because of the potential metabolic complications such as acidosis and physical complications (eg. dental caries and esophageal irritation with potential rupture and hemorrhage) this intervention cannot be recommended.

Ineffective Nonpharmacologic Interventions

One intervention attempted by study respondents was to "keep busy". Unfortunately, this intervention was reported to provide little-to-no relief. Fatigue was identified by the study respondents as one of the major precipitating factors contributing to NVP. Utilizing energy to remain busy could have magnified the fatigue experienced, thus unwittingly contributing to increased symptoms of NVP. Another nonpharmacologic measure attempted but reported as providing little help was increased exercise. Once more, this intervention may have intensified the fatigue level of study respondents, inadvertently leading to heightened NVP symptoms.

Sharing the experience with others was reported as ineffective in alleviating the symptoms of NVP. The experience of being told that nausea was normal and would go away soon was also reported as being ineffective in controlling symptoms. This finding contradicts previous assertions in the literature (Brucker, 1988; Conrad & Ponte, 1981; David & Doyle, 1976; King, 1955) that reassurance is the single most used and possibly most effective remedy for NVP symptoms. As indicated by Dilorio (1989), this type of patronizing behavior is not only ineffective but may also place a barrier in the communication and interaction process between the woman and her health care provider.

Environmental Factors

A clear pattern of relationships between environmental factors in the home, at work or at school and the intensity of NVP experienced by respondents, all of whom had NVP symptoms, indicated that the father of the child as well as parents, friends and co-workers were supportive. Unfortunately, this support did not appear to provide a buffering effect on the amount of NVP experienced by the respondents. This finding does not support work by Wolkind and Zajicek (1978) who found that women with prolonged NVP experienced little support from husbands or parents.

Understanding relationships between environmental factors and the intensity of NVP in the current study is complicated by the fact that all or most respondents may have waited until they were experiencing no or only mild symptoms of NVP to complete the questionnaire. The intensity of NVP in relation to support variables may, therefore, have been distorted.

Implications for Nursing

The findings from this study have implications for nurses in office, public health, hospital and educational settings. Only twenty-three percent of study respondents received information from nurses. If nursing is to have an effective role in assisting women to deal with NVP through the promotion of self care, the profession must become more visible and accessible as a source of prenatal health care. There is a need for the nurse to provide anticipatory guidance related to NVP rather than waiting until the symptoms become distressing or incapacitating. Findings from this study indicate that giving "pat" answers about NVP, or dismissing symptoms as "normal" will alienate the pregnant woman and keep her from seeking help. Further, such patronizing behavior on

the part of health care providers may discourage the pregnant woman's participation in any part of her health care. Because nurses often have frequent contact with women experiencing symptoms of NVP, they can identify when the symptoms have become severe enough to warrant more aggressive interventions. Seeing the woman, weighing her, noting ketones in the urine and counseling her regarding different intervention options provides needed assessment and support and allows for expression of concerns and teaching related to self care.

The majority of respondents in this study indicated that they chose not to smoke or drink during the current pregnancy. Public education has targeted pregnant women to inform them of the dangers of these social habits to the unborn child. Based on respondents in this study, this educational campaign has either resulted in women hearing and heeding the message or in women feeling stigmatized and judged if they do engage in these social habits, thus under-reporting them. Nurses must clearly communicate a nonjudgmental attitude to pregnant women in order to facilitate the collection of accurate data related to prenatal risks. The philosophy of professional nursing is that of supporting the client in reaching optimal health, based on acceptance of the client's decision making.

An additional finding of interest to nurses is that the majority of respondents indicated that they were currently taking no medication. A question that arises is what is the pregnant woman's perception of prenatal vitamins. Did respondents not consider prenatal vitamins to be a medication? If that is true, health education interventions are indicated. If pregnant women consume extra doses of prenatal vitamins in an effort to increase their energy level for example, there can be serious detrimental effects on the unborn child.

The majority of study subjects indicated increased NVP symptoms when things went wrong at home. More than half of the respondents were employed outside the home and may have found their lives to be fast paced and stressed. Thus, additional stressors at home were physiologically and psychologically upsetting. Recognition of these factors indicates the need for nurses to serve as patient advocates, educating the father of the child, parents and friends in order to mobilize their support and assistance for the pregnant woman at home. It may be advantageous for nurses to continue to assess the home support system in relation to NVP symptoms throughout the entire perinatal period.

The majority of respondents who worked outside the home indicated that their employers were not specifically supportive regarding their pregnancy. The relationship that this may have to fatigue and hunger leading to NVP cannot be discounted. Nurses can have an important role in health education related to the work place. Nurses are in a position to provide information to both employers and employees about the needs of pregnant women. Adequate breaks for rest and snacks are important in meeting the health needs of pregnant women and decreasing NVP symptoms. Such breaks may ultimately lead not only to improved health for pregnant women but, quite probably, their increased productivity at work and a reduction in sick days taken.

This study supported Alley (1984) and Dilorio's (1988) findings that not all women are aided by the same interventions in relation to NVP. Thus, women experiencing NVP symptoms should be encouraged to attempt one intervention at a time and evaluate its effectiveness. Women should be encouraged to communicate ineffective measures so that alternate suggestions can be made, and a plan of care appropriate to each individual

woman can be developed through a collaborative process involving the nurse and the client.

Recommendations for Further Study

In the current study, lying down for a brief period and resting were the most common relief measures listed as effective in reducing the distress of NVP. Additional studies are recommended which examine relationships between fatigue and NVP.

With more women entering the work force each year, studies need to be conducted on the effects of NVP on a pregnant woman's ability to attend work and/or her performance while at work. The effectiveness of brief but frequent rest and snack breaks should be examined. More investigations are critical to improving the working conditions for pregnant women enhancing both their health and productivity.

A paucity of information is available addressing how NVP affects the family unit. Most studies focus on high risk pregnancies and altered family dynamics. More investigation is needed regarding the effects of NVP during normal pregnancies on the partner and other family members. In addition, further research is needed to identify when NVP becomes serious enough to be detrimental to the health of the mother and the fetus. Identifying areas where education and support can enhance family health and functioning in relation to NVP is essential.

Further investigation is also recommended into the appropriateness of vitamins during pregnancy. Because of the irritating side effects caused by their ingestion, some women opt not to take the vitamins. Potential negative consequences to the fetus and the pregnant woman from omitting the vitamins versus the relief experienced needs further research. Additional investigation utilizing the B vitamins to decrease the

distressing symptoms of NVP is also recommended. No current literature exists addressing the potential benefits of utilizing such treatment for NVP.

The relationship between hormones and the symptoms of NVP has still not been clearly defined. The literature review did not identify any current research being conducted in this area. Further investigation to identify a relationship between pregnancy hormones and the symptoms of NVP is recommended.

Across the nation, and recently in the region where this study was conducted, governmental and private agencies have launched a campaign encouraging pregnant women to access prenatal care early. Women are provided with a toll free number to call with questions, concerns and for the names of available health care professionals. This program could offer an ideal opportunity for nurses to become more involved in educating women about pregnancy, including interventions helpful in dealing with NVP. In addition, it could allow nurses to provide pregnant women with danger signs related to pregnancy, including when NVP may be severe enough to warrant specific medical interventions.

NVP affects many aspects of a pregnant woman's life. This study may stimulate further investigations of the needs of women experiencing NVP and of her family. Results of this study indicate that NVP is a distressing aspect of pregnancy which is not effectively dealt with by simply denying or dismissing it. Meeting the needs of women experiencing NVP in a timely fashion can be an important aspect of nursing's health promotion role.

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APPENDICES

APPENDIX A

STUDY EXPLANATION AND CONSENT FORM

April 22, 1990

Name and Address of Clinic

Dear *Contact Person at Clinic* :

This letter is a follow up on the telephone conversation we had on February 7, 1990. I would again like to explain who I am and the purpose of my inquiry. As a registered nurse enrolled in the graduate nursing program at Montana State University, I am interested in identifying effective nonpharmacologic interventions employed by women in the first trimester of pregnancy to ease the discomfort of nausea and vomiting. The information obtained will be used for my Master of Nursing thesis.

My graduate committee has requested that I contact clinics providing prenatal care in three Montana cities in order to determine the number of potential sites willing to distribute a questionnaire during the summer months of 1990. My goal at this time is to distribute 450 questionnaires among five Montana clinics with an anticipated return rate of 50 percent.

Potential participants will be women who have not yet completed the first twenty weeks of gestation. They may be primigravidas or multigravidas who are new or returning clinic patients, presenting for obstetrical care with the currently pregnancy. They will be asked by the nurse doing the initial intake interview, questions regarding their experience of nausea and vomiting of pregnancy (NVP) during the first trimester. If they state that they have experienced NVP at least once, they will be given a copy of the study explanation and asked to complete the questionnaire at their convenience. The questionnaire takes approximately 20 minutes to complete and has no identifying information as to the participant's identity, no the clinic where she receives care. In addition, the potential participant is assured that neither consent nor refusal to complete the questionnaire will affect current or future care received. There are no direct benefits to the subjects for completing the questionnaire, but the study results will be useful in assisting future women who experience NVP. A stamped, addressed envelope is provided to the participant, to be returned to Montana State University, College of Nursing, Great Falls campus.

The names of the clinics will be kept confidential. My goal is to collect data from May 1, 1990 to September 1, 1990. I would like to use (*name of clinic*) office as one of my sites. I have enclosed study information, human subjects protection, and the questionnaire to be used. I would appreciate a response as soon as possible. If you have any questions, please feel free to contact me.

Sincerely,

M. Joann Robbins, B.S.N., R.N., Graduate Student
MSU College of Nursing
1101 - 26th Street South
Great Falls, MT 59405
(406) 468-2253 Home (406) 455-5610 Message

Nausea and Vomiting in the First Trimester of Pregnancy
Explanation of Study and Consent Form

As a registered nurse enrolled in the graduate nursing program at Montana State University, I am interested in identifying practices, not involving prescription drugs, used by women in the first trimester of pregnancy to relieve nausea and vomiting. In addition, I am interested in identifying familial, social, and work factors that may cause the nausea and vomiting to increase or decrease. The information obtained will be used for my graduate thesis. Knowing what methods you have used in an effort to relieve nausea and vomiting of pregnancy, and the environmental factors that have influenced the symptoms will be helpful in the development of nursing care for other women experiencing nausea and vomiting of pregnancy.

This study has been reviewed by the Montana State University College of Nursing, Great Falls campus, Human Subjects Committee to insure that the rights of those participating are protected. I have been given permission by this clinic to distribute this questionnaire to women who have experienced nausea and vomiting of pregnancy in the first twelve weeks of their pregnancy. Neither consent nor refusal to complete this questionnaire will affect the care you are currently receiving at this clinic, or will receive in the future. You may withdraw form the study at anytime without jeopardizing your care. Your responses are anonymous; you are not asked to provide your name or any other identifying date.

The questionnaire will take approximately 20 minutes to complete. The nurse providing you with the questionnaire will have been briefed on how to complete it by the principle investigator. This individual will in turn, provide you with the necessary instructions to complete the questionnaire. It will be most helpful for the purpose of the study if you complete every question and return the questionnaire within two weeks. When you have completed the questionnaire, return it in the stamped, addressed enveloped provided to you. Again, I request that you do not put your name anywhere on the questionnaire or return envelope. Returning the questionnaire indicated your consent to participate in the study.

A potential risk of this study is that some people may become nauseated when recalling factors that brought on the nausea and vomiting of pregnancy. If this occurs, please stop temporarily until you feel better. Although there are no direct benefits to you for participation in this research, the results of the study will be useful to health professionals in their care of pregnant women. Your willingness to provide information for this study will be greatly appreciated.

If you have any questions about the study, do not hesitate to phone me. My name, status, and telephone number are:

Nausea and Vomiting of Pregnancy Study
M. Joann Robbins, B.S.N., R.N., Graduate Nursing Student
Montana State University, College of Nursing
Box 181, Cascade, MT 59421
(406) 468-2253 (Home) (406) 455-5610 (Message-MSU)

APPENDIX B
FATIGUE AND NAUSEA DURING PREGNANCY QUESTIONNAIRE

Nausea and Vomiting of Pregnancy Background Data

1). AGE IN YEARS _____

2). RACE:

- ☐ Caucasian
- ☐ Asian
- ☐ Black
- ☐ Native American
- ☐ Other

3). MARITAL STATUS:

- ☐ Married
- ☐ Single
- ☐ Divorced
- ☐ Live with partner who is father of the child
- ☐ Other: specify _____

4). IS THIS A PLANNED PREGNANCY? ☐ No ☐ Yes

5). WHAT IS YOUR DUE DATE? _____

6). NUMBER OF TIMES PREGNANT _____

NUMBER OF PREGNANCIES CARRIED UP TO AT LEAST TWO WEEKS BEFORE DUE DATE? _____

NUMBER OF PREMATURE DELIVERIES? _____

NUMBER OF PREGNANCIES MISCARRIED OR ABORTED? _____

NUMBER OF LIVE BIRTHS _____

7). YOUR EDUCATION:

- ☐ less than high school
- ☐ finished high school
- ☐ some college
- ☐ college
- ☐ graduate school

8). ARE YOUR CURRENTLY EMPLOYED OUTSIDE YOUR HOME? ☐ No ☐ Yes

IF YES,

- ☐ 20 hours per week or less
- ☐ 20-39 hours per week
- ☐ 40 hours per week
- ☐ more than 40 hours per week

9). WHAT IS YOUR OCCUPATION? _____

10). IS YOUR HUSBAND (OR THE FATHER OF THE CHILD) SUPPORTIVE AND HELPFUL REGARDING YOUR PREGNANCY INCLUDING THE PHYSICAL SYMPTOMS RELATED TO PREGNANCY?

- ☐ No
- ☐ Yes
- ☐ Not Involved

ARE YOUR PARENTS SUPPORTIVE AND HELPFUL REGARDING YOUR PREGNANCY INCLUDING THE PHYSICAL SYMPTOMS RELATED TO PREGNANCY?

- ☐ No
- ☐ Yes
- ☐ Not Involved

ARE YOUR FRIENDS SUPPORTIVE AND HELPFUL REGARDING YOUR PREGNANCY INCLUDING THE PHYSICAL SYMPTOMS RELATED TO PREGNANCY?

- ☐ No
- ☐ Yes
- ☐ Not Involved

11). IS YOUR BOSS / SUPERVISOR SUPPORTIVE AND HELPFUL REGARDING YOUR PREGNANCY INCLUDING THE PHYSICAL SYMPTOMS RELATED TO PREGNANCY?

- ☐ No
- ☐ Yes
- ☐ Not Involved

12). ARE YOUR CO-WORKERS SUPPORTIVE AND HELPFUL REGARDING YOUR PREGNANCY INCLUDING THE PHYSICAL SYMPTOMS RELATED TO PREGNANCY

- ☐ No
- ☐ Yes
- ☐ Not Involved

13). DO YOU BELIEVE THAT YOUR FAMILY INCOME IS SUFFICIENT SO THAT YOU CAN LIVE COMFORTABLY?

- ☐ No
- ☐ Yes

14). DO YOUR SMOKE NOW?

- ☐ No
- ☐ Yes

IF YES, NUMBER OF CIGARETTES PER DAY _____

DO ANY MEMBERS OF YOUR HOUSEHOLD SMOKE NEAR YOU?

- ☐ No
- ☐ Yes

DOES ANYONE AT WORK OFTEN SMOKE NEAR YOU?

- ☐ No
- ☐ Yes

15). DID YOU SMOKE PRIOR TO PREGNANCY?

- ☐ No
- ☐ Yes

IF YES, NUMBER OF CIGARETTES PER DAY _____

16). ALCOHOL CONSUMPTION BEFORE PREGNANCY:

- ☐ none
- ☐ once a month or less
- ☐ 2-3 times a month
- ☐ once a week
- ☐ once a day
- ☐ more than once a day

ALCOHOL CONSUMPTION NOW:

- ☐ none
- ☐ once a month or less
- ☐ 2-3 times a month
- ☐ once a week
- ☐ once a day
- ☐ more than once a day

17). DO YOU CURRENTLY HAVE AN ACUTE ILLNESS SUCH AS COLD OR FLU?

- ☐ No
- ☐ Yes

IF YES, PLEASE INDICATE THE TYPE OF SYMPTOMS YOU ARE HAVING?

18). ARE YOU CURRENTLY TAKING ANY MEDICATIONS, PRESCRIPTIVE, OR OVER THE COUNTER?

- ☐ No
- ☐ Yes IF YES, PLEASE LIST

19). BEFORE THIS PREGNANCY, DID YOUR STOMACH GET UPSET BY THINGS THAT WENT WRONG

AT SCHOOL?

- ☐ No
- ☐ Yes
- ☐ Not Applicable

AT WORK?

- ☐ No
- ☐ Yes
- ☐ Not Applicable

AT HOME?

- ☐ No
- ☐ Yes

20). CURRENTLY, WITH THIS PREGNANCY, DOES YOUR STOMACH GET UPSET BY THINGS THAT GO WRONG

AT SCHOOL?

- ☐ No
- ☐ Yes
- ☐ Not Applicable

AT WORK?

- ☐ No
- ☐ Yes
- ☐ Not Applicable

AT HOME?

- ☐ No
- ☐ Yes

Developed by
M. J. Robbins, RN, BSN
Graduate Student School of Nursing
Montana State University

PRECIPITATING FACTORS

Have you had any nausea during this pregnancy? ___YES ___NO If you answer yes, please complete the next two forms.

Listed below are some factors which may or may not bring on an episode of nausea.

For each factor, circle the number that corresponds to the **frequency** with which you experience nausea with each event. (1 = never, 2 = sometimes, 3 = often, 4 = most of the time, 5 = all of the time).

Circle the number that corresponds to the **intensity** of your experience with the nausea associated with each factor. (1 = none, 2 = mild, 3 = moderate, 4 = severe).

Example:
How often do you have nausea upon awaking. 1 2 3 (4) 5
How intense is nausea upon awaking. 1 2 (3) 4

Experienced during the last week only	Frequency of Experience (how often)					Intensity of Experience			
Precipitating Factors	Never	Sometimes	Often	Most of the time	All of the time	None	Mild	Moderate	Severe
Getting out of bed	1	2	3	4	5	1	2	3	4
Indigestion	1	2	3	4	5	1	2	3	4
Headache	1	2	3	4	5	1	2	3	4
Thoughts of food	1	2	3	4	5	1	2	3	4
Vitamins	1	2	3	4	5	1	2	3	4
Eating	1	2	3	4	5	1	2	3	4
Exercise	1	2	3	4	5	1	2	3	4
Odors	1	2	3	4	5	1	2	3	4
Fatigue	1	2	3	4	5	1	2	3	4
Stress	1	2	3	4	5	1	2	3	4
Driving	1	2	3	4	5	1	2	3	4
Hunger	1	2	3	4	5	1	2	3	4
Feeling warm	1	2	3	4	5	1	2	3	4
Grocery shopping	1	2	3	4	5	1	2	3	4
Preparing meals	1	2	3	4	5	1	2	3	4
Other	1	2	3	4	5	1	2	3	4

We are interested in knowing if you are experiencing nausea (defined as feeling sick to your stomach, queasiness, morning sickness) *right now.*

1. Write in the time of day it is right now. _____ AM / PM

2. Please circle the term that best corresponds to the **intensity** of nausea that you are experiencing right now. (1 = **none**, 2 = **mild** (*aware of symptoms but could continue with activity*), 3 = **moderate** (*some difficulty with activity and some difficulty with concentration*), 4 = **severe** (*could not continue with activity and could not concentrate*).

NONE MILD MODERATE SEVERE

3. Did you experience any nausea yesterday? YES NO

4. Did you vomit yesterday? YES NO If yes, number of times _____.

5. Using the scale below, circle the number that corresponds to the **intensity of nausea** that you experienced **yesterday** for each of the times indicated.

1 = **none**
2 = **mild** (aware of symptoms but could continue with activity)
3 = **moderate** (some difficulty with activity and some difficulty with concentration)
4 = **severe** (could not continue with activity and could not concentrate)

NAUSEA				
Time of Day	NONE	MILD	MODERATE	SEVERE
Upon Awakening	1	2	3	4
Late morning (before lunch)	1	2	3	4
Immediately after lunch	1	2	3	4
Late afternoon	1	2	3	4
Early evening (6-9)	1	2	3	4
Just before bed	1	2	3	4
During night	1	2	3	4

6. Indicate how **distressing** nausea and vomiting were for you by circling the corresponding numbers.

	Not Distressing	Mildly Distressing	Moderately Distressing	Quite a bit Distressing	Extremely Distressing
Nausea	1	2	3	4	5
Vomiting	1	2	3	4	5

Relief Measures

The following is a list of relief measures that have been used for nausea. Please check whether you used each one or not. Then circle whether you think each one: 1) made you feel worse; 2) provided no relief (your symptoms remained the same); 3) offered mild relief; 4) offered moderate relief; or 5) offered total relief (nausea and vomiting have gone away).

	Used	Not Used	made me feel worse	no relief	mild relief	moderate relief	total relief
1. Eating more acid foods, such as grapefruit or pickles.	1	2	1	2	3	4	5
2. Eating dry toast or crackers before getting out of bed in the morning.	1	2	1	2	3	4	5
3. Avoiding spicy foods.	1	2	1	2	3	4	5
4. Eating bland foods, such as baked potato or hot cereal.	1	2	1	2	3	4	5
5. Avoiding riding in the car.	1	2	1	2	3	4	5
6. Avoiding bad smells.	1	2	1	2	3	4	5
7. Getting more rest.	1	2	1	2	3	4	5
8. Eating several small meals.	1	2	1	2	3	4	5
9. Getting more exercise.	1	2	1	2	3	4	5
10. Avoiding certain other foods drinks (please name them_____)	1	2	1	2	3	4	5
11. Taking extra B vitamins.	1	2	1	2	3	4	5
12. Taking vitamins at bedtime.	1	2	1	2	3	4	5
13. Drinking some herbal tea (please name it _____)	1	2	1	2	3	4	5
14. Eating hard candy.	1	2	1	2	3	4	5
15. Sharing experiences with another person.	1	2	1	2	3	4	5
16. Taking some over-the-counter medicine. (please name _____).	1	2	1	2	3	4	5
17. Avoiding liquids with meals.	1	2	1	2	3	4	5
18. Avoiding greasy or fried foods.	1	2	1	2	3	4	5
19. Eating before bed.	1	2	1	2	3	4	5
20. Lying down.	1	2	1	2	3	4	5
21. Accupressure	1	2	1	2	3	4	5
22. Not taking vitamins.	1	2	1	2	3	4	5

	Used	Not Used	made me feel worse	no relief	mild relief	moderate relief	total relief
23. Taking some prescription medicine (please name _____).	1	2	1	2	3	4	5
24. Accupuncture	1	2	1	2	3	4	5
25. Receiving extra attention from my partner.	1	2	1	2	3	4	5
26. Keeping myself busy.	1	2	1	2	3	4	5
27. Eating whenever I felt nauseous (which foods helped?_____)	1	2	1	2	3	4	5
28. Having someone tell me that nausea is normal and will go away soon.	1	2	1	2	3	4	5
29. Avoiding cooking.	1	2	1	2	3	4	5
30. Cutting down on smoking or avoiding smoke.	1	2	1	2	3	4	5
31. Hypnosis	1	2	1	2	3	4	5
32. Other (_____)	1	2	1	2	3	4	5
32. Other (_____)	1	2	1	2	3	4	5

33. In your own words, please describe what seemed to help you feel better when you were nauseated.

_____

_____

34. Which of the relief measures helped the most?_____

_____

35. Which helped second most?_____

36. What would you recommend to a friend who asked you for advice on nausea?_____

_____

37. Where did your information on nausea come from? (please circle all appropriate answers)

Trial and error by myself

A friend who had experienced morning sickness

my mother

a book (please give title) _____

A health care worker (circle all that apply)
doctor nurse
midwife other
nurse practitioner

Developed by
Colleen DiIorio, Ph.D., R.N.
Marsha Stalcup, R.N. BSN
Emory University

APPENDIX C

LETTERS OF PERMISSION

EMORY UNIVERSITY
NELL HODGSON WOODRUFF SCHOOL OF NURSING
Atlanta, Georgia 30322

May 11, 1990

M. Joann Robbins
Graduate Student
MSU College of Nursing
Bozeman, MT

Dear Ms. Robbins:

This letter is in response to your request for information on the reliability of the Nausea of Pregnancy Scale. A Cronbachs' Alpha computed for the scale on a sample of primarily white middle class first trimester pregnant women was .78.

Following completion of your study I would appreciate a copy of the raw study data (for the Nausea Scale) and demographic information. This will help us as we refine the instrument. Thank you again for your interest in the scale.

Sincerely,

Colleen DiIorio

Colleen DiIorio
Director, Center for Nursing Research

CD/sl

November 20, 1989

Dr. Colleen DIIorio
Emory University
c/o Nell Hodgson School of Nursing
Atlanta, Ga. 30322

Dear Dr. DIIorio,

I am a graduate student at Montana State University in the Masters of Rural Health Nursing Program. In addition, I have spent the past 15 years working in women's health care in an ob-gyn clinic.

I have come to the part of my program where I am now doing research for my thesis. My interest has been in nausea and vomiting of pregnancy, how little we know about it, and how we do even less in our clinic setting to help women get through this aspect of their pregnancy.

Your papers published in Nursing Research, November/December, 1985 and Nurse Practitioner, May 1988 have been quite enlightening. My hope is that you can direct me to the questionnaire that you developed in doing your research on first trimester nausea in pregnant teenagers. I have sent for most of the literature presented in your reference lists, but would appreciate any further direction that you might be able to supply.

I will be happy to pay for any expenses. Thank you for your time.

Sincerely,

Joann

M. Joann Robbins
Box 181
Cascade, MT 59421
(406) 468-2253

EMORY UNIVERSITY
NELL HODGSON WOODRUFF SCHOOL OF NURSING
Atlanta, Georgia 30322

December 13, 1989

M. Joann Robbins
Box 181
Cascade, MT 59421

Dear Ms. Robbins,

This letter is in response to your recent request for a copy of the nausea and vomiting questionnaire used in my study published in Nursing Research. I have enclosed a copy of the questionnaire and you have my permission to use it for your masters thesis. I have also enclosed a copy of a more recent questionnaire that we are using in our current study. The latest questionnaire was developed using results of the 1985 study plus a study published in Key Aspects of Comfort: The Management of Pain, Fatigue and Nausea (eds S. Funk et al). This current instrument is more complete.

Both instruments have been assessed for face and content validity. Test-retest reliability was assessed for the older instrument and was found to be greater than .90 after two weeks. Cronbach's alphas for the precipitating factor and relief measure sections of the new instrument will be computed when the current data collection is complete.

If you do use either of the questionnaires we request that you:

1) use the questionnaire as is without changes;
2) send us a copy of raw data;
3) send us the results of any hypotheses testing.

This information will be used to further refine the instruments.

Thank you for your interest in my work on nausea and vomiting. I wish you the best as you complete your thesis.

Sincerely,

Colleen DiIorio

Colleen Dilorio, Ph.D., R.N.
Director, Center for Nursing Research
Associate Professor

CD:mp

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