AN ANALYSIS OF IMMEDIATE COMPREHENSION WHEN

BREASTFEEDING EDUCATION IS OFFERED IN EITHER

OF TWO METHODS: POSTER DISPLAY OR LECTURE

by

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ABSTRACT

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Analysis of Immediate Comprehension When Breastfeeding Education is Offered in
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   The Special Supplemental Nutrition Program for Women, Infants, and Children

(WIC) has mandated nutrition education as an important part of its services. In the early

years after WIC's inception, education was often by classes. In recent years, education

by poster display has increased at WIC. Both WIC staff and WIC clients like the

informality and less time consuming qualities of education by poster display.

Breastfeeding education is one type of nutrition education offered by WIC nutritionists.

Breastfeeding initiation is less likely to occur for women of lower socioeconomic status

than the population in general. Breastfeeding education has been shown to increase the

incidence and duration of breastfeeding. Breastfed infants, in general, are healthier with

fewer illnesses and less severe illnesses than artificially fed infants. A large cost savings

to society can be realized when babies are breastfed, not only in health care, but also in

the cost of formula purchased by the USDA for WIC.

The purpose of this research was to determine if a difference in immediate comprehension occurred when subjects were presented with breastfeeding education in either of two ways: a poster display or a classroom lecture with overhead transparencies. The main topic of the education was reasons why women stop breastfeeding early. Subtopics addressed returning to work or school, sore nipples and perceived milk insufficiency.

A pilot study with WIC clients was carried out to determine useability of the materials and for experience with the logistics of the study. The actual study was conducted at four sites with a total of 73 subjects, 43 in the poster display method and 30 in the classroom method. Participants were from two WIC projects in Western Wisconsin, a childbirth class at a small medical center, and members of a high school Early Headstart School-age Parents group. Targeted were women of childbearing years, however, nine subjects were male. Demographic and breastfeeding experience and attitude questions were asked of the subjects through a demographic/consent form. Based on demographic data, the two WIC sites were found to be homogeneous, so were combined into one site for data analysis.

Following the presentation of the breastfeeding education which was identical in every way except the method in which it was presented, subjects answered a short quiz on the evaluation instrument. Data were analyzed for overall scores by site of data collection and method of breastfeeding education as well as by individual questions. A significant difference in score was found by method of breastfeeding education, but not by site of data collection. Those who attended the class lecture had significantly higher scores,

overall, than those who viewed the poster display. Although differences in scores were significant, the practical significance is questionable. Subjects who viewed the poster display method of breastfeeding education still did well on the quiz overall. Results of this research may indicate poster education to be effective in the WIC setting. Further research is needed to determine an effect on true learning and if behavior change occurs as a result of the education.

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List of Abbreviations

AAP: American Academy of Pediatrics

ADA: American Dietetic Association

DCWIC site: Dunn County, Wisconsin WIC

ECWIC site: Eau Claire County, Wisconsin WIC

LLL: La Leche League

LLLI: La Leche League International

MHS site: Menomonie High School Early Headstart School-age Parents

MWMC site: Myrtle Werth Medical Center childbirth class

SD or Std Dev: Standard Deviation

USDA: United States Department of Agriculture

UWEX: University of Wisconsin Extension

WIC: Special Supplemental Nutrition Program for Women, Infants and Children

WIC site: Combined Dunn County, Wisconsin and Eau Claire County, Wisconsin WIC

Chapter 1: Introduction

Adult education is not the same as education for children; special considerations must be made (Tight, 1996). For example, adults have free choice to attend or not attend educational sessions, therefore what has been planned must meet their needs and desires or adults will not continue attending. Most adults are very busy people with families and homes. The adult education must be seen as worth their time to attend (Backes, 1997). Adults are self-motivated, effective instructors of adult learners are facilitators of learning rather than teachers (Barr & Tagg, 1995).

Education that is undertaken strictly for personal gain is sometimes referred to as "community education" (Tight, 1996). Nutrition education through schools, workplaces and elderly nutrition programs is an example of community education (Contento, et al., 1995a). One type of nutrition education is breastfeeding education. Expectant parents receive breastfeeding education during childbirth classes and/or in separate breastfeeding classes, often taught in hospitals or clinics (Bocar & Riordan, 1999). Breastfeeding education has been shown to be effective in increasing the incidence and duration of breastfeeding (Reifsnider & Eckhart, 1997). Increasing breastfeeding is important for child and maternal health as well as financial concerns. Due to antibodies in the human milk, breastfed babies, in general, are healthier than artificially fed infants (American Academy of Pediatric's (AAP) Work Group on Breastfeeding, 1997). The immune properties of human milk benefit a child the entire time he or she is breastfed. Women who are breastfeeding or have breastfed gain health benefits also. Weight management is easier during lactation, maternal bones tend to be stronger following lactation (Bronner & Auerbach, 1999), and women who have breastfed tend to have less

chance of developing breast cancer (Newcomb, et al., 1994) (Romieu, Hernandez-Avila, Eduard, Lopez, & Romero-Jaime, 1996). The cost of infant formula is considerable over the course of the year it is recommended. Breastfeeding is much more economical.

Breastfeeding education is also taught through the United States Department of Agriculture's (USDA) Special Supplemental Nutrition Program for Women, Infants & Children (WIC). WIC began in 1974 and is usually offered by counties for their residents. Eligible are pregnant women, breastfeeding and non-breastfeeding postpartum women, infants and children up to age five who meet income guidelines and have a health or diet need. Drafts for cereal, juice, eggs, milk, cheese and peanut butter or dried beans or peas are issued to be used at local grocery stores. Women who are exclusively breastfeeding may also receive tuna and carrots. Infants not being exclusively breastfed receive drafts for infant formula. In addition to drafts for food packages, nutrition education is a mandated part of the services (Wisconsin WIC, 1995). Primary nutrition education is specific to the client's need and is usually provided one-on-one with a WIC nutritionist. Secondary nutrition education is more general and is usually provided by poster display. Written educational materials are also provided through WIC.

In the early years of WIC, secondary nutrition education was usually presented through classes, but more recently poster displays have become more popular, preferred by both WIC staff and clients. Reasons for the popularity of the poster displays include less time involved, informality and its "do-it-yourself" qualities (E. Lucas-Poplawski, personal communication, February, 1998) (M. Prytz, personal communication, May, 1999) (K. Arrigoni, personal communication, October, 1999). The question arose,

however, of the effectiveness of the poster display compared to the class. In other words, do the clients comprehend as much from the display as they do from a class?

This research project was conducted in an attempt to determine if a difference in immediate comprehension exists when subjects are presented with breastfeeding education in one of two ways, in a poster display or in a classroom lecture with overhead transparencies. A short lesson was prepared for the topic "Reasons why Women Often Stop Breastfeeding Early". Subtopics were on working or attending school and breastfeeding, sore nipples and concern about milk supply. The research was conducted at four sites: Dunn County, Wisconsin WIC Project, Eau Claire County, Wisconsin WIC Project, a childbirth class at the Myrtle Werth Medical Center in Menomonie, Wisconsin and the Menomonie High School Early Headstart School-age Parents group. Seventy-three subjects participated, 43 in the poster display method and 30 in the classroom method.

Objectives of this Study

Objective 1: To determine if a difference exists in immediate comprehension of breastfeeding education when presented in either of two formats: poster display or classroom lecture with overhead transparencies as determined by overall scores of the evaluation instrument.

Objective 2: To determine if a difference found in total score is a function of any one test question.

Objective 3: To determine if subjects' scores on any of the questions were a function of any demographic traits of the subjects.

Delimitations of this Study

    Participants were limited to WIC clients, childbirth class members and a high school

Early Headstart School-age Parents group in Western Wisconsin.

Limitations of this Study:

- Measurement of true learning was not intended, only immediate comprehension
- Participants' prior knowledge was not tested
- Data from evaluation instrument could not be correlated by individual's demographic data, only by particular site
- Sample size (73) was small, and two sites were very small (17 and six)
- Unequal numbers in each educational method occurred because it was difficult to recruit participants for the class at the WIC sites
- Participants were not randomized except at the site with the fewest subjects (six)
- WIC staff encouraged pregnant subjects to attend the class method of education

Chapter 2: Review of Literature

Introduction

Nutrition education has a very broad scope. Age appropriate nutrition education can be effective throughout the lifecycle (Shafer, Gillespie, Wilkins, & Borra, 1996). Sites for nutrition education are expanding. Some traditional sites offering nutrition education were hospitals, clinics, schools and elderly nutrition programs. Now dietitians are taking nutrition education into the workplace, health clubs, grocery stores, malls and libraries, as well as the traditional sites (Contento, et al., 1995b).

Breastfeeding education is one type of nutrition education. Prior to the twentieth century, there was no need for formal breastfeeding education, young girls learned through observing other women. As the prevalence of breastfeeding declined, ignorance of the management of breastfeeding increased, resulting in few babies being breastfed beyond the first few weeks of life (Coates, 1999). As research is revealing breastfeeding's health benefits to mother and baby, a resurgence of interest in breastfeeding has occurred. Breastfeeding education now needs to teach the successful management of breastfeeding, including breastfeeding while working or attending school,

a practice that is on the rise (Auerbach, 1999).

Expectant and new parents must be fully informed about infant feeding methods, so they can make the best choice for their family (McCamman & Page-Goertz, 1998). When breastfeeding is the chosen infant feeding method, health care workers, as a team, have a responsibility to the family to educate, support and empower them (Bocar & Riordan, 1999). Many demographic factors have been shown to influence a woman's

decision to breastfeed, as well as the duration of breastfeeding (Quarles, Williams, Hoyle, Brimeyer, & Williams, 1994) (Gross, et al., 1998) (Bentley, et al., 1999) (Tuttle & Dewey, 1996) (Visness & Kennedy, 1997) (Kessler, Gielen, Diener-West, & Paige, 1995) (Reifsnider & Eckhart, 1997) (Perez-Escamilla, et al., 1998).

The USDA's Special Supplemental Food Program for Women, Infants and Children (WIC) provides nutrition and breastfeeding education as well as supplemental nutritious foods. Education through WIC is of two types: 1) primary nutrition education is specific to the individual's needs and 2) secondary education that is more general. (Wisconsin WIC, 1995). Primary education is done one-on-one with a WIC nutritionist and secondary education is usually offered by walk-by display (E. Lucas-Poplawski, personal communication, February, 1998) (M. Prytz, personal communication, May,1999) (Arrigoni, personal communication, October, 1999).

Education of adults is very different from education of children. Adults are self-motivated, want to be in control of their learning experience and learn at their own pace. Instructors of adults will be more effective when they respect adults' lifestyles, experiences and learning methods (Tight, 1996).

Parenthood is a life-changing event. Expectant and new parents are self-motivated to learn all they can about this new human being they will be caring for. Health care workers who understand the stages new parents progress through are most helpful. Good parental role models are also important for new parents as they learn parenting (Bocar & Riordan, 1999).

When education is planned according to learning theories, outcomes may be more predictable. Some of the learning theories employed in health education are: the theory of reasoned action, the theory of planned behavior, the health belief model, and the PRECEDE framework. All are discussed further in "Learning Theories," pages 38-43.

Also important in planning and presenting education are the considerations of the physical environment of the learning area, the instructional method(s) and the educational aids used (Holli & Calabrese, 1998). The spoken word is an effective teaching tool, (Winn, 1993) but learning can be enhanced when appropriate written material or other visual aids such as slides, videos and/or overhead transparencies are used to reinforce the message (Interpersonal Communications, 1999).

Poster education is an increasingly popular way to present material to learners. Posters are used to present research findings, (Smith, 1998) medical continuing education, (Elder, 1994) (Thurber & Asselin, 1999) consumer education/marketing, (Hashim, Resurreccion, & McWatters, 1995) and nutrition and breastfeeding education in WIC clinics (E. Lucas-Poplawski, personal communication, February, 1998) (M. Prytz, personal communication, May, 1999) (K. Arrigoni, personal communication, October, 1999). Effective posters are attractive, well organized and give brief, to-the-point messages. Inexpensive and eye-catching posters can be made with computers and

color printers. (Mandoli, 1996).

Nutrition Education

Definition and Characteristics

Nutrition education means different things to different people. One comprehensive

definition of nutrition education is "any set of learning experiences designed to facilitate

the voluntary adoption of eating and other nutrition related behaviors conducive to health

and well-being" (Contento, et al., 1995a). This definition includes the component of

influencing behavior change, essential to effective nutrition education (Shafer, et al.,

1996).

Change is resisted to varying degrees by almost everyone. For a behavior change to

occur, people must want it and feel they have the ability to make the change (Holli &

Calabrese, 1998). The anticipated benefits of making the behavior change must

outweigh the benefits and/or risks associated with not changing the behavior (Contento,

et al., 1995e). Effective nutrition education will include methods for creating and

maintaining behavior change (Shafer, et al., 1996) and will be tailored to the particular

audience (Contento, et al., 1995b).

Nutrition education can be classified in five categories. One is *individual,*

encompassing nutrition education which is provided to one person. Another is *primary*

social network, nutrition education which is presented to the patient and his or her family.

Nutrition education provided at work is an example of s*econdary network* or

organizational level nutrition education. Other categories of nutrition education are the

community level and *the social level* (Contento, et al., 1995b). Examples of the latter two

might be a bulletin board at the public library, articles in newspapers or television clips,

all giving the same or separate nutrition education messages.

For the best use of valuable resources such as time and money, nutrition education

should be planned with these characteristics of effective nutrition education in mind:

- Nutrition education programs should be theory based
- Gear the content and the method to the target audience
- Clearly identify goals, objectives and outcomes
- Nutrition education should motivate behavior change and provide skills to maintain behavior change
- Use mass media to promote the message
- For community nutrition education, involve as many community members as possible and vary sites
- Give choices of positive options
- Communicate the consequences of not making the recommended change (Contento, et al., 1995a)
- Use personalized self evaluations or self assessments for individuals (Shafer, et al., 1996)
- Give the same message through different media and over a period of time if possible (Contento, et al., 1995a)

Nutrition Education in the Lifecycle

Nutrition impacts the health of every person at every age (Whitney, Cataldo & Rolfes,

1994). During gestation, nutrition education is geared toward positive pregnancy

outcome and is presented to the mother (Institute of Medicine, 1992). Infancy and early

childhood nutrition are also highly controlled by the mother or other caregiver (Whitney,

et al., 1994), so nutrition education at this age is appropriately given to the child's main

caregiver.

During the preschool years, children begin to receive messages about food from television that influence their food preferences (Contento, et al., 1995c). Parents of children at this age, however, are still the gatekeepers and control the availability of food in the home (Whitney, et al., 1994), therefore, nutrition education for preschoolers is often given to the parents as well as the children (Contento, et al., 1995c). Some of the goals of nutrition education presented to preschool children are to foster a positive attitude toward food and encourage an understanding of the importance of eating a variety of healthful food. At this age, children may begin to make a connection between nutrition and health (Contento, et al., 1995c).

Elementary aged children are beginning to exert much more control over their own food choices, and television plays a role in food preferences at this age also. Snacking after school and choosing or rejecting various food items at school breakfast and lunch give children options (Whitney, et al., 1994). Although parent involvement was found to increase the effectiveness of nutrition education for early elementary aged students, most nutrition education designed for elementary age students is for the children themselves Children of elementary age are capable of understanding the relationship between diet and health, but often see the negative health issue as remote to themselves (Contento, et al., 1995a).

Adolesence is a time of increasing independence in a variety of ways, including food choices. Teenagers often eat with friends and are present at family mealtime less than

younger children are (Whitney, et al., 1994). Other issues nutrition education targets at

this age include eating disorders, sports nutrition (Contento, et al., 1995d) and the use of

alcohol and other drugs (Whitney, et al., 1994).

Adults make up a very large heterogeneous group of people (Tight, 1996). Special

care needs to be taken to develop nutrition education that will meet the needs, behaviors,

motivations and desires of the audience being targeted (Shafer, et al., 1996). Most

recently nutrition education has been based on the link between diet and chronic disease,

especially for heart disease and cancer. More general nutrition education programs

address topics such as increased nutrition knowledge, improvement of diet by including

all food groups and efficient use of food dollars in purchasing household food (Contento,

et al., 1995b).

Sites for Nutrition Education

The sites for nutrition education are as varied as the types of nutrition education being

offered. Places where meals are provided for groups of people, such as Headstart,

schools and congregate dining for the elderly have an opportunity to not only set an

example through healthful menus, but can offer education through posters, pamphlets,

games, newsletters and speakers. In addition to nutrition education offered through the

school lunch program, curriculum for nutrition education may also be offered K-12,

however funding and time constraints have resulted in less than consistent efforts

(Contento, et. al., 1995a).

Other common sites for health education of all types, including nutrition education, are hospitals, clinics, HMOs and medical practice groups (Bocar & Riordan, 1999). The connection between health and nutrition is naturally apparent in these settings. Collaboration between dietitians, physicians and nurses may result in more efficient use of resources and better education for the public (Shafer, et al., 1996).

People have food on their minds when shopping for groceries and when dining in restaurants, making these excellent places for conveying nutrition information. Point of choice programs target influence on food selections at these sites (Contento, et al., 1995a).

Nutrition education in the community is often involved in food accessibility issues as well as working to change behaviors for better health. Sites for community nutrition education could be schools, malls, libraries, university extension offices, health departments and churches. Mass media involvement increases awareness and enhances motivation for community members as does involving community leaders (Contento, et al., 1995e).

The workplace is another site where effective nutrition and health education is often presented. Between 1985 and 1992, the percentage of large worksites that offered

nutrition education went from 48% to 78% and small worksites went from 9% to 22% (Contento, et al., 1995b). The above are just some of the places where nutrition education is being offered. The creative and imaginative nutrition educator will think of many more (Shafer, et al., 1996).

Breastfeeding Education

Introduction

One type of nutrition education is breastfeeding education. The goal of breastfeeding

education should be to allow all parents an opportunity to make an informed infant

feeding decision, whether or not they choose breastfeeding (McCamman & Page-Goertz,

1998). As mentioned in the previous section, nutrition education is more effective when

it is specific to the target audience (Contento, et al., 1995b). Understanding the complex

variables involved in a woman's decision to breastfeed and to continue breastfeeding can

guide breastfeeding education planning activities. Presenting different messages at

different times throughout pregnancy and in the perinatal and postnatal periods, may

result in more breastfeeding education effectiveness (Wisconsin WIC, 1998).

Breastfeeding education has been found to be effective in increasing breastfeeding

initiation and duration (Reifsnider & Eckhart, 1997) (Gross, et al., 1998) (Sciacca,

Phipps, Dube & Ratliff, 1995) (Quarles, et al., 1994).

Other variables which also influence a woman's decision to start or continue

breastfeeding include: mother's education level, her age, her race, the family's income,

the baby's father's opinion of feeding method, mother's previous infant feeding

experience, and whether or not she is employed outside the home.

Mother's Education Level

     Findings about the correlation between mother's education level and duration of

breastfeeding differ. Quarles, et al. (1994) reported mother's education level as

significantly associated with breastfeeding duration. Gross, et al. (1998) also found that

lower maternal education negatively influenced breastfeeding status at 7-10 days

postpartum. Reifsnider & Eckhart (1997), however, found that mother's educational

level was not significant in predicting breastfeeding duration.

Mother's Age

    Older women tend to breastfeed more than younger women (Coates, 1999). Quarles,

et al. (1994) found a significant difference in maternal age when comparing a group of

women who breastfed an average of 3.1 months (average age 28.8 years) and those who

breastfed an average of 2.4 months (average age 25.1 years). Bentley, et al. (1999)

found the average age of WIC African American women who stated an intention to

breastfeed was 23.3 years, whereas those intending to formula feed were 21.9 years of

age on average.

Reifsnider & Eckhart (1997) found no significant difference in ages for two groups of

women who breastfed, one significantly longer than the other. Bagwell, Kendrick, Stitt

& Leeper (1993), in a survey of dietitians, nurses and physicians, discovered these health

care professionals are less likely to encourage breastfeeding among adolescent mothers

compared to older women.

Mother's Race

In the United States, since the 1970s, breastfeeding has consistently been more likely

to be initiated by Caucasians (Coates, 1999). African Americans have the lowest

prevalence of breastfeeding in the United States. In 1997, among WIC participants

surveyed, 53% of Caucasian, 84% of Hispanic and 34% of African American women

initiated breastfeeding (Bentley, et al., 1999).

The Family's Income

When breastfeeding incidence declined during the 1980s, the most dramatic decrease

was in ethnically diverse and low income groups (Tuttle & Dewey, 1996). Visness &

Kennedy (1997) found through The National Maternal and Infant Health Survey in 1988,

that women with higher incomes tended to breastfeed more than women with lower

incomes. However, household income was not significantly associated with the intention

to breastfeed or not (Bentley, et al., 1999).

Father's Opinion of Feeding Method

Kessler, et al., (1995) found preference by a woman's husband or boyfriend for a

specific feeding method was related to her decision to use that method. Sharma & Petosa

(1997) reviewed the literature on father's influence on the feeding decision and found

similar results. Bentley, et al. (1999) found a strong association between the father's

preference for breastfeeding and the mother's intention to breastfeed.

Previous Infant Feeding Experience

Previous infant feeding method is a strong predictor of the decision to breast or bottle

feed (Perez-Escamilla, et al., 1998). Reifsnider & Eckhart (1997), when studying the

effectiveness of breastfeeding education on incidence and duration found that women

who had bottle fed previously quit breastfeeding sooner than those without artificial

feeding experience. They concluded that primiparous women should be targeted for

breastfeeding education, since the feeding method women use for their first child will

likely influence the feeding method for subsequent children. In one study (Bentley, et al.

1999), of the women who stated an intention to breastfeed, 25.1% had breastfed

previously, compared to 7.2% of the previous breastfeeders who stated an intention to

formula feed.

Employment Outside the Home

Gross, et al. (1998) found that a mother being employed or in school by eight weeks

postpartum negatively influenced breastfeeding status in the next eight weeks. Visness &

Kennedy (1997) discovered through the National Maternal and Infant Health Survey that

in 1988, women employed before delivery were more likely to breastfeed than women

who were not employed. They found no difference in breastfeeding initiation rates

between women who returned to work within the first year postpartum and those that

didn't.

History of Breastfeeding Education

Looking back on the evolution of breastfeeding education puts today's breastfeeding

education into perspective. The earliest breastfeeding education occurred as young girls

observed their mothers, aunts, older sisters, and neighbors breastfeed. By the time they

had their own babies, there was no question of whether they would breastfeed or not, they

just did (Bocar & Riordan, 1999). With the advent of book printing, advice on child care

was widely disseminated. Beginning approximately in the 1500s in Europe, avoidance of

overfeeding was stressed and this idea lasted several centuries. Ettmuller (as cited in

Coates, 1999) published this in 1703: "Nothing is more apt to disorder a child than

suckling it too often, since large quantities of milk stagnating in the stomach, must needs

corrupt….especially if fresh milk be pour'd in before the preceeding be digested." Later,

in 1749, William Cadogan advocated just four feedings per day and none at night

(Coates, 1999). It is now known that 8-12 feedings per 24 hours are necessary for

sufficient milk supply and proper growth of the infant (Mohrbacher & Stock, 1997).

Only men wrote books at that time, so the management of infant care evolved from

women's domain to men's. Cadogan believed this to be a very good thing, having "men

of sense rather than foolish, unlearned women in charge" (Coates, 1999).

    Some artificial feeding began in the 1800s in the United States, but was limited to

small segments of the population and the practice spread slowly (Coates, 1999).

Following World War II, infant feeding practices began to change dramatically in the

U.S. Manufacturers of artificial baby milks advertised to the "modern" woman.

Breastfeeding was made to appear old-fashioned or not worth the effort when

"innovations in science" could produce an acceptable substitute (Coates, 1999).

    Women were often led to believe their milk was not "good enough" for their babies.

Grace Langdon, an instructor at Columbia University, wrote in 1931, "Sometimes, even though the mother is very careful about her diet, she does not secrete enough milk to satisfy the baby. Sometimes, even though she secretes enough in quantity, it is thin and does not provide enough nourishment for the baby." Another passage by Langdon (1931) states, "Above everything else, the baby should not be given the breast at intervals all night to keep him quiet."

The above statements by Langdon are in direct opposition to what is now known. A low milk supply can be remedied through increased frequency and length of nursings. Even women who are marginally malnourished can produce milk with all the nutrients their babies need. Night feedings are a very important aspect of building and maintaining an adequate milk supply and proper growth of the baby (Mohrbacher & Stock, 1997).

The Langdon book and others written on child care at that time provided education of the type that subtly (or blatantly at times) undermined breastfeeding. Artificial baby milk manufacturers pushed their products by targeting doctors. Mead Johnson advertised this in medical journals of the 1930s: "When mothers in America feed their babies by lay advice, the control of your pediatric cases passes out of your hands, Doctor. Our interest in this important phase of medical economics springs, not from any motives of altruism, philanthropy or paternalism, but rather from a spirit of enlightened self interest and co-operation because our infant diet materials are advertised only to you, never to the public" (Coates, 1999).

In 1956, when knowledge about breastfeeding was at its lowest in the United States, seven breastfeeding women in Illinois began what would grow into an international organization dedicated to the promotion of and education about breastfeeding: La Leche

League (LLL). Currently there are 3000 groups in 66 countries. Experienced breastfeeding mothers volunteer to lead monthly meetings where breastfeeding information is shared informally (Coates, 1999). Publications by La Leche League International (LLLI) include books, periodicals and pamphlets on a variety of topics dealing with childbirth, breastfeeding and parenting. Information is available in several languages and for many special circumstances such as premature birth, multiple births, cesarean birth, and a variety of conditions affecting mothers or babies (LLLI, 1997b).

The 1970s brought a resurgence of interest in breastfeeding in the United States. Likely this was due to a renewed interest in "natural" products and processes (Coates, 1999). Childbirth classes and fathers present at the birth of their babies gained in popularity at this time. Breastfeeding education is very often a part of childbirth classes, and families frequently seek advice from their childbirth educator following birth (Bocar & Riordan, 1999).

Early in the 1980s a new kind of health care worker emerged: the lactation consultant. Certification for lactation consultants was needed for two reasons: 1) an awareness that the volunteer provider of breastfeeding information was often discredited because she wasn't paid, and 2) a need to provide minimum standards for the profession. The role of lactation consultants who work in clinics, hospitals or are in private practice is prenatal breastfeeding education, education and support for new parents postnatally, as well as to provide lactation education to other health care professionals (Riordan & Auerbach, 1999).

Present Need for Breastfeeding Education

Currently, breastfeeding practices in the United States do not meet The American

Academy of Pediatrics recommendations of exclusive breastfeeding for approximately

the first six months of life and continuation of breastfeeding for at least 12 months and

thereafter for as long as mutually desired (American Academy of Pediatric's (AAP)

Work Group on Breastfeeding, 1997). Ryan (1997) found that 60% of hospital born

infants received any breastmilk and 18% were still receiving any breastmilk at six months

of age. Among WIC clients in Wisconsin, 46% of babies were breastfed at birth, 11%

were still nursing at six months (Wisconsin WIC, 1997).

   Breastfeeding education has been found to increase breastfeeding initiation and

duration (Reifsnider & Eckhart, 1997) (Gross, et al., 1998) (Sciacca, et al., 1995)

(Quarles, et al., 1994). An increase in breastfeeding would benefit families and society

as a whole both in health and economic ways (Lyons, 1997). Breastfeeding has widely

recognized benefits to the baby in regard to general health, growth and development, as

well as significantly reduced risk for a number of acute and chronic diseases (AAP Work

Group on Breastfeeding, 1997).

   Specific health benefits to the baby include less risk of gastrointestinal infections that

cause diarrhea (Raisler, Alexander & O'Campo, 1999) (Dewey, Heinig & Nommsen-

Rivers, 1995) (Howie, Forsyth, Ogston, et al., 1990) (Lyons, 1997) (Popkin, et al., 1990)

(Beaudry, Dufour & Marcoux, 1995). Babies can become dehydrated more quickly than

adults and diarrhea can lead to dehydration and death (Whitney, et al., 1994).

Respiratory infections (Lopez-Alarcan, Villalpando & Fajardo, 1997) (Lyons, 1997) and

otitis media (Riordan, 1999b) (Duncan, et al., 1993) are also less prevalent among

breastfed babies.

   Health benefits to the lactating woman appear to include less chance of

premenopausal breast cancer (Newcomb, et al., 1994) (Romieu, et al., 1996) and ovarian

cancer (Rosenblatt & Thomas, 1993). Improved bone remineralization following

lactation (Bronner & Auerbach, 1999) means a possible decrease in hip fracture risk in

postmenopausal years for women who have breastfed (Cummings & Klineberg, 1993).

Lactational amenorrhea occurs during exclusive breastfeeding. The Lactational

Amenorrhea Method is a contraceptive method with specific criteria that must be met in

order to be considered effective (Kennedy & Visness, 1992) (Gray, et al., 1990)

(Kennedy & Kotelchuck, 1998).

Financially, breastfeeding is a benefit to the family and society. In 1993, the

estimated cost of purchasing infant formula for the first year was $855 (AAP Work

Group on Breastfeeding, 1997). Montgomery & Splett (1997), compared breastfed and

artificially fed WIC and Medicaid enrolled infants as to costs to these two programs. Six

month food costs for women and infants were significantly lower (by $299) for

breastfeeding dyads than for artificially fed infants and their mothers. The medicaid cost

savings was $112 per breastfed infant and Medicaid pharmacy reimbursement costs were

half that of artificially fed infants.

Tuttle & Dewey (1996) studied Hmong WIC participants who were also recipients of

three other governmental programs: Medi-Cal (Medicaid in California), Aid for Families

with Dependent Children (AFDC) and Food Stamps. They found a $400-$800 savings

per family per year when babies were breastfed for at least six months. This translates

into $3-5 million saved in one California county in 7.5 years. If theYear 2000 Health

Objective of increasing to 50% the proportion of women who continue to breastfeed their

babies for 5-6 months was achieved, WIC could save $6.5 million a month nationwide

(Montgomery & Splett, 1997).

In addition to lower health care costs, less absenteeism from work occurs among mothers who breastfeed. Cohen, Mrtek & Mrtek (1995) studied 101 infants of mothers working outside the home at two different corporations. Fifty-nine were being breastfed, forty-two were given commercial formula. The children were followed until they were weaned or were 1 year of age. Appoximately 28% of the infants had no illnesses. Of these, 86% were breastfed, 14% formula fed. Of the one day maternal absences from work due to an ill child, 25% were among breastfed babies, and 75% among formula fed babies (Cohen, et al., 1995).

Barriers to successful breastfeeding include hospital factors, such as separation of mother and infant (Lyons, 1997) and provision of formula samples to take home (Wright, Rice & Wells, 1996). Short maternity leaves (Lyons, 1997), insufficient time and lack of a sanitary, comfortable place to pump milk at work (Dodgson & Duckett, 1997) are other barriers to successful breastfeeding.

Women need education on the proper management of breastfeeding, something most can't learn from their mothers, as occurs in traditional societies (Coates, 1999). They turn to health professionals for advice on breastfeeding, but many of them are inadequately trained (Krebs & Murtaugh, 1997).

Education of society as to women's rights to breastfeed, for example in public or in custody cases, is needed (LLLI, 1997b). Breastfeeding education for parents (Sharma & Petosa, 1997) and health care professionals may be effective in changing attitudes, knowledge and practice (Bagwell, et al., 1993).

Role of Baby's Father in Breastfeeding Education

Typically, breastfeeding education has targeted only expectant and new mothers (Fredrickson, 1993). Increasing evidence points to the influential role the baby's father has on the decision to breastfeed and to continue breastfeeding (Bentley, et al., 1999) (Sharma & Petosa, 1997). Freed, Jones & Schanler, (1992) found that lack of support for breastfeeding by the baby's father was negatively associated with breastfeeding intention in 307 pregnant women. In another study involving 268 pregnant women, Freed & Fraley (1993) found that 87% of the women had discussed infant feeding with the baby's father and 68% of them believed he was in favor of breastfeeding.

In Voss, Finnis, & Manners' study, (as cited in Sharma & Petosa, 1997) the researchers spoke with 113 new fathers and learned that 72% of them had been involved with making the decision to breastfeed. In a postnatal study involving 84 adolescent WIC mothers, Robinson, Hunt, Pope & Garner (as cited in Sharma & Petosa,1997) discovered that 64% of the fathers had influenced the decision to breastfeed. As evidenced by these studies, prenatal and postnatal breastfeeding education is likely to be more effective when targeting both parents (Sharma & Petosa, 1997).

Expectant and new fathers' attitudes about breastfeeding affect the decision to breastfeed as well as the duration. Sharma & Petosa (1997) reviewed findings that most men knew breastfeeding was natural, helps with bonding and protects babies from disease. The fathers also said they had respect for women who breastfeed. However, negative attitudes the fathers reported about breastfeeding included: breasts become ugly, feelings of being left out, interference with sex, breastfeeding is more difficult than artificial feeding, and children don't grow as well when breastfed.

Breastfeeding education that reduces fathers' negative feelings toward breastfeeding

and increases their skills as parents can help them become an important source of support

for the mother, thereby likely increasing the duration of the breastfeeding experience

(Sharma & Petosa, 1997). The new family benefits when suggestions are given to the

father for ways he can be involved (Bocar & Riordan, 1999).

Janet Rourke, Breastfeeding Promotion Coordinator for WIC in Texas (1997) gives

these tips for new fathers and expectant fathers:

- Learn about breastfeeding with your partner and help her remember what you learned together
- Be optimistic and encourage breastfeeding
- Get help for breastfeeding if things aren't going well
- Be patient while you both learn how to care for your baby
- Protect the new mom from too many visitors or advice from anyone who is negative about breastfeeding
- Help with household chores and older children
- Offer your friendship and love
- Be involved in the breastfeeding process and tell your partner what a wonderful thing she is doing
- Tell friends and relatives how good breastfeeding is for the baby
- Be proud of yourself and how much you do to care for your family

Role of the Health Care Worker in Breastfeeding Education

The American Academy of Pediatrics (AAP) encourages physicians to become an

active part of assuring breastfeeding success, including providing breastfeeding

education. According to AAP's Work Group on Breastfeeding, (1997) one of the roles of

the pediatrician in promoting and protecting breastfeeding is to "work collaboratively

with the obstetric community to ensure that women receive adequate information

throughout the perinatal period to make a fully informed decision about infant feeding.

Pediatricians should also use opportunities to provide age-appropriate breastfeeding

education to children and adults".

Freed, (1993) reported that "physicians are in a position to play an important role in

breastfeeding counseling, support and problem solving." He also explains, however, that

many physicians feel they lack sufficient knowledge about breastfeeding techniques. For

example, many breastfeeding issues commonly asked of physicians include advice about

sore nipples, signs of adequate infant intake and supplementation (Izatt, 1997). In

addition to physicians, obstetric nurses, childbirth educators, lactation consultants and

dietitians are in the position to offer breastfeeding education. A team approach works

well, when consistent information is given by all team members. New parents are

frustrated and lose confidence in the health care system when given conflicting

information (Bocar & Riordan, 1999).

To ensure that consistent information is given by all members of the health care team

in a particular hospital, for example, each should be aware of what has been discussed

with a patient or family by another health care professional. Consistency can be managed

through use of teaching checklists, careful documentation and care planning meetings

(Bocar & Riordan, 1999).

During the hospital stay, support services should be in place for the new mother

(Institute of Medicine, 1992). A study by Quarles, et al. (1994) found that the presence

of a lactation consultant for new mothers after delivery may increase breastfeeding

duration. Forty-six women who had hospital access to a lactation consultant breastfed for

a mean of 3.1 months compared to a mean of 2.4 months for 115 women who delivered in a hospital that did not employ a lactation consultant.

New mothers, especially first time mothers, need support throughout the newborn period (Bocar & Riordan, 1999). Fatigue, postnatal depression, and worry about breastfeeding and/or returning to work are some of the problems new mothers experience for weeks or months after the birth of a baby (Wambach, 1998). Following hospital release, telephone counseling, an in-home visit by a trained health professional and/or early office visits are helpful for most postpartum women (Institute of Medicine, 1992) (Bocar & Riordan, 1999).

In the past few years, the importance of the role of the doula has been recognized in the United States. A doula is a caregiver for the postpartum mother. In many cases the new mother's own mother or mother-in-law helps out in the household in the days following childbirth. Some households hire a trained doula to fill this role. The presence of the doula allows the mother to rest, an important part of recovery from childbirth (Riordan, 1999a).

WIC staff and programming are also influential in the care and feeding of young infants. The WIC Infant Feeding Practices Study found, among 900 bottle feeding mothers, that 25% were adding other foods or liquids into the baby's bottle with formula by three months of age. Mothers in the study who reported receiving advice from WIC dietitians about when to begin supplemental foods were less likely to give them to babies too early (Office of Analysis and Evaluation, 1997).

New parents are taking on an unfamiliar role. They need time and support for

developing into a comfortable style of parenting that suits them. Concrete instructions

and specific, positive feedback can help them build skill and confidence (Bocar &

Riordan, 1999). Encouragement and accurate information can help not only with the

current baby but future babies as well (Humenick, Hill & Spiegelberg, 1998).

Effectiveness of Breastfeeding Education

Breastfeeding education has been found to be effective in increasing breastfeeding

initiation rates as well as breastfeeding duration. Other factors also affect initiation and

duration of breastfeeding, such as:

- mother's education level
- mother's age
- mother's race
- family's income
- baby's father's opinion of feeding method
- mother's previous infant feeding experience
- mother's employment status (Gross, et al., 1998) (Reifsnider & Eckhart, 1997) (Sharma & Petosa, 1997) (Quarles, et al., 1994) (Sciacca, et al., 1995) (Perez-Escamilla, et al., 1998)

Consideration of these factors is essential when planning and carrying out breastfeeding

education.

Many studies of breastfeeding education effectiveness have WIC participants as

subjects. Reifsnider and Eckhart (1997) studied an experimental group of 14 pregnant

WIC clients and a control group of 17 pregnant WIC clients. All had stated an intention

to breastfeed prior to the start of the study. The experimental group attended at least one

class, "The Basics of Breastfeeding," which covered:

- anatomy of the lactating breast
- physiology of lactation
- advantages of breastfeeding for mother and baby
- prenatal breast care
- immediate postpartum period

A second breastfeeding class, "The How-tos of Breastfeeding" was optional for the

experimental group. This class covered:

- mechanics of breastfeeding
- self-care for the breastfeeding mother
- possible problems and treatment for each
- breastfeeding and the working mother
- resources for the breastfeeding mother (Reifsnider & Eckhart, 1997).

The control group did not attend the breastfeeding classes, instead they attended the

standard prenatal education class which covered nutrition for pregnancy. Those in the

control group were told that breastfeeding is the preferred method of infant feeding.

Following childbirth, 13 of the 14 in the experimental group initiated breastfeeding as did

13 of the 17 in the control group. Duration of breastfeeding was an average of 76 days

for those in the experimental group compared to an average of 29 days for subjects in the

control group (Reifsnider & Eckhart, 1997).

Another finding of this study was that in both groups, women who had bottle fed a

previous baby weaned sooner than first time mothers or women who hadn't bottle fed.

The researchers feel that breastfeeding education should be especially targeted to

primiparous women (Reifsnider & Eckhart, 1997).

Sciacca, et al., (1995) researched the effect of breastfeeding education on exclusive

breastfeeding rates for fifty-five primiparous pregnant WIC participants. Most subjects

were white, and 21 years of age or older. Approximately equal numbers of subjects had

12 years or less of formal education (n=27) and more than 12 years of formal education

(n=28).   The breastfeeding education intervention, with incentives to attend,

(experimental group) increased the proportion of mothers who breastfed exclusively after

childbirth compared with a group which received only the "usual" breastfeeding

education (control group) The usual breastfeeding education for this site consisted of :

- The Prenatal Childbirth Preparation Series, five sessions, one hour each, including a unit on breastfeeding vs formula feeding
- WIC breast pump rental program, pumps displayed and flyers available
- Infant shirts with a breastfeeding message for all mothers who report breastfeeding at first postpartum WIC appointment
- Breastfeeding promotion posters at WIC clinics
- Bosom Buddy Program, with peer breastfeeding counselors available for information and support
- Fifteen minute breastfeeding group classes available, but not mandatory at the time of WIC appointments (Sciacca, et al., 1995)

Twenty-six subjects were assigned to an experimental group and twenty-nine to a

control group. The subjects in the experimental group and their partner (or another

person of their choice) received incentives for completion of each of the program

components. The first component was an Expectant Couple Breastfeeding Class that was

not available to the control group. Covered in the class were:

- Fears and concerns of new parents toward breastfeeding
- Benefits of breastfeeding
- Myths about breastfeeding
- Basics of milk production
- Positioning and latch-on
- Typical problems and how to solve them
- Pumping and storing milk
- The importance of early nursing (Sciacca, et al., 1995)

Incentives for attending the class were baby care items and coupons, a breast pump

and tickets to a university sporting event. Another component was a Prenatal Childbirth

Series offered in five sessions. Each couple attending at least three of the five sessions

received one of the following: gift certificate for a restaurant, gift certificate for a

clothing store, an infant carrier, video or haircut coupons, or stuffed animals (Sciacca, et

al., 1995).

Following childbirth, subjects in the experimental group were assigned a peer

counselor who visited the new mother in the early days to assess how breastfeeding was

going. Peer counselors were available throughout the course of breastfeeding for

information and encouragement. A box of baby wipes was the incentive for a new mom

to contact a peer counselor within two days of the baby's birth (Sciacca, et al., 1995).

Mothers who reported breastfeeding at least half time at hospital discharge, two

weeks, six weeks and three months postpartum were eligible for raffled incentives such

as lunch for two, a free haircut, a free car wash, a compact disc and free gasoline.

Mothers who reported any breastfeeding at three months postpartum received a bag of

diapers (Sciacca, et al., 1995).

Mothers who were breastfeeding exclusively at the above mentioned times had more

expensive incentives raffled to them. They included a $40.00 dinner for two, an electric

drill, $100.00 worth of groceries, a 52 piece tool set, and a trip for two on the Grand

Canyon Railway (Sciacca, et al., 1995).

Breastfeeding initiation rate for the experimental group was 100% while 24 of the 29,

or 82.7% of the control group subjects started out breastfeeding. The researchers wished

to know the number of women from each group who were exclusively breastfeeding or

not at hospital discharge, two weeks, six weeks and three months postpartum. By self-

report of those in the intervention group, at hospital discharge, 88.5% were exclusively

breastfeeding, at two weeks, 80.8%, at six weeks, 50%, and at three months, 42.3% were

breastfeeding exclusively. Of the control group participants, also by self-report, 55.2%

were exclusively breastfeeding at hospital discharge, 34.5% at two weeks, 24.1% at six

weeks and 17.2% at three months postpartum (Sciacca, et al., 1995).

Schy, Maglaya, Mendelson, Race, & Ludwig-Beymer (1996) found no statistically

significant difference in duration of breastfeeding between an experimental group who

attended an in-hospital 30 to 60 minute breastfeeding education session taught by

lactation consultants and received daily visits by a lactation consultant when compared

with a control group. Subjects in the control group received routine care with staff

nurses assisting with the first breastfeeding and as needed. A lactation consultant was

available to the control group if necessary.

One hundred fifty postpartum breastfeeding women were randomly assigned to either

the experimental or control group, 75 subjects in each. The women were contacted in

the hospital within 24 hours of delivery (or 48 hours if cesarean birth.) All participants

were asked their expected duration of breastfeeding and demographic information

including age, race, educational level and income (Schy, et al., 1996).

The informal class attended by the experimental group allowed ample time for

questions and covered the following topics:

- Breast changes during pregnancy and lactation
- Maturational changes of breastmilk

- Maternal nutrition during lactation
- Breastfeeding positions
- Normal feeding patterns
- Evaluating the adequacy of breastfeeding in the newborn
- Pumping and storing breastmilk
- Bottle supplementation
- Problem solving (Schy, et al., 1996)

Details on instructional methods were not given, only that content was presented in a

"class."

All study participants had access to a breastfeeding telephone help line. Women in

the experimental group phoned the helpline more often than women in the control group

Monthly phone calls for six months or until the mother was no longer breastfeeding,

were made to all study participants. Based on self-reported practices, the duration of

breastfeeding and level of satisfaction with breastfeeding, using a Likert-type scale, were

noted. Satisfaction scores did not differ statistically by group, nor did duration of

breastfeeding. Self reported length of breastfeeding was statistically related to the

mother's perceived level of satisfaction, as was her educational level and expected length

of breastfeeding. (Schy, et al., 1996). One confounding factor that may explain the lack

of treatment effect could be the timing of the class. In the first few days following

childbirth, women have reduced cognitive awareness and retain less information than at

other times (Bocar & Riordan, 1999).

Gross, et al., (1998) studied one hundred fifteen urban African American

breastfeeding WIC mothers. Three intervention groups and one control group (no

intervention) were formed. One intervention group received education by video only,

one by peer counselor only and one group met with a peer counselor and viewed the

video.

Women were assessed at 7-10 days, eight weeks and 16 weeks postpartum. A higher

proportion of women who had attended one of the interventions was still breastfeeding

at 7-10 days postpartum than were those in the control group. The proportion of women

reporting breastfeeding declined at eight and 16 weeks postpartum for both groups, but

the rate of decline was slower in the intervention groups than in the control group (Gross,

et al., 1998).

McCamman and Page-Goertz (1998) believe that short targeted conversations which

answer a mother's questions prenatally are much more effective than breastfeeding

classes. They add, "The frequency of hearing about breastfeeding is directly related to

initiation rates." Kistin, Benton, Rao & Sullivan (1990) found concurring results;

increased breastfeeding initiation rates occurred following counseling on breastfeeding

from a nurse practitioner or pediatrician (53%) compared with group classes on

breastfeeding (46%) or no breastfeeding instruction (22%).

Various factors affect a woman's decision to breastfeed or to continue breastfeeding.

Breastfeeding education is a type of adult education, and what makes adult education

effective also makes breastfeeding education effective. The next section addresses adult

education.

<u>Adult Education</u>

Definition and Characteristics

Tight (1996) defines adult education as "any learning activity or program provided by

an agency to satisfy specific needs or interests for a person who is beyond high school

age." He also states, "adult education entails all the forms of education in which the

learners are viewed as experienced, mature, capable, responsible adults."

All adult education is actually a continuation and a supplement to education received as children. Adult education needs to build on what was learned as children (Tight, 1996).

The distinction between learning as children and learning as adults is a key element. Children are expected to be passive learners, the concept of pedagogy is of an authoritative teacher feeding information to children students (Tight, 1996). This type of teaching is also called the "banking" method, teachers deposit education into the children (Vella, 1995). In contrast, the word andragogy was developed to denote, "the art and science of helping adults learn" (Tight, 1996).

Self direction in learning is key in adult education. It is one of only a few core concepts in the foundations for the identity of adult education as a distinct discipline (Tennant, 1991). Adults know what they want to learn, the educator's role is to facilitate learning (Bocar & Riordan, 1999). A respect for the diversity of adult's experiences, values and beliefs is necessary for an effective educator of adults (Tennant, 1991).

Learning is the process whereby an individual acquires and stores new knowledge or skill and changes behavior because of an interaction with or experiences in an educational encounter (Holli & Calabrese, 1998). However, it takes more than just information to change ideas, attitudes and behavioral patterns (Vella, 1995).

Adult education should enable people to connect themselves with what is being learned so they can move forward, not always in big leaps forward, but in the direction of developmental growth. Adult learners look inside themselves in order to make a connection with the outside. This contributes to significant shifts in beliefs, attitudes, understandings and behaviors (Marienau, 1995).

Taylor & Marienau (1995) give the following list of what learning is:

- A basis for further learning
- A process of revising knowledge and meaning
- Multidemensional, a journey with unpredictable results
- Promoted by interactions among one's experiences and ideas, and those of others
- Purposeful and deepened when directed towards goals
- Enhanced by assessment of oneself and others
- Variable from person to person

Adults are a heterogeneous group (Tight, 1996), but tend to have these common

characteristics:

- Want to be actively involved in learning
- Life tasks and challenges create a desire to learn
- Learn best in a less formal, relaxed environment
- Prefer to reason through, rather than be told the answer to a problem
- Would rather identify needs themselves than be told they have a problem
- Have many responsibilities, resent a waste of their time
- Like to have their accomplishments acknowledged (Keller & Burkman, 1993)

Self-motivation is also a key element of adult education. An inherent motivator of

adult learners is the freedom they have. They have chosen to be present at the

educational session (in a vast majority of cases.) Choice leads to commitment, deep

involvement and strategic thinking with tasks. Challenge, as in the opportunity to tackle

moderately difficult tasks, is another motivator of adult leaners. Control or autonomy is

positively related to interest and intrinsic motivation (Donald, 1997).

Education of New Parents

Adult education is a lifelong process, each stage of life has situations for which people

need or desire education (Tight, 1996). The events surrounding the birth of a child,

especially the first child, is one of those times. People facing parenthood for the first

time are in a major life transition (Bocar & Riordan, 1999). Traditionally, the new

and expectant mother has been targeted for education. The recognition of the need for

education for fathers means there are now more opportunities for new and expectant dads

to obtain education in child care (McBride & McBride, 1990).

Transition into parenthood tends to occur in four stages: anticipatory, formal, informal

and personal (Bocar & Riordan, 1999). The first stage, anticipatory, occurs during

pregnancy when prenatal education is given.

Prenatal Education

During the *anticipatory stage*, expectant parents need realistic information about

childcare. Parents should be helped to perform in the following ways:

- Time management and an understanding of the energy needed for child care
- Practice psychomotor skills needed for baby care (use dolls or real infants)
- Begin to think philosophically about child care ("How will you handle a crying infant?")
- Learn about typical emotional responses to new parenthood
- Socialize with other new families to gain a support network
- Identify community resources to help ease the transition into parenthood (Bocar & Riordan, 1999).

Other important matters for expectant parents at this time are:

- Proper nutrition for the mother including appropriate weight gain
- Importance of regular prenatal care by a physician
- Ways to alleviate the usual discomforts of pregnancy
- Abstention from smoking, alcohol and other drugs (Institute of Medicine, 1992)
- Feeding methods, so parents can make an informed decision about what is right for them (McCamman & Page-Goertz, 1998).
- Preparation for childbirth (Bocar & Riordan, 1999).

Likely educators of expectant parents at this time are physicians, nurses, dietitians,

and lactation consultants (Bocar & Riordan, 1999). The Special Supplemental Nutrition

Program for Women, Infants and Children (WIC) is an important source of information

prenatally as well as postnatally (Wisconsin WIC, 1995). The education may be formal

(i.e. "classes") or informal (such as casual conversations, for example.) Postnatal Education

The birth of the infant begins the second stage of the transition into parenthood, the

formal stage. During this stage, new parents are bonding with their infant while

simultaneously trying to gain sense of the parental role. New parents are often surprised

by their intense feelings of the whole process (Bocar & Riordan, 1999). Education

appropriate at this time involves infant feeding, adequate diet for the mother, and

recovery from childbirth (Institute of Medicine, 1992).

Within the formal stage, new parents often rigidly try to do everything perfectly. The

inadequacy new parents feel at this time can be reduced by praise of their performance

and help in putting things in the proper perspective (Bocar & Riordan, 1999). Follow-up

phone calls, in-home visits, if possible, and early physician office visits can help allay

new parents concerns (Institute of Medicine, 1992).

When parents feel they have mastered child care tasks, the *informal stage* begins.

Most new parents take weeks or even a few months to enter this stage. During the

informal stage, parents become less concerned with "perfect" baby care, behave more

spontaneously and are open to trying different options. Experienced parents are role

models during this stage (Bocar & Riordan, 1999).

During the *personal stage*, behaviors involving child care are modified even more, until parental roles are consistent with the parents' personalities. Support groups and classes at this time offer the opportunity to share experiences with other new parents, helping people integrate their new parental roles into their personalities (Bocar & Riordan, 1999).

WIC and Headstart Involvement in Parent Education

Two sources of ongoing education for many families with young children are WIC

and Headstart. Both programs offer education and support for families with children ages

birth to 5 years (Wisconsin WIC, 1995) (Collins, 1993).

According to Wisconsin WIC (1995) nutrition education through WIC shall be designed to achieve the following two broad goals:

(1) Stress the relationship between proper nutrition and good health with special emphasis on the nutritional needs of pregnant, postpartum, and breastfeeding women, infants and children under five years of age, and raise awareness about the dangers of using drugs and other harmful substances during pregnancy and while breastfeeding.

(2) Assist the individual who is at nutritional risk in achieving a positive change in food habits, resulting in improved nutritional status and in the prevention of nutrition-related problems through optimal use of the

supplemental foods and other nutritious foods. This is to be taught in

the context of the ethnic, cultural and geographic preferences of the

participants and with consideration for educational and environmental

limitations experienced by the participants.

The above is achieved through nutrition asssessment and nutrition education.

Nutrition assessment through WIC includes:

- use of accurate procedures, including properly maintained equipment
- correct interpretation of assessment information and identification of risk factors
- identification of high risk participants

Nutrition education through WIC includes:

- skilled counseling based on participants identified and prioritized needs
- skilled counseling based on current research and practice
- use of education materials appropriate for the individual
- planned secondary education offered either individually or in a group
- referrals made for client as needed
- documentation of nutrition education
- positive nutrition-related health outcomes (Wisconsin WIC, 1995)

Headstart provides a range of medical, dental and nutritional services for children as

well as early childhood education. Parents benefit from exposure to good role models

and programs that deal with issues such as family literacy, substance abuse, increased

employability and family self sufficiency (Collins, 1993).

More women than men receive education about pregnancy, childbirth, breastfeeding

and childcare (McBride & McBride, 1990). Women learn differently than men and have

special educational needs (Gajdusek & Gillotte, 1995).

Women As Adult Learners

Women's learning styles differ from men. For example, women learn better in

climates of cooperation rather than competition (Gajdusek & Gillotte, 1995). Belenky,

Clinchy, Goldberger & Tarule (1986) interviewed 135 women and derived five

epistemological perspectives on women's ways of learning and knowing. The first is

silence and is characterized by a disbelief in one's capacity for knowledge. The second is

received knowledge which is characterized by the idea that knowledge resides in others

and one must get it from them. Third, the *subjective knower* has discovered an inner

voice and listens to her gut feelings. Fourth is the *procedural knower,* who knows the

forms of academic discourse and knows how to dialogue with the text, the author and the

instructor in a way that her beliefs can both be tested and refined. Finally, the

constructed knower integrates experiential and relational modes of thought, reason and

intuition.

    Each stage of development is defined by and is a function of a woman's rule for

making meaning out of her life and circumstances. What she sees, she perceives as

reality. Development occurs as she begins to perceive a larger, more complex reality. A

person's perception can only change when she realizes that it is just a perception

(Carfagna, 1995). Reflection on learning experiences can cause perception changes,

revealing the inadequacies of the former perceptions and building a structure of the new

interpretation (Marienau, 1995).

   Women learn well in a group environment. This strengthens self-confidence and

provides opportunities for establishing positive, supportive relationships with peers and

instructors (Gajdusek & Gillotte, 1995). The effective instructor, rather than "feeding"

information to students, will motivate and enable students to learn for themselves (Tight,

1996) (Marienau, 1995).

   Learning experiences are transitions in a woman's life. Transitions can be energizing

and exhilarating, but can also result in significant stress (Carfagna, 1995). Women report

knowing oneself, accepting oneself, connecting with others, changing perspectives,

empowering oneself and seeking growth and development as valuables gained from adult

education (Marienau, 1995).

<u>Learning Theories</u>

Adults approach education for many different reasons at different times in their lives, but all want to realize a relevance of the education to their needs (Holli & Calabrese, 1998). When the education is relevant, people are self-motivated to learn (Keller & Burkman, 1993) but motivation does not occur in the same way for everyone (Wlodkowski, 1998).

Motivation to learn more about health practices for families, such as breastfeeding, may be explained by learning theories such as these: the theory of reasoned action, the theory of planned behavior and the health belief model. The underlying premise of all these theories is that people will make health changes if they see a need and perceive that the benefits outweigh the inconvenience of making any necessary changes (Contento, et al., 1995e). Each of these learning theories or models will be discussed individually, beginning with the theory of reasoned action.

The Theory of Reasoned Action

This theory, developed by psychologists Icek Ajzen and Martin Fishbein in 1967, postulates that attitudes are formed from personal beliefs about the expected outcomes of practicing a behavior and the value one places on the outcomes (Brown, 1999). The theory of reasoned action has two assumptions: 1) human beings are rational and will make use of information available to them and 2) people consider the implications of their actions before deciding to engage in certain behaviors or not (Ajzen & Fishbein, 1980).

These attitudes, as well as social norms, which are perceived as group pressure to

conform, influence the intent to perform the behavior and intention is predicted by

attitudes and social pressures (Brewer, Blake, Rankin & Douglass, 1999). According to

this theory, the most important determinant of an individual's behavior is intent to

perform the behavior (Brown, 1999).

When placed in the context of breastfeeding education, the theory of reasoned action

appears to hold true. Hearing about the benefits of breastfeeding from different sources,

such as WIC, physicians, and relatives or friends who have breastfed may influence

expectant mothers to consider breastfeeding. The more times an expectant mother hears

about breastfeeding, the more likely she is to decide to initiate it (McCamman & Page-

Goertz, 1998). The intention to breastfeed and the expected duration of breastfeeding are

predictors of breastfeeding initiation and duration, respectively. In a study of 115

African American pregnant women, Gross, et al. (1998) found stated intention to

breastfeed resulted in actual initiation of breastfeeding. Intended duration of

breastfeeding was a strong predictor of actual duration of breastfeeding in a study of 146

postpartum women (Quarles, et al., 1994). In a study of 150 postpartum women, Schy,

et al. (1996) found length of breastfeeding was statistically related to the mother's

expected length of breastfeeding.

 A belief in the control over performing a behavior is predictive of actual performance

of the behavior. The theory of planned behavior, discussed next, considers control.

The Theory of Planned Behavior

Similar to the theory of reasoned action, this theory includes perceived behavior

control. A feeling of control, or belief in the ability to perform a behavior, increases the

likelihood of the intent to perform it, and ultimately the actual performance of the

behavior (Contento, et al., 1995e). Perceived control has been found to be a better

predictor of action than stated intentions (Royak-Schaler & Alt, 1994).

The perception of behavior control reflects past experiences (Brown, 1999). When a

particular behavior has been successfully carried out in the past, more control over that

behavior is experienced. The following studies show that women who have artificially

fed a previous infant are more likely to artificially feed again, and women who have

breastfed previously are more likely to breastfeed again. Perez-Escamilla, et al. (1998)

studied 144 WIC enrolled, pregnant Puerto Rican women who already had at least one

child. Having breastfed their previous child was positively associated with the decision

to breastfeed their new infant. Reifsnider & Eckhart (1997) discovered that among 31

breastfeeding WIC participants, the women who had artificially fed a previous infant quit

breastfeeding earlier, on average, than those who had breastfed previously.

Knowing she can successfully feed an infant with the previously used infant method

gives a woman confidence that she can do so again. The confidence in the ability to

breastfeed, even if a previous child was not breastfed, will be increased for expectant

parents when they gain knowledge about how to breastfeed through breastfeeding

education (Bocar & Riordan, 1999). Exposure to others who relate the rewards their

family has gained through breastfeeding, either in person or through literature, can also

increase confidence in the expectant couple. An increased confidence leads to a greater

perception of control over the situation, and a higher likelihood of initiating breastfeeding

(Albernaz, Giugliani & Victora, 1998).

For some people, changes in behavior occur when expected benefits of the change are

seen as more valuable than not changing the behavior, which is a premise of the next

learning theory discussed.

Health Belief Model

The health belief model is a theory emphasizing motivation by perceived threat and

perceived benefits leading one to take action (Contento, et al., 1995e). Avoiding illness

or other undesirable health outcomes will motivate people to change, but only if they: 1)

feel the threat to themselves (or their family); 2) believe the recommended action to

reduce the threat will work and not be too costly; 3) believe they have the ability to

successfully carry out the recommended action (Royak-Schaler & Alt, 1994); and 4) have

access to cues which stimulate recurrence of the desired action (Kloeblen, 1999).

Some add the dimension of social pressures to this model. Whether or not to develop

new health practices is greatly influenced by one's family and friends, especially in

certain cultures (Sharma & Petosa, 1997) (Wiemann, DuBois & Berenson, 1998).

In breastfeeding education, the attitudes of those close to the pregnant woman need to

be recognized and accounted for by targeting those family members for education also

(Royak-Schaler & Alt, 1994). Learning more about breastfeeding may or may not

convince some parents that the health benefits to be gained are reason enough to pursue it

(McCamman & Page-Goertz, 1998). Whether this occurs or not depends on how

information is presented for learning. Health education of any type rarely uses just one

model. Possible variables in age and other demographics of learners, their current

knowledge base, learning needs and motivational levels are numerous, leading to the

need for a combination of models (Contento, et al., 1995e). A model which combines

these learning theories and expands on the health belief model is the PRECEDE

framework (Royak-Schaler & Alt, 1994).

The PRECEDE Framework

This model integrates several learning theories (Contento, et al., 1995e) and extends

the health belief model (Royak-Schaler & Alt, 1994). PRECEDE stands for

"predisposing, reinforcing and enabling constructs in educational diagnosis and

evaluation." It assumes these three factors influence health behavior and can be changed

by education. *Predisposing factors* encompass knowledge, attitudes, beliefs, values and

interest, and are assumed to be motivational factors. *Reinforcing factors* come from

social and peer influences and include rewards and punishments. *Enabling factors* are

skills and other resources needed to perform desirable health practices (Royak-Schaler &

Alt, 1994).

Education is geared toward target groups after learning what their predisposing and

reinforcing factors are. Development of and use of enabling factors are the desired

outcomes of the educational intervention (Contento, et al., 1995e).

This model is also compatible with breastfeeding education. Learning what the

predisposing and reinforcing factors are for the group will lead to the development of the

appropriate enabling factors (Albernaz, et al., 1998). The predisposing and reinforcing

factors will vary greatly, depending upon such variables as age, ethnicity, and socio-

economic status of the target audience (Sharma & Petosa, 1997) (Wiemann, et al., 1998).

The above learning theories and models reveal the importance of careful planning in

any educational intervention (Contento, et al., 1995e). Recognizing and meeting the

need of the learner is essential to a successful experience (Leshin, Pollock & Reigeluth,

1992), as is being aware of any potential learning barriers.

Barriers to Learning

Before learning can take place effectively, barriers to learning must be recognized and

eliminated. Malcolm Tight (1996) categorizes these barriers as: 1) physical/temporal;

2) individual/social; and 3) subject matter. Restrictions on time and place are examples

of physical/temporal barriers (Tight, 1996). Included are scheduling, proper lighting,

room temperature and comfortable chairs (Backes, 1997). Adult learners are busy

people, most often with jobs and families as higher priorities than education (Taylor &

Marienau, 1995). Scheduling that takes this into account, and then sticking to the

schedule, can reduce one barrier to learning. People learn best in a comfortable

environment, so equipment and furniture are important considerations in planning an

educational experience (Backes, 1997).

Individual/social barriers are those that involve characteristics of the learners, such as

age, sex, socio-economic status and ethnicity (Tight, 1996). While difference can add

more interest to the group, it can also prevent group cohesion from occuring, thus

reducing the learning capacity for those who feel "different" (Wagschal, 1997). Non-

native speakers of English or the only person of color in the group may be reluctant to

speak up. Extra effort must be made to include them in discussions, while taking

precautions to prevent "putting them on the spot" or other embarrassment (Taylor &

Marienau, 1995). Effective instructors help the group recognize their commonalities and

respect their diversity simultaneously (Backes, 1997).

    Barriers which arise from the subject matter can occur if learners feel they have been

"forced" to attend, but have no real interest in the subject. Students who have an intrinsic

motivation to learn, a genuine interest in the subject will most likely learn the material

easier than those who are extrinsically motivated (Donald, 1997). Examples of

extrinsically motivated students could be a reluctant expectant father who attends

childbirth class only at his partner's insistence or a poor driver who attends points

reduction class only to avoid losing his driver's license.

    Emotions can also be barriers to learning. If learners are angry, fearful, anxious or

feel threatened, communication between instructor and student will likely be blocked

(Preparing and Giving A Presentation, 1999). Even those who have an interest may not

always find the material easy to learn. Using different teaching methods, such as games,

case studies or hands-on projects can facilitate learning (Keller & Burkman, 1993).

Some barriers to learning may prevent people from even attending an educational

session. Anticipating possible barriers to learning is part of planning for an educational

session (Tight, 1996). To eliminate barriers, first it is essential to recognize and admit the

barriers exist, followed by recognizing and admitting the cause. Finally, everything

possible to eliminate or reduce the intensity of the cause must be done, in this way

increasing the effectiveness of the adult education being offered (Preparing and Giving a

Presentation, 1999).

<u>Making Adult Education More Effective</u>

Adults are busy people, with many roles to play in their lives. The time they take to

attend educational sessions competes with other important parts of their lives (Backes,

1997). Learning must be meaningful for adults, or they will not continue to participate.

The learner must be able to relate the content to prior knowledge and experiences

(Leshin, et al., 1992). Helping adults make the connection between their past knowledge

and their current needs will enhance learning (Wagschal, 1997).

The way material is presented is just as important as the content of the subject material

itself. Adults learn best when they are motivated. The motivation to learn is influenced

by the learner's personality, the nature of the subject or skill to be learned, and the

perceptions of the value and difficulty of learning it (Keller & Burkman, 1993). Adult

learners are more motivated when they are in control of their learning experience (Tight,

1996).

Keller & Burkman (1993) offer the following general motivational principles for

instructors to employ:

- *Use variation and curiousity:* change the organization of the class, create a gap or an incongruity in the student's existing knowledge, provoke mild mental conflict, introduce topics problematically, use facts that contradict past experience, invoke a sense of mystery
- *Relevance:* build relationship between content, objectives of the learning experience and learner's needs and desires, let the students know how the instruction connects to their existing skills or knowledge and to their future goals, use personal language and human interest stories, adapt teaching styles to the students' learning styles, use role modeling
- *Appropriate challenge level:* create an expectancy of success, let students know exactly what is expected of them and what the objectives of the class are, allow students to set and have control over achieving their own goals, allow students to progress at their own pace, use easy to difficult sequencing of content, exercises and evaluations, provide criteria for success, give confirmational feedback, provide options for learning opportunities
- *Positive outcomes:* use intrinsically satisfying outcomes, allow students to use their newly acquired knowledge/skill, praise students for a job well done, use statements that specifically acknowledge actions, characteristics, risks or challenges the student employed, provide an equitable relationship between learner expectancy, performance assessments, and rewards
- *Print courseware:* choose attractively designed material that is accurate in content, appropriately difficult, organized well, with helpful formatting, graphics that make the material easier to interpret and has interesting pictures

Adult learners want to be and should be autonomous and self-directed (Tight, 1996).

Rather than instructors being in control of learning, the adult students themselves should

be in control (Barr & Tagg, 1995). Francis (1990) delineated the following principles of

self-directed learning, written for educators:

- Progressively decrease the learner's dependency on faculty
- Help the learner to understand how to use learning resources
- Help the learner to define his or her learning needs
- Help the learner to assume increased responsibility for defining, planning and evaluating his or her own learning
- Organize what is to be learned in relationship to the students' current problems, concerns and level of understanding
- Foster learner decision making: select learning experiences that require choosing, expand the learner's range of options, and facilitate appreciation for the perspectives of others who have alernative ways of understanding
- Encourage the use of criteria for judging that are increasingly inclusive and differentiating in awareness while remaining reflective and integrative of experience
- Facilitate problem posing and problem solving, especially in the areas of individual and collective action and those that concern the relationship between personal problems and public issues
- Reinforce the learner's self-concept by providing for progressive mastery
- Emphasize experiential, participative, and projective instructional methods with appropriate use of modeling and learning contracts

Barr & Tagg (1995) suggest a paradigm shift in adult education from one of instructor

emphasis to one of learner emphasis. They suggest that instead of delivering instruction,

learning should be produced, and instead of transferring knowledge from faculty to

student, the atmosphere of the learning environment should elicit discovery and

construction of knowledge. Instead of being concerned with the quantity and quality of

the resources, the new learning paradigm should be concerned with quantity and quality

of outcomes of learning experiences. In the new paradigm, faculty and students would

work in teams with each other and other staff, instead of each acting in isolation.

Learning should be holistic, rather than atomistic (Barr & Tagg, 1995).

Instructional stagies to enhance understanding include paraphrasing (Leshin, et al.,

1992), redundancy (Winn, 1993), elaborations (Leshin, et al., 1992), involvement of as

many senses as possible through learning aids such as audio-visual aids and real objects (Holli & Callabrese, 1998) and making resources available to students (Tight, 1996). Involving students in the learning experience enhances their learning (Long, 1998). Learning is more effective when it is active rather than passive (Vella, 1995).

Acknowledgment of adults' wealth of life experiences will boost confidence and learning (Wagschal, 1997). Students should be encouraged to share their knowledge in various fields with the class (Backes, 1997). Adult students and teachers are peers, and at times their roles are reversed, the teacher often learns from the student (Tennant, 1991).

Community Education

In contrast to adult education for the purpose of academic credit, education that adults engage in strictly for personal gain is often referred to as community, or nonformal education (Tight, 1996). Adult learning has been deinstitutionalized, moving into the workplace and community (Tennant, 1991). Community colleges, libraries, and even malls offer learning opportunities for adults and children. Classes offered may include hobbies, computers and health issues.

An increasing segment of community education is health education offered in hospitals, clinics, HMOs and medical practice groups. The primary purpose of these programs is education, but in light of the highly competitive nature of health care, these programs also aim to attract families to their facilities (Riordan & Auerbach, 1999).

WIC and local health departments are also large providers of community education. Dietitians and nurses offer one-on-one education specific to the clients' needs, as well as the more general secondary education, usually in the form of walk-by displays, written information, or small group meetings (M. Prytz, personal communication, May, 1999).

According to Malcolm Tight, (1996) community education has these characteristics:

- is a lifelong activity
- emphasizes the learners'active participation
- stresses problems and needs as starting points for learning
- is in either geographic communities or groups of interest
- is a change agent
- is not limited to traditional "formal" teaching methods

Community education is often seen as being more relevant to the needs of the people.
Through this type of education, people can enrich their lives in numerous ways, such as

health and nutrition education (Tight, 1996).

The role of community education appears to be growing, with an increased need for

health, fitness and nutrition education (Shafer, et al., 1996) (Houle, 1992). Partnerships

between the public and private sector can ensure cost effective community education that

fulfills the needs of the public (Shafer, et al., 1996).

Classroom Education

Introduction

Education that occurs in classrooms typically has these common characteristics:

- A human based component (i.e. at least one instructor and at least one student who have face-to-face communication at some time during the experience)
- Usually has a print based system (textbooks, handouts, etc.) (Leshin, et al., 1992)
- Is preplanned and occurs at a designated site at a particular time

Lecture often is the first thing that comes to mind when one thinks of classroom

education, but lecture is only one of many methods for effective classroom teaching (Farrah, 1998). Using a variety of teaching methods creates more interest and better learning because not all people learn in the same way (Backes, 1997) (Leshin, et al., 1992).

Some of the teaching/learning methods employed in classrooms in addition to lecture are: independent study (Sanacore, 1995), small group work (Curtis, 1997) (Vella, 1995), games (Keller & Burkman, 1993), computer based learning (McKinney, 1996), student presentations (Sanacore, 1995), role playing (Keller & Burkman, 1993), conference style discussions (Underwood & Wald, 1995), and problem based learning (Griffin, 1990) (Woods, 1994) to name a few.

These and other teaching/learning methods can be combined in a teaching session or used alone. Creative instructors are always employing innovative techniques for increasing interest and motivation in their students (Keller & Burkman, 1993). Utilizing a variety of methods and resources is important for ensuring students gain the most out of the learning experience (Backes, 1997) (Leshin, et al., 1992).

First in this section is a discussion of the physical environment of the classroom, followed by the positives and negatives of classroom education. Next is a look at lectures, then written materials and other audio-visual aids. Finally, two of the above mentioned classroom teaching/learning methods, computer based learning and problem based learning, will be discussed in Trends in Classroom Education, pages 65-68. These two methods are gaining in use and popularity in classrooms, so are addressed separately.

The Physical Environment of the Classroom

Being physically comfortable in the classroom enhances learning for the adult (Backes, 1997). Important considerations in providing a comfortable physical

environment include temperature of the room, lighting, furniture, arrangement of the furniture, sound, and nearby restrooms and areas for socialization.

The temperature of the room should be fairly cool and not humid. Lighting should be adequate for the size of the room and be non-glare (Demick & Nazzaro, 1994). Furniture of appropriate size for adults is essential (Backes, 1997). Writing surfaces are appreciated by adults (Bocar & Riordan, 1999), holding a note pad in the lap is not conducive to productive learning (Farrah, 1998).

Arrangement of the desks or tables and chairs with attached writing surface is also an important consideration in the classroom environment. First, the room should be neither too large nor too small for the size of the group (Farrah, 1998). All participants must be able to comfortably view all visual aids used in class (Bocar & Riordan, 1999). If the group is small and interaction between participants is encouraged, such as in many community education classes, a U shaped table may work best. The instructor and the visual aids are at the open end of the "U" (Farrah, 1998). All necessary accomodations needed for a handicapped participant should be made, while respect for the person is upheld (Backes, 1997). If the arrangement of the room is not conducive to learning, it can and must be changed (Preparing and Giving A Presentation, 1999).

Speaking loudly and clearly will ensure all participants in a small to medium sized group can hear the speaker (Farrah, 1998). Speaking to a large group requires using slower speech in order to be well understood. Use of a sound system appropriate to the size of the room, and understanding how to use it (Holli & Calabrese, 1998), will eliminate the risk of some of the class participants missing portions of the presentation. Steps should be taken to minimize or eliminate all unnecessary noise. Outside noise

(from lawn mowers or construction, for example), or noise from inside the classroom (for example, students carrying on conversations), is distracting to both instructors and students. Information processing may be reduced for students when distracted by noise (Demick & Nazzaro, 1994) unrelated to the presentation.

Adults appreciate knowing where restroom facilities are located, as well as a place where food and drinks can be purchased and/or consumed (Bocar & Riordan, 1999). Handicapped restroom facilities must be available to accommodate all students. Having an area where students can socialize before or after class and during class breaks contributes to a sense of community within the group (Backes, 1997).

Planning for the above conditions are a part of planning the educational experience (Holli & Calabrese, 1998). Meeting students' physical needs are as important to the learning process as meeting their educational needs. The physical environment of the classroom can enhance or impede the learning process when in conjunction with other variables (Demick & Nazzaro, 1994). Following is a discussion of some of the positive and negative aspects of classroom education.

Positives and Negatives of Classroom Education

A major advantage of classroom education is the direct interaction between instructor and learner. This interaction can result in modification of teaching methods if necessary to ensure the learner understands the material being taught (Leshin, et al., 1992). A sensitive instructor notes quizzical looks and questions the learner as to their comprehesion. If needed, the material is covered again. On the other hand, the direct interaction also means students can ask for clarification of a point (Farrah, 1998).

Interactive discussions between instructor-student and student-student can result in

more in-depth and critical thinking (Underwood & Wald, 1995). Students working in groups learn effectively from each other (Curtis, 1997).

Human speech is the most powerful and expressive medium for use in instructional design (Winn, 1993). Choice of words, voice inflection, gestures and body language can all be used to enhance the learning experience (Farrah, 1998). A human instructor can say "well done" or offer other encouraging comments that increase motivation to learn (Keller & Burkman, 1993). Another advantage of classroom education is that large numbers of people can be presented with the same information in an orderly fashion and a timely manner (Curtis, 1997).

A variety of teaching methods can be employed in classrooms (Keller & Burkman, 1993) to match the varied learning styles of the students (Backes, 1997) (Leshin, et al., 1992). The use of audio-visual aids to enhance learning is also well suited to classroom learning (Holli & Calabrese, 1998). Use of interactive multimedia in computer based learning is gaining in popularity and improves understanding (Lewis, 1997). Instructors may have additional resources for students to use (Sanacore, 1995).

In the classroom setting, the instructor can easily gain objective measurement of students' understanding of the material. Assignments related to the subject increases retention of the information. Evaluations such as quizzes and tests will help the instructor evaluate the students' learning (Keller & Burkman, 1993).

Some of the negative aspects of classroom education also involve the human element. Some prospective students are afraid of or are threatened by a classroom situation. This may occur because of their past experiences with school (Tight, 1996) (Leshin, et al., 1992). Sitting still for long periods of time is difficult for some people to endure.

Instructors can also be a negative influence on the classroom learning process. Some instructors aren't creative enough to vary their teaching methods or want to teach only in the method most suited to their own learning style (Holli & Calabrese, 1998).

Another potential negative is that classroom education tends to be a concept of learning based on the spoken or written word, rather than hands-on kind of work. Learning styles vary widely among students and some may not do as well with only a language-based course. To change language-based learning into a positive, a wide variety of resources, written and otherwise, available for student use offer more opportunities for students to learn in different ways (Sanacore, 1995). One language-based learning technique, lecture, is discussed next.

Lecture

While lecture is not the only effective teaching/learning method employed in adult education classrooms, it is the most frequently used. One reason for the popularity of lecture is that information can be disseminated to many individuals in a short period of time (Farrah, 1998). Lecture yields the most efficient use of the instructor's time (Bocar & Riordan, 1999). According to David Curtis (1997), information-only lectures are the easiest teaching technique for instructors to prepare and deliver. Other advantages include:

- material can be presented clearly and precisely in an ordered fashion
- most adults are familiar and comfortable with lecture
- works well for people who won't or can't use printed material
- gives face to face contact between lecturer and audience
- many participants find listening easier than reading (Farrah, 1998)

 Although lecture has its place in the list of effective teaching/learning methods, it

isn't the best model for all subjects or audiences. Varying the instructional method will

keep students' attention and increase their motivation to learn (Backes, 1997) (Leshin, et

al., 1992).

Some other drawbacks to lecture are:

- audience is passive (Holli & Calabrese, 1998) (Curtis, 1997)
- audience may be exposed only to the lecturer's views (Farrah, 1998)
- speech is ephemeral and members of the audience may not be able to take adequate notes, therefore may miss large amounts of the message
- if the content is complex, speech alone will be unlikely to meet the learners' needs (Winn, 1993)
- lectures are associated with lower levels of retention of presented material (Bocar & Riordan, 1999)

Lectures can be enhanced by the use of audio-visual aids such as flipcharts,

whiteboards, posters, handouts, slides, overhead transparencies, videos, computers and

real objects (Holli & Callabrese, 1998). Other tips for instructors to make lectures more

interesting include:

- use a conversational tone with voice inflection
- wear bright clothing
- use gestures and movements
- use humor (Farrah, 1998)
- encourage questions and discussions (Bocar & Riordan, 1999)
- schedule breaks for long lectures (Backes, 1997)
- summarize to provide an obvious end (Farrah, 1998)

Variations on the informational lecture can combine advantages of different

teaching/learning techniques. One is the "reflective lecture" as described by David Curtis

(1997). This type of lecture assumes the students have completed the required reading

for the day and engages them in discussion modeling high level thinking.

Another variation on "pure" or informational lecture is to require students to make a

list of the three most important points of the subject just lectured on or about to be

lectured on. Working alone, students are given a very short period to complete this task,

causing them to engage with the content of lecture (Curtis, 1997).

Small group work can also be incorporated into lecture (Farrah, 1998). The instructor

poses a question and the groups are to answer it according to instructions given.

Discussion on the subject among students enhances the learning process. Using one or

more of these approaches to break the classtime keeps students involved and improves

their capacity for learning when standard lecture is given (Curtis, 1997).

Following are some other lecture styles that vary from the "information only" style.

- *Participatory lecture* which begins with a brainstorming session followed by lecture to classify, evaluate or discuss the ideas generated
- *Role-play lecture:* this style of lecture begins with a role play by audience volunteers, followed by discussion of important outcomes
- *Demonstration lecture* begins with a demonstration of a technique or procedure, followed by discussion
- *Team quiz lecture* begins with an announcement of a quiz after lecture. Teams are assigned and points awarded to the teams based on individual's scores
- *Cooperative lecture* is based on teams having to lecture to one another, content is learned as participants prepare to lecture (Leshin, et al., 1992)

In an effort to learn students' perceptions of lectures, Vivien Hodgson (as cited in

Maciuika, Basseches, & Lipson, 1994) conducted interviews with thirty-one adults

attending college. Hodgson played back lectures the students had attended and asked

them their thoughts and feelings during the lectures. She discovered these adults

experienced the lecture content in three ways: extrinsically (affected student only

superficially); intrinsically (student internalized lecture); and vicariously (student

assumed lecturer's enthusiasm for the subject or found one example interesting, rather

than the whole.) Hodgson hypothesized that the vicarious response could be transitional

between extrinsic and intrinsic understanding. The vicarious experience of lecture

relevance makes clearer the association between reports of lecturer enthusiasm and

rapport being "effective" in student learning and actual experiences of learners according

to Hodgson (Maciuika, Basseches & Lipson, 1994).

Lecture effectiveness has much to do with the lecturer. Both expertise in the subject

and good presentation skills are necessary for a lecture to be an effective instructional

method (Farrah, 1998). According to Shirley J. Farrah (1998), a successful lecture is

prepared and delivered using four crucial points. *Point One: Say a Lot About a*

Little. Farrah stresses that each lecture should contain no more than three or four essential concepts, but each concept should be emphasized in as many different ways as possible and repeated up to four or five times to increase retention.

Point Two is: *Use a Lot of Examples.* In order to do this, the lecturer needs to be very knowledgeable about the subject and understand the audience well. Using examples the learners can relate to increases their understanding (Farrah, 1998).

Point Three: Keep Moving. Interest is heightened when the lecturer moves about the room, makes eye contact with students, improvises when necessary, speeds up or slows down the pace of the lecture as needed and calls students by name (Farrah, 1998).

Point Four is: *Capitalize on Variety.* Using audio-visual aids and varying the style of lecture even within the same session helps hold the learner's attention (Farrah, 1998).

Lectures have an important role to play in adult education (Farrah, 1998). "Pure lecture", that is, information passed by speech only from the lecturer to the audience is rarely appropriate alone (Winn, 1993). Written materials and educational aids which strengthen the message being conveyed are useful tools in classroom education.

Written Materials and Other Educational Aids

Classroom education can be enhanced with the use of audio-visual teaching aids. The purpose of the use of aids is to provide learners with direct sensory contact with the subject under discussion (University of Kansas (U. of Kansas), 1999). When spoken information is complex, it will be lost if not reinforced with written material (Winn, 1993). Any objects, including people, can be aids in making a point, emphasizing a point (Interpersonal Communications, 1999), adding variety to a presentation (U. of Kansas, 1999), or increasing the instructor's credibility. Audio-visual aids, on the other hand, are

not to be used to replace the speaker making a point. The timeliness of the use of aids

within a presentation is important (Interpersonal Communications, 1999), as is keeping

the aids simple, relevant, and professional looking (Preparing and Giving a Presentation,

1999). The instructor should always be familiar with the aids and have practiced the
presentation with the use of the aids (U. of Kansas, 1999).

Following is a discussion of selecting written materials commonly used in classrooms

(i.e. textbooks, booklets, journals, and handouts), followed by some tips on designing

effective written materials. Next will be information on other audio-visual aids that are

often used in classroom teaching.

Selecting Written Materials

Written instructional materials most commonly used are textbooks, manuals, journals

and handouts (Leshin, et al., 1992). The underlying principles of the use of these

materials in adult education are to: 1) gain and maintain learners' attention; 2) relate

content of materials to learner interests, needs and goals; 3) build and maintain learner

confidence in the ability to use the material (Keller & Burkman, 1993). Educational

materials for adults are not only used in the classroom, but at home (Bocar & Riordan,

1999) (Shepherd, Sims, Davis, Shaw & Cronin, 1994), at work and in public.

Educational material written by others should be chosen with these tips in mind:

- Information must be accurate and up-to-date (Bocar & Riordan, 1999)
- Attractively designed materials will increase learners' attention (Keller & Burkman, 1993)
- Educational level of the material is appropriate for the intended readers (Nitzke & Phillips, 1996)

Developing Written Materials

When developing written materials for adult students, the above apply as well
as these

additional tips:

- Use a readable writing style, incorporating action verbs, familiar and specific words
- Keep sentences to moderate length
- Avoid overuse of acronyms and abbreviations
- Give clues to what is coming next (Keller & Burkman, 1993)
- Repeat important or new information
- Be consistent in vocabulary
- Use simple fonts
- Point type should be 12 or larger
- Use no more than two font styles per handout
- Allow for ample white space on each page
- Add visuals to enhance interest and learning
- Make sure charts or graphs are very clear
- Limit use of borders or shading, they may not copy well (University of Wisconsin Extenstion (UWEX), 1996)

Shepherd, et al. (1994) asked twenty-eight women their preferences about content and

design of a nutrition education booklet. The preferred writing style was an informal,

upbeat one that included lots of pronouns. In defining terms used in the booklet, the

subjects weren't satisfied with a simple definition, they wanted descriptions of the effects

of the term (such as polyunsaturated fat or hydrogenated fat) as well as products which

contained them. Participants also liked the booklet's "Did you know…?" items. The

panel members felt these were most effective when they provided shock value, were

highlighted and placed throughout the text, as an incentive to keep on reading.

When it came to typeface and layout of print, the women reported preferring large (12

to 16 point) typeface and one column formats on a page 5 1/8" wide. These features,

along with plenty of white space made the material look less formidable and easier to

read. Subjects preferred realistic drawings or paintings or color photographs of foods

common to their culture. Tables were preferred over bar graphs and pie charts, which the

participants felt were hard to understand. Both a table of contents and a visual index

were favored by the subjects in this study. They wanted a brief description of each

section in the table of contents as well as staggered pages and extended tabs for a visual

index (Shepherd, et al., 1994). Soliciting another person's input on the content and

design of educational materials (UWEX,1996) will maximize the materials'

effectiveness. Written materials with a comfortable image will hold the reader's attention

and build confidence in learning (Keller & Burkman, 1993).

Other Audio-Visual Aids

Learning is more likely to take place when more senses are stimulated. Real objects

make excellent instructional media, especially those involving all senses (Holli &

Calabrese, 1998). However, the discussion here will involve the most commonly used

A-V aids, namely chalk or whiteboards, flipcharts, posters, slides, videos and overhead

transparencies.

Possibly the most common of all educational aids, virtually every classroom contains

one or more *chalk or whiteboard.* Information to be conveyed to learners can be placed

on the board prior to the class meeting time or during class. Large lettering on the board

will help ensure all can see it, as will taking care that the instructor doesn't block the

view of the board. The correct marking pens for whiteboards eliminates the problem of

cleaning the board (Interpersonal Communications, 1999).

Some advantages of this educational aid is its inexpense and its ease of use for both

instructor and student. Some disadvantages are that it may be hard to see in a large room

and information placed on it isn't permanent. Another problem occurs when information

is on the board prior to class: students become involved in reading the board and taking

notes instead of paying attention to the instructor (Holli & Calabrese, 1998).

An aid similar in use to chalk or whiteboards, the *flipchart* resembles a huge pad of

paper on an easel. To ensure all can read information on a flipchart, letters of titles

should be at least 3", subtitles 2", and other text 1½ " (U. of Kansas, 1999). Using a

variety of colored marking pens adds interest.

Placing information on a flipchart prior to class is more practical than with chalk or

whiteboards, with the advantage of being able to conceal parts of it until time to present it

Other advantages are: the information can be permanent rather than erasing it to make

more room, a new sheet can be used. Flipcharts work well for recording comments made

in group discussions. Portability of the flipchart is another advantage, it can be taken into

and used in a room with no chalk or whiteboard (Holli & Calabrese, 1998).

One problem encountered when using a flipchart is its relatively small size, making it

impractical for use with large groups However, when used with small to medium sized

groups, the flipchart may be a better tool than chalk or whiteboards (Holli & Calabrese,

1998).

   Posters can be used as visual aids to enhance an educational presentation or be a stand

alone educational presentation themselves. This brief discussion will deal with posters in

the former context. The poster as a stand alone educational presentation is addressed in

Poster Education, pages 68-74.

   Educational posters can be purchased or created. Widely available computer graphics

and laser printers make creating professional looking posters easy at home or at the

office. Each poster should have one main message (Mandoli, 1996). If more than

one message needs to be conveyed, a poster for each should be produced. Posters work

best for small groups, print is unlikely to be big enough for everyone in a large group to

see (Holli & Calabrese, 1998).

   Educational posters need to be readable, legible, well organized and succinct

(Mandoli, 1996). Other important characteristics of effective posters are: lettering that

can be read at least 5 feet away, open space in the design, elements of different size and

proportion, use of color to add visual interest and clarity, and simple and bold illustrations and photographs (Steinhart, 1996.) To draw learner's attention, posters

should be professional looking even though they may not be professionally made

(Mandoli, 1996).

Laminating poster elements will prolong their life and adds to the professional look.

Posters may be presented on easels, or bulletin boards. Depending upon type of board,

posters may be attached with push pins which are visible, or velcro which is hidden in the

back (Steinhart, 1996).

With careful planning, organizing and creativity, posters that clearly convey the

intended educational message can be produced. Drawing attention to a main concept and

keeping the attention of learners is the goal of this type of visual aid (Mandoli, 1996).

Computer generated *slides* are rapidly becoming a presentation standard. PowerPoint

software allows production of computerized slides on a disk. Outlines of the presentation

for a handout and speaker's notes are easily made when using PowerPoint. Slides made

from photographs is another option, as is purchased slides, available for nutrition

education, for example (Bocar & Riordan, 1999).

Each slide should be simple and convey only one message. Text on slides should only

highlight the point of the message, not be the script for the presentation. The speaker's

words are still the main way the message is communicated to the learners. Too much

visual material will cloud rather than illuminate the message (Interpersonal

Communications, 1999). When presenting complex topics, use build sequences, adding

one topic at a time to allow the learners to absorb the information (Preparing and Giving

a Presentation, 1999).

Unless the group is fairly small, text should be 16 point or larger to be easily seen.

One font family in three or less sizes will mean less confusion for the audience. A

consistent background and color harmony will reduce learner distraction (Preparing and

Giving a Presentation, 1999).

Prior to the slide presentation, it is essential to be sure slides are in the correct order

and are not upside down (Bocar & Riordan, 1999). Test equipment and set up the screen

well in advance of the presentation and plan ahead for possible malfunctions. Bringing

an extra bulb and an extension cord to the classroom can prevent problems. When slides

are projected, placing the projector so the slide image fills the entire screen will make it

easier for all to see (Bocar & Riordan, 1999). With prior preparation and planning, slide

presentations can be very effective at enhancing the learning process (Holli & Calabrese,

1998).

Videotapes are a widely used audio-visual aid in classrooms. A video is an excellent

way to demonstrate psychomotor skills, such as proper latch-on of the baby to the breast

in breastfeeding education (Bocar & Riordan, 1999). Unlike slides and overheads, videos

present action (Holli & Calabrese, 1998) and sound. Sometimes just a short piece of

video footage can make a point clear that would have remained cloudy from a verbal

description only (Preparing and Giving a Presentation, 1999).

As with all educational aids, their content must be appropriate to the subject (Holli &

Calabrese, 1998) and should only aid the instructor in making a point, not replace the

instructor (U. of Kansas, 1999). Videotapes should always be viewed prior to presenting

to ensure content is relevant to the learning situation (Holli & Calabrese, 1998). A check

of the videocassette player to be sure it's in good working order can eliminate frustration

during the presentation (Bocar & Riordan, 1999).

Educational videos are widely available, but they can be expensive (Bocar &

Riordan, 1999) (Holli & Calabrese, 1998). Videotapes can be created for specific

learning experiences, but adults expect high visual quality and likely won't be satisfied

with less (Bocar & Riordan, 1999).

A short and to the point videotape can aid an instructor in clarifying a lesson

(Interpersonal Communications, 1999) and can be very effective at demonstrating action

involved in learning a skill (Bocar & Riordan, 1999). Long films or videos can become

boring and demotivate learners. Instructors must carefully select videos, and any other

educational aids used in the classroom, overuse will cause aids to lose their effectiveness

(Holli & Calabrese, 1998).

Another commonly used educational aid is the *overhead transparency.* Nearly every

classroom has an overhead projector (Bocar & Riordan, 1999). Portable overhead

projectors can be used in classrooms where one isn't available.

Use of this type of aid has its advantages as well as its disadvantages. Transparencies

can be made easily and inexpensively (Bocar & Riordan, 1999). Using 36 point type for

titles, 24 point for subtitles and 18 point for other text ensures the information can be

easily seen. Other helpful tips include using color on the transparency for visual interest

and keeping fonts similar to avoid confusion (U. of Kansas, 1999). Information can be

added to the transparency during class without the instructor turning his or her back to the

group. Real objects can be projected as silhouettes for a dramatic effect. Part of the

information can easily be concealed by covering it with a piece of paper (U. of Kansas,

1999).

On the down side, transparencies can be easily damaged and some judge them to be a

less professional looking aid than other forms (Bocar & Riordan, 1999). Distortions can

occur on some parts of the screen. Following are some other points for preparing and

giving effective presentations using overhead transparencies:

- Create professional looking overhead transparencies with a computer
- Use medium to medium-light backgrounds with bright colors and dark text (Preparing and Giving a Presentation, 1999)
- Ensure the transparencies are legible and easy to read (Leshin, et al., 1992).
- Have a series of transparencies assembled in the order to be used
- Test out projector prior to start of class
- Have a spare projector bulb
- Place projector so glass top is at table level to avoid blocking view of the screen
- Face the audience at all times
- Point out relevant material on the transparency, not on the screen
- Turn the machine off when not in use (Interpersonal Communications, 1999)
- Use the correct markers when adding handwritten information
- Use large enough type or print to ensure all can read the material (U. of Kansas, 1999)

As is true of all educational aids, those mentioned here as well as those not listed, the

overhead transparency should not replace the speaker, only enhance the message

(Interpersonal Communications, 1999).

    The classroom education atmosphere is changing to incorporate new ideas and new

technology. As instructors learn to effectively use new methods and new techniques of

teaching, students are better served and learning is potentially enhanced.

Trends in Classroom Education

Adopting new ways of teaching and learning involves risk of failure (White, 1996),

thus excellent new methods may catch-on slowly. Two innovative teaching/learning

methods that have gained acceptance and increased in use in the last decade or two are

Computer Based Learning (McKinney, 1996) and Problem Based Learning (Woods,

1994). Each will be discussed briefly here.

Computer Based Learning

Computers extend into every facet of daily living. Implementing more computer use

into education can result in benefits such as increased instructor creativity, increased

student interest and learning and greater flexibility of instructional delivery (McKinney,

1996). Widespread access to personal computers makes CD ROM technology, with its

ability to bring animation, color, sound and interactivity to the learner another effective

teaching/learning method used in classrooms and computer labs (Lewis, 1997).

Unlike textbooks, which assume learning proceeds in a linear fashion, computers are

interactive and can withhold, reorganize and search information, then deliver it back

contingent on student response (Siegel & Sousa, 1994). Interactivity may be simple or

complex (Boling, 1994), depending on the subject or student's level within the subject.

Several CD ROMs have been developed for breastfeeding education and are being

used in teaching hospitals. Some of the advantages of the CD ROM are that students can work independently, yet still receive the same information (Bocar & Riordan, 1999). Adults learn better when they feel in control of their learning experience (Keller & Burkman, 1993). Computer based learning can offer flexibility for time and pace of learning, making this method ideal for many adult learning situations. The experience adults gain through computer based learning can enhance their competitiveness in the job market (McKinney, 1996).

Drawbacks to computer based learning include the expense of the equipment that becomes obsolete within 3-6 years, adequately trained faculty and personnel and the creation of a greater division between the techno-rich and the techno-poor. Despite these drawbacks, technology continues to change and people need to keep up with the advances available to them. Computer based learning can teach the subject matter as well as provide valuable computer skills to adults who may have had little exposure to computers previously (McKinney, 1996).

Problem Based Learning

In this nontraditional teaching/learning method the problem comes first, unlike subject

based learning in which a problem is worked after lecture on the subject (White, 1996).

Students work in groups, engage in independent study, and teach and learn from each

other (Griffin, 1990).

After being presented with a problem, members of the group identify related topics they need to know more about, assign themselves those topics, then set about studying

the topics independently. When the group reconvenes, members share with the group

what they learned about the problem. After everyone presents, the group decides the best

way to proceed in solving or correcting the problem and plans are made together (Woods,

1994). The instructor's main role is facilitator of the group and learning process (White,

1996).

Critical thinking skills are developed through problem based learning because unlike

subject based learning that directs students to what they need to know, this method

requires students to decide what they need to learn, then learn and apply the information

(Woods, 1994).

One identified disadvantage of the problem based learning method is that students

may be uncomfortable with it at first, because it is so different from the typical subject

based learning (Woods, 1994). The group's effectiveness is a function of each person's

efforts. If one or more persons in the group is uncooperative or lazy, the group will

suffer (White, 1996). Some people feel the time this method takes is a disadvantage, as

well as that students often report wanting to go more indepth into the problem than time

allows. In other words, it inspires students to become more interested and want to look

further which they can do on their own (Woods, 1994).

Students who feel in control of their learning learn much better (Keller & Burkman,

1993). The self-directed learning stimulated by problem based learning makes it a very

effective classroom teaching/learning method (Griffin, 1990). Another self-directed

learning method is the educational poster display; discussed next.

Poster Education

Posters are becoming an increasingly popular way to present information. Learners

can gain information from poster displays in less time than by other methods (Thurber

and Asselin, 1999) (Arrigoni, 1997). Cost of making and presenting poster displays can

be shared by teaching agencies, conserving valuable resources of time and money.

Learning by poster display is self-directed because learners are responsible for reading

the poster and asking questions if necessary. A potential disadvantage of poster displays

is lack of opportunity to evaluate learning that occurred from poster education (E. Lucas-

Poplawski, personal communication, February, 1998). (M. Prytz, personal

communication, May, 1999)

Ways Poster Education is Used

Educational poster displays are used to present information and communicate ideas

(Steinhart, 1996). Research findings are often presented to colleagues via poster

sessions. The presenter visually highlights the research findings and is available for

discussion (Smith, 1998). Continuing education in the medical field is another area

where poster education is being utilized.

Poster education was useful in giving critical care staff members practice in reading

electrocardiograms (EKGs) at a Pennsylvania hospital. Each month a new EKG was

displayed with four questions to be answered. The four questions were always the same

to promote a systematic method for assessment and interpretation of EKGs. The answers

to the questions were collected and, if needed, corrected as feedback to the staff member.

An outcome of this poster education was consistent improvement in EKG interpretation

skills (Elder, 1994).

An educational fair that featured posters was very popular with management and staff

members at a hospital in the northeastern United States. A task force identified twenty-

five mandatory education topics. The task force members with expertise in the selected

topics identified three behavioral objectives, key points (principles) and questions related

to the content. Posters, two interactive stations, an answer sheet for each poster or station

and an evaluation tool were developed (Thurber & Asselin, 1999).

One evaluation goal set by the task force was that 95% of staff would agree or strongly agree they could state their role in each content area following the poster education. Evaluation summaries revealed that 99% of participants could state their role in the content area following the poster education. In addition to being effective, poster education realized a large cost savings compared with traditional continuing education by classroom instruction. The task force estimated that classroom instruction of each of the twenty-three content areas would take a total of seven and one-half hours per employee. The poster education approach had taken one hour per employee (Thurber and Asselin, 1999).

Poster education was also evaluated according to its ability to reach consumers in a simulated grocery store. One hundred twenty-six subjects, who were the primary food shoppers for their families, participated in this study designed to educate subjects about irradiation of poultry. Subjects were each given $5.00 to purchase poultry from a display case that contained both irradiated and non-irradiated boneless, skinless chicken breasts and thighs. Both the irradiated and non-irradiated breasts were $3.50 per package and both types of thighs were $1.50 per package. Subjects were told to purchase one package of breasts and one package of thighs (Hashim, et al., 1995).

Those subjects who did not purchase two packages of irradiated poultry the first time, were exposed to one of three marketing/educational strategies: 1) a slide presentation, 2) a poster and 3) labels on chicken packages. The slide presentation was seven minutes in length and explained the role of irradiation and the safety of irradiated poultry. The poster displayed the irradiation symbol, a statement, "treated by irradiation" and a statement explaining the benefit of irradiation: "to control salmonella and other

foodborne bacteria." The label on the chicken packages showed the irradiation logo, the statements also found on the poster and the USDA seal (Hashim, et al., 1995).

Following exposure to one of the treatment methods, subjects were again given $5.00 and told to purchase one package of breasts and one package of thighs under the same conditions as the previous purchase. Those who purchased both packages of irradiated chicken in either the first or second testing (n=74) were involved in a home use test, in which subjects were encouraged to cook the chicken in their favorite way or use provided recipes. The chicken was then rated for color, appearance, flavor and acceptability on a nine point hedonic scale (Hashim, et al., 1995).

Effectiveness of the educational strategies was defined as the number of consumers who purchased irradiated chicken compared with the number exposed to a particular marketing/educational strategy. Effectiveness of each of the strategies was calculated by dividing the number of consumers (subjects) who purchased the irradiated poultry after exposure to the marketing/educational strategy by the total number of subjects exposed to that strategy. Results showed that the slide presentation was 58.8% effective for irradiated chicken breasts and 62.5% effective for chicken thighs. The increase in the number of subjects who purchased irradiated chicken was not significant with the poster display strategy. Effectiveness of the poster was 31.6% for breasts and 14.3% for thighs. The label had no effect on consumers' decision to purchase thighs, but was 25% effective for breasts (Hashim, et al., 1995).

Poster Education in WIC

Poster education is also becoming increasingly popular in WIC settings for a variety of reasons:

- poster displays don't require constant attention
- clients are more willing to participate in poster education
- poster displays can be exchanged between counties, making more resources available for less cost and time (M. Prytz, personal communication, May, 1999)
- clients can receive valuable information in a short period of time
- poster displays often have "take with you" handouts and pamphlets reiterating the information in the poster or giving additional information
- poster displays are "do-it-yourself," therefore people who are more interested or have a greater need for the information can spend more time with a particular display, and those with less interest or need can spend less time
- WIC clients are finding poster education, rather than classroom instruction, fits their lifestyle (E. Lucas-Poplawski, personal communication, February, 1998) (M. Prytz, personal communication, May, 1999) (K. Arrigoni, personal communication, October, 1999) (Damron, et al., 1999)

A nutrition education display survey of 21 Sawyer County, Wisconsin WIC clients revealed that 90% preferred poster display over classroom nutrition education. Of the 18 specifying a reason, 100% said "it takes less time." (Arrigoni, 1997). Factors associated with attendance at WIC classes designed to increase fruit and vegetable consumption were studied with 1528 women in Maryland. Women who attended at least one of the three sessions reported conflict with work or school as a problem for them (32%). Among the women who did not attend any of the sessions, 39% reported conflict with work or school as a reason (Damron, et al., 1999).

Ideally in poster education, a knowledgeable person is always available to attend the display to provide further information or answer questions. However, due to financial and time constraints, this is not always possible in the WIC setting. A disadvantage of poster education is the difficulty in determining if participants have really learned anything from it. People may give the display nothing but a cursory glance. Asking clients to fill out a short quiz on the display evaluates the learning which took place

(M. Prytz, personal communication, May, 1999).

Planning and Making Effective Educational Posters

Attention to details when developing posters for education can make the difference

between a display that draws people to it or one that doesn't. The size and color of the

display board itself, as well as the letter type and size, and organization of material on the

poster are all important details (Steinhart, 1996) (Mandoli, 1996). The poster elements

can be made of computerized word or graphic images printed on paper or laser prints

made directly from color slides. Both are easy to mount and inexpensive (Mandoli,

1996).

The color of the display board will narrow choices of colors to be used on the actual

poster display. Red, blue and black are colors that go well with most backgrounds,
except for backgrounds of these colors (Ingram, 1994). Mounting boards add color to the

display easily and effectively. LaserFoil allows color text to be printed, adding visual

interest (Mandoli, 1996).

All lettering should be visible from 5-8 feet from the display, which is a minimum of

18 points (Steinhart, 1996). No more than three typefaces should be used, although

various sizes of type add interest. The typefaces chosen should be those easily read and

should harmonize with one another. Script and Old English lettering is usually hard to

read (Ingram, 1994).

Titles may be in all capitals and should be no more than six words. Text should not be

in all capitals, as this is harder to read and conveys shouting (Steinhart, 1996).

Highlighting may be done with boldface, italics, shadow, larger print, or color (Mandoli,

1996). Each poster display should have one main topic and no more than three subtopics

(Holli & Calabrese, 1998). Brief statements rather than long paragraphs are appropriate

for poster displays. Open space is important for a less cluttered look (Steinhart, 1996).

All text and graphics should be arranged in such a manner that the viewer is lead

through the display (Steinhart, 1996). Viewers read posters as they do books or

newspapers. Mandoli (1996) reports poster viewers will first read the top center, so the

most important information is place there. The information is then read sequentially,

beginning at top left, then top right, next bottom left and finally bottom right. Arranging

information into two vertical columns is highly readable, viewers understand the

sequence in which they should read it. Borders should not be placed around related text

and graphics, this would break the continuity for the reader.

Tabular information is more easily understood in graph form for a poster

presentation. Any photographs used must be clear, easily visible from 5-8 feet and be

pertinent to the material presented (Steinhart, 1996). Placement of the display is crucial

to its effectiveness as a teaching tool. High traffic areas with enough room for people to

stop and read the poster without feeling they are "in the way" are best (M. Prytz, personal

communication, May, 1999) (K. Arrigoni, personal communication, October, 1999).

In order to educate with posters, first attention must be captured. According to

Mandoli (1996), the average poster viewer will decide in 11 seconds whether to read the

poster or move on. The first part they read must convince them that the poster is

interesting. An enthusiastic (but not overly so) attendent at the poster display can also

help people realize reading this display is worth their time.

Chapter 3: Methodology

Introduction

  Planning and carrying out education for adults involves considering many variables.

Factors such as age, income and education level completed contribute to the uniqueness

of a group of people targeted for education (Gross, et al., 1998) (Bentley, et al., 1999)

(Perez-Escamilla, et al., 1998). Adults have special learning needs that differ from

children, instructors must respect these needs in order to accomplish educational goals

(Tight, 1996).

Nutrition education for the public is offered as non-academic, or non-credit education, also known as community education (Tight, 1996). Gaining people's attention to community education can be a challenge, most adults are very busy with families and jobs and want to take the time only for education that truly meets their specific needs (Backes, 1997).

Expectant and new parents are in a transitional time in their lives and are motivated to learn about their new roles as parents (Bocar & Riordan, 1999). Breastfeeding education, a type of nutrition education, is needed because the American culture is neither knowledgeable about nor supportive of breastfeeding, resulting in many women nursing their babies for only a short time.

Developing effective educational materials, including those for breastfeeding education, involves knowing the audience, understanding learning theories, considering learning principles, and providing a clear, simple message. Nutrition education has been a component of WIC since its inception in 1974, and breastfeeding education is mandatory through WIC. In the past, in addition to one-on-one nutrition counseling, group sessions were held on a variety of topics. In recent years, more WIC participants have been employed full time outside the home, and have less time to spend at WIC clinics attending education sessions (E. Lucas-Poplawski, personal communication, February, 1998) (M. Prytz, personal communication, May, 1999) (Arrigoni, 1997). Education by poster display has become increasingly popular with WIC participants because they can view the display while waiting to see the nutritionist or for drafts to be issued, rather than waiting for a specified time for a class (E. Lucas-Poplawski, personal communication, February, 1998) (M. Prytz, personal communication, May, 1999)

(K. Arrigoni, personal communication, October, 1999).

What is not known about this trend, however, is whether participants are learning as

much through poster education as they would through classroom type education. The

purpose of this research was to examine any difference in immediate comprehension

of the content when presented in either poster display or classroom format.

Research Design

A comparison of two groups, a walk-by display group and a lecture-style class group,

each receiving the same education was done. Assignment into groups was not

consistently randomized, with the exception of MHS, therefore the design of the study

was quasi-experiment with equivalent materials (Campbell & Stanley, 1967).

Research Objectives

Three research objectives were identified, as defined below:

Objective 1: To determine if a difference exists in immediate comprehension of

breastfeeding education when presented in either of two formats: poster display or

classroom lecture with overhead transparencies as determined by overall scores of the evaluation instrument.

Objective 2: To determine if a difference found in total score is a function of any one test

question.

Objective 3: To determine if subjects' scores on any of the questions were a function of any demographic traits of the subjects.

Following identification of the research objectives, a pilot study was developed and carried out with the Barron County, Wisconsin WIC project. The pilot study is described in the next section.

Pilot Study

Purposes

The two main purposes of the pilot study were: 1) to test the understandability of the material and 2) to practice the logistics of carrying out the research. In addition to the pilot study, students in the Diet Therapy class (a senior level class in the Dietetics program) at the University of Wisconsin-Stout in Menomonie, Wisconsin reviewed the Demographic/Consent form and the Evaluation Instrument for readability and understandability.

Curriculum Development

Three common reasons women stop breastfeeding early and how to overcome these perceived difficulties were the education topic. The subtopics were returning to work or school, sore nipples and perceived milk insufficiency. An outline was developed from the subtopics by first stating a potential obstacle to breastfeeding, then offering suggestions for overcoming the problem (See Outline of Curricular Content in Appendix A). From the outline, lecture notes were written, then word processed to be used when presenting the classroom format of the research (See Lecture Notes in Appendix A).

The same phrasing was used for the class and the poster display to ensure both groups

were given the same information. Sections of the lecture notes were broken into parts to be made into small posters to be placed on the large poster display for the walk-by display format.

Rationale for Curriculum Content

Curricular content for the pilot study was compiled from information about breastfeeding in a textbook, from journal articles and the researcher's own education and experience as a breastfeeding counselor. The textbook used was *Breastfeeding and Human Lactation* edited by Jan Riordan and Kathleen G. Auerbach (1993). Journals used were *The Journal of the American Dietetic Association, Journal of Human Lactation,* and *Maternal and Child Nursing Journal.* These resources were chosen because of the expertise of the authors, and because the articles are peer reviewed.

The appropriateness of the topic for WIC clients is implied by the statistics that show 46% of babies born to Wisconsin WIC enrolled mothers are breastfed at birth and only 31% of all babies are breastfed by one month of age (Wisconsin WIC, 1997). The subtopics were chosen from the researcher's own experience as a breastfeeding counselor and through a literature review. A study by Brinton, et al., (1995) identified return to work and perceived milk insufficiency as reasons women discontinued breastfeeding. Quarles, et al., (1994) found that of the women who had quit breastfeeding in the first month, 62% reported insufficient milk/fussy baby; engorged, painful breasts and nipple problems as the reasons. McCamman & Page-Goertz (1998) state, "the most common reasons for mothers to seek help with breastfeeding are: concerns about infant weight gain or maternal milk supply, nipple pain, mother's own health and questions about dietary and health practices."

Poster Development

   Computer software, The Print Shop Deluxe (1995) was used to make posters for the

pilot study. Small posters (8 ½" x 11") were made of the text. Headings were made on

1 ½" x 11" strips of paper. The three subtopics in the introduction were each color coded

with the headings for each section. Color photos of breastfeeding women (Motherwear,

1995) were copied on a color copier (used with permission from Motherwear, see

Appendix B). A black and white diagram of proper latch-on technique La Leche League

International (LLLI, 1997a) was also used (with permission from (LLLI), see Appendix

B). Each small poster, photo or diagram had colored paper as an accent behind them, all

posters for each topic being accented with the same color, and color coded with the

heading for that section. The posters were arranged on a tri-fold display board, each

of the three sections being approximately 2' x 3'.

   Each small poster, photo and diagram that was used for the display part of the research

was also made into an overhead transparency for the class method. Lecture notes

corresponded to overheads, thereby ensuring that both groups received the same

educational content.

Consent/Demographic Form Development

   The consent/demographic form (See Appendix C) was used to obtain informed

consent as well as gather demographic data and breastfeeding history/attitude from the

subjects. The consent form included an explanation of the purpose of the research,

indicated that participation was voluntary and confidential, and that filling out the

evaluation instrument implied consent. Also asked on the demographic/consent form

were:

- Age
- Family's yearly income
- Highest level of education completed
- Work outside the home? Full or part time?
- Pregnant now?
- Number of children
- If pregnant, planning to breastfeed?
- Ever breastfed?
- Consider breastfeeding in the future?

The men in the study were instructed to place a large "X" over the question beginning

with "Are you pregnant now?" and through the rest of the sheet to distinguish between

men and women subjects.

Evaluation Instrument Development

    Six evaluation items based on the content of the curriculum were asked of the

participants on an evaluation instrument (See Appendix C). The evaluation items were:

- Two reasons given why women often stop breastfeeding early
- Breastfeeding is now _____ common for working women (more) (less)
- The one most common reason breastfeeding women have sore nipples
- One reason why the baby's whole body needs to face the mother for breastfeeding
- Two ways given that you can tell a breastfed baby is getting enough milk in the early weeks

- Is it normal for breastfed newborns to be hungry every two hours? (yes) (no)

The questions were chosen based on their importance to the overall concept of reasons

why women often stop breastfeeding early. Two questions required two answers,

therefore a total score of eight was possible. At the top of the form, the subjects were

directed to answer the questions based on information given that day.

This instrument was administered after the lecture or poster display reading sessions, a

time when subjects did not have any access to the information that had been presented. A

"p" in the right hand corner of the sheet was used to designate the class participants from

the poster subjects. Subjects were directed to place the evaluation instrument into a large

brown envelope when finished, an envelope was provided for each of the two educational

methods. The envelopes were in possession of the researcher at all times throughout the

day.

Procedure

Recruitment of subjects for the pilot study was the same as for the actual study.

Recruitment is described on pages 83-85 in this chapter. The procedure used

to carry out the pilot study was the same as described in "Data Collection", pages 85-89

in this chapter.

Pilot Study Results

Twenty-one subjects participated in the pilot study, seventeen with the poster display

and four with the classroom format. The materials were found to be useable. No

questions were asked about the demographic/consent form or evaluation instrument and

no comments were made to reveal that anyone had difficulty understanding the content.

Answers to questions did not reveal any confusion on the part of subjects. Practice in

setting up the display and classroom areas, approaching potential subjects at the WIC

clinic, recruiting them and carrying out the study was very valuable for the actual

research. During the pilot study, subjects were much less willing to participate in the

class if it was described to them as "education" or a "class". Response rate was much

better when the researcher called the class "a short presentation."

Final Study Development

The pilot study did not reveal the need for any changes in content of the curriculum or

the instruments for gathering data. A grant was applied for and received through the

Menomonie Community Health Foundation, Inc. for professional development of the

poster display and overhead transparencies for the research. The grant money was

received with the understanding that Dunn County, Wisconsin WIC would own the

posters and transparencies for educational purposes and would share them with the Dunn

County University of Wisconsin-Extension Office. A professional graphics designer,

Ejaz Saifullah, of Turtle Design, Menomonie, Wisconsin was hired. Using the same

curricular content as the pilot study, three large posters, each approximately 2' X 3',

incorporating text, the photographs and diagram were developed. All text and graphics

used in the first section were placed on one large poster, and so on (See Appendix D for

replicas of poster panels). Overhead transparencies for use in the classroom format were

made of sections of the large posters (See Appendix H for samples of overhead

transparencies).

Subjects

Women of childbearing age were targeted, regardless of breastfeeding experience or

intent. Research was conducted at four sites: Dunn County, Wisconsin WIC, Eau Claire

County, Wisconsin WIC, Myrtle Werth Medical Center Childbirth Class and Menomonie

High School Early Headstart School-age Parents. People included in the research at the

two WIC sites were adult attendees of WIC clinics, mostly women, but including

husbands and friends of WIC participants. Subjects of the research conducted at the

childbirth class were participants of the class, including expectant couples, one couple

with a newborn and one expectant mother with her mother. The particpants at the school-

age parents were either teenage mothers or teenage expectant mothers, with the exception

of the group leader, a Headstart employee, who asked to participate. A teenage father

attended the classroom presentation but declined an offer to participate in the research.

Anyone who expressed a desire to participate was allowed to do so.

Recruitment

Recruitment is considered any contact with potential subjects only up to the point of

their consent to participate. From that point, subject contact is considered "data

collection," and is described on pages 85-89 in this chapter.

Dunn County WIC: Flyers announcing the upcoming research were distributed

approximately two months prior to the day research was to be conducted (See

Appendix F, Recruitment Materials). A WIC newsletter, also distributed two months

prior to the research day, contained an article explaining a little about the research and

encouraged participation (See Appendix F). Both the flyers and the newsletter article

announced the times the classes were scheduled to run. Assignment into groups was not

random because potential subjects had been notified of times of display research and

times of class research, and because as WIC clients arrived, the WIC staff encouraged

pregnant women who were planning to breastfeed, to attend the class.

On the day of the research, subjects were recruited while they waited for their WIC

drafts to be printed. The research purpose and procedure were explained to each

prospective subject, then they were asked if they would be willing to participate. There

were set times for the class to run, so the time of day dictated whether subjects would be

in the walk-by display group or the classroom group.

Eau Claire County WIC: The classroom method of the research was planned to take

the place of an already established monthly breastfeeding class taught by WIC dietitians

at Eau Claire Co. WIC. Research was scheduled for the day of the month that class was

normally held. Approximately 80 announcements of the class were mailed to expectant

women who were due to come in to pick up WIC drafts that month (See Appendix F).

Women were encouraged by the WIC staff to make their WIC appointment just before or

just after the class. Assignment into groups was not randomized because potential class

participants were targeted with invitations.

Recruitment of subjects on the day of the research followed the same procedure as at

Dunn Co. WIC for the walk-by display. Subjects for the classroom group made

appointments and indicated their desire to attend the class prior to research day.

Myrtle Werth Medical Center Childbirth Class: The instructor of the childbirth class

was contacted by telephone to determine interest in participating in the research. The

instructor wanted to use the research as the breastfeeding portion of the childbirth class.

Breastfeeding is addressed at the last class of the series, so the research was set for that

date. All attendees of the childbirth class were informed of the research by their

instructor prior to the date.

The childbirth class was divided into walk-by display group and classroom group by

volunteerism, therefore the groups at this site were not randomly assigned. The instructor

announced a break, and asked for three couples to volunteer to view the display during

the break. The rest of the childbirth class members became the classroom education

research participants.

Menomonie High School Early Headstart School-age Parents: An employee of

Headstart is the group leader for the school-age parents. The leader was contacted by

phone to determine interest in the research. The leader was interested and the research

was scheduled for the first meeting of the school-age parents for that school year.

However, all members of the group had been members the previous year(s), and the

leader contacted them all by phone to inform them about the research prior to that day.

Groups were randomly assigned for this site. The demographic/consent forms were

handed to participants as they entered the room. A small "p" was written in the upper

right corner of some of the forms, to designate the classroom presentation. The rest of

the forms had nothing in the upper right corner. Those with the "p" made up the

classroom group, the rest were the walk-by display group.

Data Collection

Data were collected on two instruments, the consent/demographic form and the

evaluation instrument. The instruments are described on pages 79-81. Data collection

differed slightly at each of the four sites due to differences in staff, schedules, and room

set-up, therefore each method at each site will be discussed individually. At each site, the

researcher arrived early in order to have both methods set-up prior to the arrival of any

potential subjects.

Walk-By Display at Dunn Co. WIC: After giving verbal consent to participate,

subjects were escorted to a table where the consent/demographic forms, pencils and a

large brown envelope was placed. A brief explanation of the consent/demographic form

was given and subjects were asked to place the forms into the envelope when finished.

The table used for filling out the consent/demographic forms was placed away from the

walk-by display. One man participated in this method at this site, he was instructed to

leave blank all the questions including and following "Are you pregnant now?"

When finished with the form, subjects were escorted to the walk-by display and told to

take all the time they needed to read it and were also told they could ask questions at any

time about the display. Participants were reminded there would be a short quiz after they

read the display. Most participants took between five and ten minutes to read the display.

When subjects had indicated they were done reading the display (i.e. verbally, or by

turning away from it), they were asked to return to the table they used before and were

handed an evaluation instrument. Subjects were instructed to answer the questions away

from the display, to prevent them returning to the display for answers.

When finished, participants were directed to place the evaluation instrument into the

same large brown envelope used before. All subjects were thanked for participating.

   Lecture-style class at Dunn County WIC: The WIC staff encouraged pregnant women

who were planning to breastfeed to attend the class. An area away from the display was

set up for the class, and class participants were escorted to the class area and were seated

with their backs to the display. Class participants did not view the poster display prior to

the participating in the class or filling out the evaluation instrument. Some class

participants were interested and viewed the display when completely finished with the

research. When the classroom method subjects were seated at the table, they were given

the consent/demographic form in the same way as above. One man participated in this

method at this site and was instructed to not answer the questions including and following

"Are you pregnant now?" After putting the consent/demographic forms into a large

envelope used only for the class, the subjects were told they were welcome to ask

questions at any time during the class, and that there would be a short quiz following the

class.

Using an overhead projector, transparencies and lecture notes, the material was

presented in a lecture style. The content of the lecture was about 15 minutes long, but the

actual length of the presentation varied depending upon the number of questions asked.

Following the class, the same evaluation instrument that was used for the display was

given to the participants of the class. The researcher shut off the overhead projector and

put transparencies and notes away to ensure answers could not be seen by participants.

Subjects placed their completed evaluation instruments into an envelope used only for the

classroom method at that site and were thanked for participating.

Walk-By Display at Eau Claire County WIC: The procedure was the same as the

walk-by display at Dunn County WIC.

Lecture-Style Class at Eau Claire County WIC: The major difference at this site for

the class was in recruitment, discussed on pages 83-84. The class was set-up in a

separate room, so class participants were met at the WIC lobby area and walked down the

hall to the classroom. The procedure for the class was the same as at Dunn County WIC.

   Walk-By Display at Myrtle Werth Childbirth Class: The consent/demographic forms

were distributed with an explanation that the men should place a large "X" over the

bottom beginning with the question, "Are you pregnant now?" When the forms were

filled out, they were placed into a large brown envelope used only for the display method

at this site. The participants were then shown to the display and invited to ask questions

as needed. Participants spent approximately ten minutes reading the display. After

viewing the display, participants were directed to another part of the room, away from the

display, to fill out the evaluation instrument. When finished, the subjects were instructed

to place their instruments into the envelope. All subjects were thanked.

   Lecture-Style Class at Myrtle Werth Childbirth Class: The procedure for the class

was the same as the two WIC sites, discussed above. Participants at this site asked more

questions than participants at other sites, therefore the class lasted approximately 30

minutes. Most of the subjects who had participated in the display chose to attend the

class also, but did not fill out data collection instruments again or assist anyone else in

filling them out.

   Walk-By Display at Menomonie High School Early Headstart School-age Parents:

The consent/demographic forms and the procedure for the research were explained to the

entire group for both methods and they filled out the forms at the table together. Those

participants with nothing in the upper right corner of their form were asked to step into

the next room where the display was set up. The forms were collected into a large

envelope for the display method as display subjects were moving to the other room.

   The display participants were invited to take as long as they needed to read the display

and to ask any questions they might have. They were reminded there would be a short

quiz about the display. After reading the display for about ten minutes, the participants

indicated they were finished and were escorted back to the table where they filled out the

evaluation instrument. The evaluation took approximately five minutes. When finished,

the display participants were instructed to place their instrument into an envelope for the

display method and were thanked.

Lecture-Style Class at Menomonie High School Early Headstart School-age Parents:

While the display participants were reading the display and filling out their evaluation

instruments, the class method participants were meeting with their group leader. When

the display participants were finished and had put away their evaluation instruments, the

consent/demographic forms were collected from the class participants into a large

envelope designated for the class method.

The class was presented using the same procedure as the other sites. Just one question

was asked and answered, so the class lasted about 15 minutes. Participants filled out the

evaluation instrument following the presentation and instruments were collected into a

large envelope. Display participants chose to also attend the class, but did not fill out

data collection instruments again, or assist anyone else in filling them out. All subjects

were thanked for participating.

Data Analysis

Questions from the consent/demographic form and the evaluation instrument were

placed onto questionnaires on the computer software Epi Info 6.04b (Dean, et al., 1994).

Data from the instruments were transferred onto the questionnaires, each instrument from

each subject making one record in Epi Info.

Epi Info was used to analyze data. Groups were compared by independent t-test for

total score. When assumption of homogeneity was not met by Bartlett's test, then non-

parametric statistic Kruskal-Wallis H test was used. Demographic variables and

individual questions were compared using Chi square. The Mantel-Haenszel Chi square

was used when given, otherwise Chi square was used. The p-value used was the one

corresponding with either the Mantel-Haenszel Chi (when used) or Chi square (when

used) except when the Fisher exact p was recommended, then the Fisher exact 2 tail p

was used.

Chapter 4: Results

Introduction

Adult education requires carefully planning to be effective. Many factors are involved in the success of any educational encounter. Variables to be considered include demographics of potential students as well as life experiences and attitudes potential students may have. Adults are not all the same and do not all learn in the same ways, (Tight, 1996) but there are learning prinicples which apply to most adults (Francis, 1990, see pages 46-47, Chapter 2.) Varying teaching methods increases the likelihood of learning. Evaluation of teaching methods allows instructors to understand which methods work best with which groups of people (Keller & Burkman, 1993).

In the Special Supplemental Food Program for Women, Infants and Children (WIC) population, participants now have less time to spend in Nutrition Education classes than participants had in the past due to employment outside the home (Damron, et al., 1999). Walk-by displays are well accepted as Nutrition Education by WIC clients (Arrigoni, 1997). Comparing these two educational methods for immediate comprehension of the material may give an indication of the effectiveness of either method with WIC clients and others. Comparison of demographic factors along with question scores allows for consideration of the affect the factors may have on score.

Subjects

Seventy-three subjects participated in the research. Forty-three participated in the

walk-by display method and thirty in the classroom presentation method. Eight subjects

were male. Research was conducted at four sites: Dunn County, Wisconsin WIC

(DCWIC) Eau Claire County, Wisconsin WIC (ECCWIC), Myrtle Werth Medical Center

Childbirth Class (MWMC), and Menomonie High School Early Headstart School-age

Parents (MHS). Table 1 shows numbers of subjects, gender and method of breastfeeding

education by site.

Table 1 Number and Gender of Subjects by Site of Data Collection and Method of Breastfeeding Education

	SITES			
	DCWIC	ECCWIC	MWMC	MHS
METHOD	n = 26	n = 24	n = 17	n = 6
Poster Method	n = 17 Female = 16 Male = 1	n = 18 Female = 18 Male = 0	n = 6 Female = 3 Male = 3	n = 2 Female = 2 Male = 0
Classroom Presentation Method	n = 9 Female = 8 Male = 1	n = 6 Female = 6 Male = 0	n = 11 Female = 8 Male = 3	n = 4 Female = 4 Male = 0

Comparison of and Combination of WIC Sites

In comparing demographic data for DCWIC and ECCWIC, it was found there was a

significant difference for pregnancy status (Mantel-Haenszel (M-H) Chi = 5.56, df =1, p

= 0.02). Eleven of the 24 (45.8%) subjects at ECCWIC were pregnant at the time of the

research, while four of the 24 (16.7%) female subjects at DCWIC were pregnant. When

comparing the two WIC sites for other demographic factors, no significant differences

were found in the following:

- Age   (M-H Chi = 0.64, df =1, p = 0.42)
- Family income   (M-H Chi = 2.00, df =1, p = 0.16)
- Educational level completed   (M-H Chi = 0.10, df =1, p = 0.75)
- Work outside the home, full- or part-time   (M-H Chi = 0.16, df =1, p = 0.69, and
  M-H Chi = 0.23, df = 1, p = 0.63, respectively)
- Number of children   (Chi = 5.11, df =2, p = 0.08)
- If pregnant, planning to breastfeed   (M-H Chi = 1.60, df =1, Fisher 2 tail p = 0.50)
- Breastfeeding history   (M-H Chi = 0.19, df =1, p = 0.66)
- Consider breastfeeding in the future?   (M-H Chi = 0.04, df = 1, p = 0.84)

   The total score and scores for each question also were not significantly different

between the two WIC sites. The difference in total score was (F = 0.03, df = 1, p = 0.85).
Individually, the statistics for each question were:

- Question 1   (Chi = 3.43, df =1, p = 0.18)
- Question 2   (M-H Chi = 0.27, df = 1, Fisher 2 tail p = 0.70)
- Question 3   (M-H Chi = 1.35, p = 0.24)
- Question 4   (M-H Chi = 1.35, df = 1, p = 0.24)
- Question 5   (Chi = 2.15, p = 0.34)
- Question 6   (no variance, p = 1.0).

   Based on the above reported findings, DCWIC and ECCWIC were combined into one

WIC site for data analysis. Hereafter, the two WIC sites will be combined and referred to

as "WIC".

Demographic Data by Site of Data Collection
and Method of Breastfeeding Education

 To achieve a useable n in each category, categories within the demographic factors

age, income, education completed and number of children were collapsed into fewer

categories for data analysis. A variance in n occurs due to men being asked not to fill

out bottom of the demographic form and non-response of some items.

Age

 Age could not be analyzed across the three sites because there was no variance at the

MHS site. The age categories were collapsed into two: < or = to 30 years and over 30

years. Seventy-four percent of the subjects were 30 years of age or less. Age by method

of breastfeeding education was shown to be significantly different (Mantel-Haenszel (M-

H) Chi = 4.20, df = 1, p = 0.04). Nearly 87% of the class lecture participants were under

30 years of age, whereas 65% of the poster display participants were. This was also true

of the MWMC site, ten of the eleven (91%) class lecture participants were under age 30.

Table 2, page 93, shows age of subjects by site of data collection and method of

breastfeeding education.

 Table 2   Comparison of Age by Site of Data Collection
                  and Method of Breastfeeding Education

AGE	WIC n=50		MWMC n=17		MHS n=6		Overall Statistics
	Poster	Lecture	Poster	Lecture	Poster	Lecture	
< or = to 30 years	24	12	2	10	2	4	M-H Chi = 2.65, df = 1, p = 0.10
> 30 years	11	3	4	1	0	0	

Statistics for Each Site	M-H Chi = 0.67, df = 1, Fisher 2 tail p = 0.51	M-H Chi = 5.83, df =1, Fisher 2 tail p = 0.03	No variance	

Income

   The family's yearly income could not be analyzed by site due to no variance at the

MWMC site. Categories were collapsed into < or = $20,000 per year and > $20,000 per

year. Sixty-two percent of the subjects had yearly family incomes of greater than

$20,000. By method, income was not significantly different (M-H Chi = 3.45, df = 1, p =

0.06). Table 3 compares income by site and method.

Table 3   Comparison of Income by Site of Data Collection
                          and Method of Breastfeeding Education

WIC n = 46   MWMC n = 17   MHS n = 6

INCOME	Poster	Lecture	Poster	Lecture	Poster	Lecture	Overall Statistics
< or = to $ 20,000 per year	18	6	0	0	2	2	M-H Chi = = 0.76, df = 1, p = 0.38
> $ 20,000 per year	14	8	6	11	0	2	
Statistics for Each Site	M-H Chi = 0.68, df = 1, p = 0.41		No variance		M-H Chi = 1.50, df = 1, Fisher 2 tail p = 0.47		

Highest Level of Education Completed

   Highest level of education completed could not be analyzed by site of data collection

because there was a zero value at the MHS site for the poster method of breastfeeding
education. The collapsed categories were High School or less, and any post-secondary

education. Forty-two percent (n=31) of the subjects had a High School education or less,

and 58% (n=42) had any post-secondary education. By method of breastfeeding

education there was no significant difference between the two categories of education

completed (Chi = 0.69, df = 1, p = 0.41). Table 4 compares highest level of education

completed by site of data collection and method of breastfeeding education.

Table 4   Highest Level of Education Completed by Site of Data Collection
                    and Method of Breastfeeding Education

	WIC n = 50		MWMC n = 17		MHS n = 6		Overall
EDUCATION	Poster	Lecture	Poster	Lecture	Poster	Lecture	Statistics
High School or Less	17	5	1	3	2	3	M-H Chi = 0.29, df = 1, p = 0.60
Any post-secondary	18	10	5	8	0	1	
Statistics for Each Site	M-H Chi = 0.97, df = 1, p = 0.32		Chi = 0.24, df = 1, Fisher 2 tail p = 1.0		M-H Chi = 0.50, df = 1, Fisher 2 tail p = 1.0		

Employment Status

By site, data could not be analyzed for this demographic factor because there were

zero values at two sites (MWMC and MHS). (See Table 5, page 95). Seventy-one

percent (n=52) of the subjects were employed outside the home. Of those who did work

outside the home, twice as many worked full-time (67%) than did part-time (33%). By

method of breastfeeding education, there was no significant difference between workers

outside the home and those not employed outside the home (CHI = 1.22, df = 2, p =

0.54). Of the subjects who were workers outside the home, there also was not a

significant difference by method of breastfeeding education (CHI = 3.14, df = 2, p =

0.21). Table 5 stratefies subjects by site of data collection, by method of breastfeeding
education and employment status.

Table 5   Comparison of Employment Status by Site of Data Collection
                    and Method of Breastfeeding Education

EMPLOYED Statistics	WIC n = 50		MWMC n = 17		MHS n = 6		Overall
	Poster	Lecture	Poster	Lecture	Poster	Lecture	
YES	21	11	6	10	2	2	M-H Chi = 0.03, df = 1, p = 0.86
NO	13	4	0	1	0	2	
Statistics by Each Site	M-H Chi = 0.60, df = 1, p = 0.43		M-H Chi = 0.55, df = 1, Fisher 2 tail p = 1.0		M-H Chi = 1.25, df = 1, Fisher 2 tail p = 0.47		

	WIC n = 32		MWMC n = 16		MHS n = 4		
	Poster	Lecture	Poster	Lecture	Poster	Lecture	
Part-Time	7	7	0	0	2	1	M-H Chi = 0.52, df = 1, p = 0.47
Full-Time	13	4	6	10	0	1	
Statistics for Each Site	M-H Chi = 2.27, df =1, Fisher 2 tail p = 0.15		No variance		M-H Chi = 1.0, df =1, Fisher 2 tail p = 1.0		

 The rest of the demographic factors apply to female subjects only.

Pregnancy Status

   By site of data collection, data could not be analyzed for pregnancy status because

there were zero values at two sites (MWMC and MHS). By method of breastfeeding

education there was a significant difference by pregnancy status (M-H Chi = 7.06, df =1,

p = <0.01). More class lecture method subjects (15 of 26, 58%) were pregnant than

subjects who viewed the poster display (9 of 39, 23%). Table 6, page 96, shows a

comparison between sites of data collection and methods of breastfeeding education for

pregnancy status.

Table 6   Comparison of Pregnancy Status By Site of Data Collection
                    and Method of Breastfeeding Education

PREGNANT?	WIC n = 48		MWMC n =11		MHS n = 6		Overall Statitistics
	Poster	Lecture	Poster	Lecture	Poster	Lecture	
Yes	6	9	3	4	0	2	M-H Chi = 3.81, df = 1, p = 0.051
No	28	5	0	4	2	2	
Statistics for Each Site	Chi = 10.04, df = 1, Fisher 2 tail p = <0.01		Chi = 2.36, df = 1, Fisher 2 tail p = 0.24		Chi = 1.50, df = 1, Fisher 2 tail p = 0.47		

Number of Children

   By site, the number of children could not be analyzed due to the presence of zero

values at two sites (WIC and MHS). By method of breastfeeding education the

number of children was significantly different (Chi = 7.67, df =2, p = 0.02). Only the

WIC site had subjects who were not pregnant and did not have any children.
Table 7

shows only the number of children for the WIC site by each method.

Table 7   Number of Children by Method of Breastfeeding Education for the
WIC Site

# CHILDREN	WIC Site n= 47	
	Poster	Lecture
Not pregnant, no Children	3	0
Pregnant with First Child	3	7

1 or more children	27	7	
Statistics for WIC Site	Chi = 10.38, df = 2, p = <0.01		

The MWMC site and the MHS site were divided into "no children" (this includes

pregnant for the first time) and "children". Table 8, page 97, shows the MWMC and

MHS sites for number of children by site of data collection and method of breastfeeding

education.

Table 8   Number of Children By Site for MWMC and MHS
                     and By Method of Breastfeeding Education

# CHILDREN	MWMC n= 11		MHS n = 6		Overall Statistic
	Poster	Lecture	Poster	Lecture	
No Children	2	4	0	1	M-H Chi = 2.39, df = 1, p = 0.12
1 or More Children	1	4	2	3	
Statistics for Each Site	Chi = 0.24, df = 1, Fisher 2 tail p = 1.0		Chi = 0.60, df = 1, Fisher 2 tail p = 1.0		

If pregnant, planning to breastfeed?

Twenty-four of the total number of subjects were pregnant at the time the research

was conducted. At the WIC site, two subjects said "not sure" to the question "If

pregnant, plan to breastfeed?" so WIC data were analyzed separately, shown in Table 9.

Table 10, page 98, shows results for the MWMC and MHS sites. By site of data

collection, data could not be analyzed because of zero values at all sites. Only 16.6% of

pregnant subjects said they were not planning to breastfeed. By method of breastfeeding

education no significant difference occurred (M-H Chi = 2.24, df =1, Fisher 2 tail p =

0.26).

Table 9   Comparison of Pregnant Subjects at WIC Site Planning to
         Breastfeed (BF) or Not by Method of Breastfeeding Education

	WIC Site n = 15	
PLAN TO BF?	Poster	Lecture
Yes	3	7
No	3	0
Not Sure	0	2
Statistic for WIC Site	Chi = 4.55, df = 2, Fisher 2 tail p = 0.07	

Table 10   Comparison of Pregnant Subjects Planning to Breastfeed (BF) or Not
by Site   of Data Collection and Method of Breastfeeding Education for
MWMC and MHS Sites

	MWMC n = 7		MHS n = 2		Overall Statistics
PLAN TO BF?	Poster	Lecture	Poster	Lecture	
Yes	3	3	0	2	M-H Chi = 0.54, df = 1, p = 0.46
No	0	1	0	0	
Statistics for Each Site	Chi = 0.88, df = 1, Fisher 2 tail p = 1.0		No variance		

Breastfeeding History

By site, data could not be analyzed due to the presence of a zero values at MHS. Of

the female subjects, 44% had breastfed before. By method of breastfeeding education,

differences between those subjects who had or had not breastfed previously were not

significant (M-H Chi = 1.81, df =1, p = 0.18). Table 11 compares breastfeeding history

by site of data collection and method of breastfeeding education.

Table 11   Breastfeeding (BF) History By Site of Data Collection and Method of Breastfeeding Education

BF HISTORY Statistics	WIC n = 47 Poster	Lecture	MWMC n = 10 Poster	Lecture	MHS n = 6 Poster	Lecture	Overall Statistics
Yes	19	4	1	2	0	2	M-H Chi = 0.95, df = 1, p = 0.33
No	14	10	2	5	2	2	
Statistics for Each Site	Chi = 3.31, df = 1, p = 0.07		Chi = 0.02, df = 1, Fisher 2 tail p = 1.0		Chi = 1.50, df = 1, Fisher 2 tail p = 0.47		

Consider breastfeeding in the future?

Subjects who answered "no need" or "no more babies" were removed from the data

for this factor, because those answers do not reveal whether or not they would breastfeed

in the future if they did have the opportunity. Some did not answer this question at all.

By site, data could not be analyzed because zero values occurred at MWMC and MHS.

Sixty-one percent of the women said they would consider breastfeeding in the future. By

method of breastfeeding education, no significant difference was found (M-H Chi = 0.55,

df = 1, p = 0.46). Table 12 compares subjects who stated they would or would not

consider breastfeeding in the future by site of data collection and method of breastfeeding

education.

Table 12   Comparison of Subjects Who Would or Would Not Consider Breastfeeding   (BF) in the Future by Site of Data Collection and Method of Breastfeeding Education

	WIC n = 41		MWMC n = 9		MHS n = 5		Overall
CONSIDER BF?	Poster	Lecture	Poster	Lecture	Poster	Lecture	Statistics
Yes	18	11	3	5	1	1	M-H Chi =
No	11	1	0	1	0	3	0.51 df = 1
Statistics for Each Site	Chi = 3.59, df = 1, Fisher 2 tail p = 0.07		Chi = 0.56, df = 1, Fisher 2 tail p = 1.0		Chi = 1.88, df = 1, Fisher 2 tail p = 0.40		p = 0.47

Test Score Results

Total Scores by Site of Data Collection and Method of Breastfeeding Education

By site of data collection, no significant difference in total scores occurred (H = 5.4,

df = 2, p = 0.07). However, by method of breastfeeding education a significant

difference in total scores was found (H = 8.2, df = 1, p = <0.01). Table 13, page 100,

gives the numbers of subjects with total scores by site of data collection and Table 14,

page 100, gives the total scores by method of breastfeeding education. Table 15, page

100, combines sites of data collection and methods of breastfeeding education and gives

the mean, standard deviation, range and the overall statistics.

Table 13   Total Score By Site of Data Collection

Total Score		WIC n = 50	MWMC n = 17	MHS n = 6
Four	(4)	3	0	0
Five	(5)	5	0	0
Six	(6)	9	0	2
Seven	(7)	15	8	3
Eight	(8)	18	9	1

Table 14   Total Score by Method of Breastfeeding Education

Overall Score		Poster n = 43	Lecture n = 30	Statistics
Four	(4)	3	0	Kruskal-Wallis
Five	(5)	5	0	H = 8.2 df =
Six	(6)	8	3	1 p =
				<0.01

| Seven (7) | 15 | 11 | |
| Eight (8) | 12 | 16 | |

Table 15   Mean, SD, Range, Statistics and Total Scores by Site of Data
                Collection and Method of Breastfeeding Education

WIC n = 50   MWMC n = 17   MHS n = 6

OVERALL

Poster Lecture   Poster Lecture Poster Lecture Poster

Lecture
MEASUREMENT n = 35   n = 15   n = 6   n = 11   n = 2   n = 4 n = 43
n = 30

	Poster	Lecture	Poster	Lecture	Poster	Lecture	Poster	Lecture
Mean Score Possible: 8	6.52	7.47	7.33	7.64	7.0	6.8	6.65	7.43
Std Deviation	1.27	0.74	0.52	0.51	1.41	0.50	1.21	0.68
Range	4-8	6-8	7-8	7-8	6-8	6-8	4-8	6-8
Statistics for Each Site	H = 6.7 df = 1, p = <0.01		t= 1.17, df = 1, p = 0.26		t= 0.35, df = 1, p = 0.75		H = 8.2, df = 1, p = <0.01	

Individual Question Scores By Site of Data Collection
and Method of Breastfeeding Education

   Questions 1 and 5 required two answers each, questions 2-4 and 6 required one answer

each. See Appendix F for copy of evaluation instrument. Scoring for each question was

by 0-1 or 0-2 answers correct, depending upon number of answers required.

   Question 1: ("List two reasons given why women often stop breastfeeding
early.")
By site of data collection, no significant difference occurred in the scores of
Question 1

(Chi = 4.72, df = 4, p = 0.32). By method of breastfeeding education, there was
also no

significant difference in scores for Question 1 (Chi = 3.94, df = 2, p = 0.14). The WIC

site was the only site where any incorrect answers were given to this question, so data

were analyzed separately, and are shown separately in Table 16. Scores of Question 1 by

method at the MWMC and MHS sites are shown in Table 17 below.

Table 16   Question 1 Scores at the WIC Site by Method of Breastfeeding Education

# CORRECT out of 2 points	WIC n = 50 Poster n = 35	Lecture n = 15
Zero (0)	2	0
One (1)	6	1
Two (2)	27	14
Mean	1.71	1.93
SD	0.57	0.26
Range	0-2	1-2
Statistics for Site	Chi = 2.02, df = 2, p = 0.36	

Table 17   Question 1 Scores at the MWMC and MHS Sites
               By Method of Breastfeeding Education

# CORRECT out of 2 points	MWMC n=17 Poster n=35	Lecture n=15	MHS n=6 Poster n=2	Lecture n=4
Two (2)	6	11	2	4
Mean	2.0	2.0	2.0	2.0
SD	0.0	2.0	0.0	0.0
Range	2	2	2	2
Statistics for Each Site	No Variance		No Variance	

Question 2: ("Breastfeeding is now (more, less) common for working women"). By site

of data collection, the Question 2 scores were not significantly different (Chi = 0.89, df

= 2, p = 0.64). By method of breastfeeding education, Question 2 scores also were not

significantly different (Chi = 3.81, p = 0.05). Table 18, page 102, shows Question 2

scores by site of data collection and method of breastfeeding education.

Table 18   Question 2 Scores by Site of Data Collection
                          and Method of Breastfeeding Education

# CORRECT out of 1 point	WIC n = 50		MWMC n = 17		MHS n = 6		Overall Statistics	
	Poster n = 35	Lecture n = 15	Poster n = 6	Lecture n = 11	Poster n = 2	Lecture n = 4		
Zero (0)	7	0	0	1	1	0	Chi = 2.10 p = 0.15	
One (1)	28	15	6	10	1	4		
Mean	0.80	1.0	1.0	0.91	0.5	1.0		
SD	0.41	0.0	0.0	0.30	0.71	0.0		
Range	0-1	1	1	0-1	0-1	1		
Statistics for Each Site	Chi = 3.49, df = 1, Fisher 2 tail p = 0.09		Chi = 0.58, df = 1, Fisher 2 tail p = 1.0		Chi = 2.4, df = 1, Fisher 2 tail p = 0.33			

Question 3: ("What is the one most common reason breastfeeding women have sore

nipples?") By site of data collection, the scores for Question 3 were not significantly

different (Chi = 0.39 df = 2, p = 0.82). By method of breastfeeding education, scores for

Question 3 also were not significantly different (Chi =0.31, df = 1, p = 0.58). Table 19

shows scores for Question 3 by site of data collection and method of breastfeeding

education.

Table 19   Question 3 Scores by Site of Data Collection
                              and Method of Breastfeeding Education

WIC n = 50   MWMC n = 17   MHS n = 6

# CORRECT out of 1 point	Poster n = 35	Lecture n = 15	Poster n = 6	Lecture n = 11	Poster n = 2	Lecture n = 4	Overall Statistics	
Zero (0)	8	3	3	1	0	2	Chi = 0.18 p = 0.67	
One (1)	27	12	3	10	2	2		
Mean SD Range	0.77 0.43 0-1	0.80 0.41 0-1	0.50 0.59 0-1	0.91 0.30 0-1	1.0 0.0 1	0.50 0.58 0-1		
Statistics for Each Site	Chi = 0.05, df = 1, Fisher 2 tail p = 1.0		Chi = 3.61, df = 1, Fisher 2 tail p = 0.10		Chi = 1.50, df = 1, Fisher 2 tail p = 0.47			

Question 4: ("Give one reason why the baby's whole body needs to face the mother

for breastfeeding.") By site of data collection, no significant difference in scores for

Question 4 occurred (Chi = 2.26, df = 2, p = 0.32). However, by method of breastfeeding

education, a significant difference did occur (Chi = 4.32, df = 1, p = 0.04). Table 20

displays Question 4 scores by site of data collection and method of breastfeeding

education.

Table 20   Question 4 Scores by Site of Data Collection
                              and Method of Breastfeeding Education

WIC n = 50   MWMC n = 17   MHS n = 6

# CORRECT	Poster	Lecture	Poster	Lecture	Poster	Lecture	Overall

out of 1 point	n = 35	n = 15	n = 6	n = 11	n = 2	n = 4	Statistics
Zero (0)	10	1	0	1	1	0	Chi = 1.95, df
One (1)	25	14	6	10	1	4	= 1,
Mean	0.72	0.93	1.0	0.91	0.50	1.1	p = 0.16
SD	0.46	0.26	0.0	0.30	0.71	0.0	
Range	0-1	0-1	1	0-1	0-1	1	
Statistics for Each Site	Chi = 2.94, df = 1, Fisher 2 tail p = 0.14		Chi = 0.58, df = 1, Fisher 2 tail p = 1.0		Chi = 2.40, df = 1, Fisher 2 tail p = 0.33		

Question 5: ("List two ways given that you can tell a breastfed baby is getting enough

milk in the early weeks.") By site of data collection there was not a significant difference

in scores for Question 5 (Chi = 6.52, df = 4, p = 0.16). By method of breastfeeding

education a significant difference also did not occur for Question 5 (Chi = 3.80, df = 1, p

= 0.16).   Table 21 displays Question 5 scores by site of data collection and method of

breastfeeding education.

Table 21   Question 5 Scores by Site of Data Collection
                              and Method of Breastfeeding Education

WIC n = 50   MWMC n = 17   MHS n = 6

# CORRECT out of 2 points	Poster n = 35	Lecture n = 15	Poster n = 6	Lecture n = 11	Poster n = 2	Lecture n = 4	Overall Statistics
Zero (0)	5	0	0	0	0	0	Chi = 0.05 p = 0.82
One (1)	7	3	1	1	0	3	
Two (2)	23	12	5	10	2	1	
Mean SD Range	1.51 0.74 0-2	1.8 0.42 1-2	1.83 0.41 1-2	1.91 0.30 1-2	2.0 0.0 2	1.25 0.50 1-2	
Statistics For Each Site	Chi = 2.45, df = 2, p = 0.29		Chi = 0.21, df = 2, Fisher 2 tail P = 1.0		Chi = 3.0, df = 2, Fisher 2 tail P = 0.40		

Question 6: ("Is it normal for breastfed newborns to be hungry every two hours?")

All subjects at all sites and by both methods were correct in answering this question,

therefore, no variance occurred in the statistics for Question 6.

Chapter 5: Discussion

Introduction

The planning and presenting of education to adults requires careful consideration of

the target audience, including demographic factors such as age, income and education

level achieved (Holli & Calabrese, 1998) (Shafer, et al., 1996). The

demographic/consent form used to gather information about the subjects was to

determine homogeneity of the groups as well as try to explain the results obtained from

the evaluation instrument. The evaluation instrument included six questions (with a total

of eight points) based on the curricular content of the educational material. Immediate

comprehension only, and not true learning, was measured by scores of the evaluation

instrument. Scores were analyzed by site to determine if differences may have existed

due to demographic and program factors and by method to determine if differences

occurred because of method of instruction. Tables combining the two sets of data help to

clearly display the results.

Limitations of this study included: subjects' prior knowledge about breastfeeding was

not determined, small sample sizes, unequal numbers in the two educational methods, no

randomization of subjects except at smallest site (n=6), pregnant women were invited to

attend the class lecture method of breastfeeding education, and data from the evaluation

instrument could not be correlated to individuals' demographic data, only to that of the

site. Demographic factors will be discussed as well as total scores and results of

individual questions. Conclusions that may be drawn from this research will be followed

by recommendations of the researcher.

Demographic Factors of Subjects

Subject groups involved in this study were found, overall, to be homogeneous.

Differences were significant only in age when compared by method of breastfeeding

education, poster display or class lecture, in whether subjects were pregnant or not and

number of children. This strengthens the possibility that differences in scores were

actually due to the instructional methods and not other factors. Each of the demographic

factors will be discussed individually, exploring possible reasons for results and

comparing results to the literature review.

Age of most subjects was 30 years or less. Fifty-one of 73 (74%) were between 20

and 30 years of age. This was expected because women of childbearing years were

targeted for this research. The literature on breastfeeding education agrees with this

finding. Quarles, et al., (1994) found average ages of two groups of women who

received breastfeeding instruction to be 28.8 and 25.1 years. Reifsnider & Eckhart

(1997) report an average age of 22.9 for their experimental group and 20.8 years for their

control group when they offered breastfeeding education.

When comparing age by method of education, nearly 87% of the subjects who

participated in the class were under 30 years of age while 65% of the poster group were

under age 30. When comparing age by site of research, the difference in age was

significant only for the Myrtle Werth Medical Center (MWMC) childbirth class (see

Table 2, page 93). On average, the subjects at this site were older than the other two

sites. Nearly one-third of the MWMC subjects (five of 17) were over 30 years of age.

All subjects at Menomonie High School Early Headstart School-age Parents (MHS)

group were under 30. This is understandable since five of the six subjects were high

school students.

Comparison of *income* did not reveal a significant difference between groups. No

variance occurred at MWMC, all subjects had yearly family incomes of greater than

$20,000 per year. An explanation may be the higher education levels at this site as well

as nearly all MWMC subjects at this site were employed full-time.

No significant difference in *highest education level* was found when comparing

subjects who received breastfeeding education by poster display with those receiving it

by class lecture. Most subjects (58%) had at least some post-secondary education. Fifty-

six percent of the WIC subjects had had post-secondary education of any type or

duration. This differs from Perez-Escamilla, et al., (1998) who found, that among WIC

subjects in their study, only 6.9% had any schooling beyond high school. However, the

results found by Sciacca, et al., (1995) differed with Perez-Escamilla, et al.: out of 55

WIC enrolled subjects, 28 (50.9%) had more than a high school education.

The MWMC site had the highest percentage of subjects who had had post-secondary

education (76.5%). At MHS, as expected, most had less than a high school education

because they were still in high school at the time of the research. The two cities where this research was done (Menomonie and Eau Claire, Wisconsin) both have technical colleges and universities. This may explain, in part, why a rather high percentage of subjects had had post-secondary education.

Most subjects (71%) were *employed outside the home,* and of those, two-thirds worked full-time. These findings concur with Damron, et al., (1999) who found that more WIC enrolled women are working now than in the past and this fact appears to be contributing to the rise in popularity of nutrition education by poster display (Arrigoni, 1997). Classes are perceived to take longer, and WIC participants are finding they have less time to spend at WIC due to work conflicts (Damron, 1999). Sixteen of the seventeen subjects at MWMC worked full time. At MHS, four of the six subjects worked outside the home. As expected of high school students, three of the four worked part-time.

Beginning with the question *"Are you pregnant now?"* only female subjects answered. A significant difference existed for this demographic factor, by method of breastfeeding instruction (Chi = 7.06, df = 1, p = <0.01). At each site, there were more pregnant subjects who attended the class than participated in the poster display format of the research (see Table 6, page 95). This finding could be explained by the recruitment method at both WIC sites. The WIC staff encouraged pregnant women to attend the classes. At Dunn County WIC the day of the research, WIC staff verbally encouraged pregnant women to attend the class, whereas the WIC staff mentioned the poster less often to either pregnant or non-pregnant participants.

At Eau Claire County WIC, invitations to attend the class were mailed only to

pregnant women and the class ran in place of the regularly scheduled monthly

breastfeeding class. Higher scores in the class participants could have been due to

interest level in the curriculum. Pregnant subjects are likely more interested in learning

about breastfeeding than non-pregnant subjects (Bocar & Riordan, 1999). A bias could

have been introduced into the study in this way.

Unlike many of the studies on breastfeeding education that have only pregnant

subjects (Kistin, et al, 1990) (Sciacca, et al., 1995) this study targeted women of

childbearing years, regardless of whether they were pregnant at the time of the
study or

not. Breastfeeding education is appropriate for people of all ages (American
Academy of

Pediatric's (AAP) Work Group on Breastfeeding, 1997) but especially for women
of

childbearing years because what they learn may be used if they become pregnant
in the

future or they may pass information on to friends and relatives who are pregnant.

A significant difference (Chi = 10.38, df = 2, p = <0.01) existed in the *number of*

children at the WIC site when method of breastfeeding education was compared. The

number of subjects who viewed the poster display (n=27) and had one or more children

was nearly four times that of the class participants (n=7) who had one or more children.

One explanation for this could be the encouragement the WIC staff gave to the pregnant

women to attend the class. If those women were pregnant for the first time, more women

who already have children would be left to view the poster. Another possible explanation

for the imbalance in the numbers of the poster display participants versus the class

participants at WIC is that more than twice the number of subjects (n=35) viewed the

poster as attended the class (n=15).

In the study by Gross, et al., (1998) 70.8% of the women had one or more children and

were involved in breastfeeding education. Even women who have breastfed before can

gain more knowledge and confidence about breastfeeding through education. At the

MWMC site, 54.5% of the subjects had no children (includes pregnant for the first time).

This is likely due to the population, women who are pregnant for the first time attending

a childbirth class.

By method of breastfeeding education there was no significant difference between

pregnant subjects who were or were not *planning to breastfeed.* Seventy-five percent of

pregnant subjects at all sites in this study said they were planning to breastfeed. Two

(8.3%) were not sure. The high percentage of pregnant subjects planning to breastfeed at

the MWMC site (85.7%) and at the MHS site (100%) increased this percentage overall.

At the WIC site, 66.7% of pregnant subjects stated they planned to breastfeed. This is

still high compared to the 1997 Wisconsin WIC report "Breastfeeding Incidence &

Duration by County" that shows a breastfeeding incidence of 55% of babies born to WIC

enrolled women in Dunn County and 60% in Eau Claire County. Both of these counties

were higher than the state average of 46% breastfeeding incidence. Subjects may have

answered "yes" to this question because they felt it was expected of them.

Forty-four percent of the female subjects in this study had ever *breastfed previously*.

Included in those who had not ever breastfed were first time pregnant women who had

stated an intention to breastfeed. Breastfeeding history was not significantly different

when subjects were compared by method of breastfeeding education. Breastfeeding

experience was also considered by some of the studies in the review of literature. In the

study by Gross, et al., (1998) just 20% of the subjects who received breastfeeding

education had breastfed previously. Having breastfed before increases the likelihood that

a pregnant woman will breastfeed again (Reifsnider & Eckhart, 1997). Breastfeeding

education is as appropriate for those who have breastfed previously as it is for those who

have not. Every breastfeeding experience is different and more knowledge can possibly

help eliminate potential problems (Bocar & Riordan, 1999).

Women in this study were also asked if they would *consider breastfeeding in the*

future. The purpose for asking this question was to learn subjects' attitudes towards

breastfeeding. Previous breastfeeding experience doesn't really reflect how a woman

feels about breastfeeding. If she indicates that she would consider breastfeeding in the

future, that indicates she values the experience and feels it is worthwhile. A truer

indication of breastfeeding attitudes of women who have already breastfed could have

been gained by asking only those who had breastfed previously if they would consider

breastfeeding in the future.

Not everyone answered this question and some indicated they were not planning to

have more children, making it a moot point. Fifty-five subjects answered this question

and 39 of them (70.9%) said they would consider breastfeeding in the future. By method

of breastfeeding education there was no significant difference between subjects who

would consider breastfeeding in the future and those who would not.

**Total Scores Compared by Site of Data Collection
and Method of Breastfeeding Education**

The total scores ranged 4-8 out of a possible 8 points. By method of breastfeeding

education, ranges of scores were 4-8 for the poster and 6-8 for the class. Subjects who

received breastfeeding education by poster method had mean scores of 6.65 and those

who attended the class had mean scores of 7.43. The difference was significant (H = 8.2,

df = 1, p = < 0.01) between scores for the poster method and scores for the class method

overall. However, while the difference was statistically significant, it was small, leading

to the question of the difference in a practical sense. Overall, most subjects of either

educational method achieved all possible points on individual questions. This indicates

the useability of these particular educational materials for the population, specifically and

the effectiveness of poster education in general. In the poster format of the research,

more subjects had 7 total points than 8 (15 and 12, respectively). More subjects involved

in the class had 8 points than 7 (16 and 11 respectively).

    An explanation for higher scores in the class method may be that people tend to learn
more when more senses are involved (Keller & Burkman, 1993) (Holli & Callabrese,

1998) (Leshin, et al., 1992). The poster method involved sight (reading).
Subjects were

invited to ask questions, but few did. The class method involved sight (overhead

transparencies) and hearing (lecture). Many more people asked questions in the

classroom method, possibly because the researcher was speaking to them, encouraging

conversation.

Scores of Individual Questions on Evaluation Instrument

Only on Question 4 ("Give one reason why the baby's whole body needs to face the

mother for breastfeeding") was there a significant difference (Chi = 4.32, df = 1, p =

0.04) found when comparing the subject groups by method of breastfeeding education.

This question corresponded to information given with a diagram of proper latch-on of the

baby to the breast. One possibility for this finding is that hearing the information spoken

at the same time as viewing the diagram and reading the information enhances immediate

comprehension, whereas reading the information and viewing the diagram without the

information being spoken does not. Certain types of education, such as hands-on

techniques, may be better comprehended when exposure is by class lecture than by

poster education. If this is true, perhaps WIC clients are not best served by only poster

education, but careful consideration of the content of the education to ascertain whether

class lecture or poster display is most feasible.

Other interesting findings included groups of subjects, either by site of research or by

method of breastfeeding education, who all answered certain questions correctly. For

example, on Question 1, ("List two reasons given why women often stop breastfeeding

early") all subjects, of either method of breastfeeding education, at MWMC and MHS

were correct for both answers to the question. The answers to this question were

contained within the introduction to the breastfeeding education and were the subtopics,

so were repeated individually at each section. (Three total reasons were given, but

subjects were asked to give two of the three). Explanations for this finding could be the

possible higher interest level in breastfeeding information among those of the MWMC

site, they were all members of a childbirth class. Five of the six subjects at the MHS site

were currently high school students, familiar with taking quizzes and exams, which could

explain all being correct for both answers to Question 1.

All subjects who received breastfeeding education by class lecture at the WIC and

MHS sites and by poster method at the MWMC site answered Question 2

("Breastfeeding is now (more, less) common for working women") correctly. An

explanation for this could be the format, choose one of two given answers rather than

write an answer.

Question 6 ("Is it normal for breastfed newborns to be hungry every two hours?(yes,

no")) was unusual in that all 73 participants in the research answered this question

correctly. Again, this question was one that required choosing a given answer rather than

having to write an answer, which may have contributed to the findings. However, having

100% of all subjects answer the question correctly also further indicates the effectiveness

of the educational materials and the evaluation instrument.

The trend was for higher scores by the class lecture method of breastfeeding education

than the poster display, but two times the MHS site went against this trend. Question 3

("What is the one most common reason breastfeeding women have sore nipples?") was

answered correctly by 100% of the poster display subjects at MHS and 50% of the class

participants. Question 5 ("List two ways given that you can tell a breastfed baby is

getting enough milk in the early weeks") also was answered correctly by 100% of the

poster display participants at MHS, but just 25% of the class participants. These results

may have little meaning due to the very small total number of subjects at this site (6).

Conclusions

Higher total scores for subjects in the classroom method (7.4 out of 8) versus the

poster method (6.7 out of 8) suggest that immediate comprehension may be greater for

persons receiving breastfeeding education by a class rather than a poster display.

However, results also indicate that immediate comprehension was good for subjects

receiving breastfeeding education by poster display. The three objectives of this research

were met: one method (class) showed a significant difference in score than the other

(poster), results indicated the higher overall score was a function of the scores for one

question on the evaluation instrument (Question 4), and possible influences of

demographic factors upon results have been analyzed and noted. The demographic

factors age, pregnancy status and number of children were significantly different between

the two breastfeeding education methods.

Participants comprehended the important topics from this breastfeeding education,

therefore use of this material through WIC is likely to be effective in teaching

breastfeeding. Both the poster display and the overhead transparencies used for the

class lecture method can be used with confidence in their effectiveness.

Subjects'demographic data and their scores could not be correlated, due to the data

collection method. Demographics of subjects by the site of research and their scores

were compared.

Recommendations For Future Research

No research ever gives the definitive answer to any question, further research is

always needed. Some of the things discovered throughout the course of this research

project that could have been improved upon were:

- Linking the demographic/consent form of each subject to that subject's evaluation form, would make correlation of demographics with score possible
- Having larger numbers of subjects at all sites would be helpful in showing trends
- Having equal numbers of subjects in each method might help clarify results by making data more consistent
- Recruiting class participants at WIC was difficult, offering incentives to participate may have helped to convince more WIC participants to attend the class
- Asking only those subjects with a breastfeeding history if they would consider breastfeeding in the future may give a clearer picture of breastfeeding attitude

   True learning was not measured by this research, only immediate comprehension, a

first step in learning. Retesting the same subjects three months after the initial education

would help to show how much true learning occurred by method. Subjects' prior

knowledge about the educational material was not known, so it is difficult to determine

what they gained from the education and what they already knew. Administering a pre-

test would help discover subjects' prior knowledge and what they comprehended as new

information.

References

Ajzen, I. & Fishbein, M. (1980) <u>Understanding Attitudes and Predicting Social Behavior</u>. Engelwood Cliffs, NJ: Prentice Hall.

Albernaz, E., Guigliani, E.R.J., & Victora, C.G. (1998) Supporting breastfeeding: A successful experience. <u>Journal of Human Lactation, 14,</u> 283-285.

American Academy of Pediatrics Work Group on Breastfeeding (1997) Breastfeeding and the use of human milk. <u>Pediatrics, 100,</u> 1035-1039.

Arrigoni, K.O. (1997) Sawyer County, Wisconsin, WIC Project. (1997) Nutrition Education Display Survey.

Auerbach, K.G. (1999) Maternal Employment and Breastfeeding. In J. Riordan and K.G. Auerbach (Eds.), <u>Breastfeeding and Human Lactation,</u> Second Edition (pp. 577-600). Sudbury, MA: Jones & Bartlett Publishers.

Backes, C.E. (1997) The do's and don'ts of working with adult learners. <u>Adult Learning, 8,</u> 29-31.

Bagwell, J.E., Kendrick, O.W., Stitt, K.R., Leeper, J.D. (1993) Knowledge and attitudes toward breastfeeding: Differences among dietitians, nurses, and physicians working with WIC clients. <u>Journal of the American Dietetic Association, 93,</u> 801-804.

Barr, R. & Tagg, J. (1995) Comparing education paradigms. [On-line], 1-3. Available: http://www.cai.pcc.edu/tlc/assess/tch-lrn.htm

Beaudry, M., Dufour, R., Marcoux, S. (1995) Relation between infant feeding and infections during the first six months of life. <u>Journal of Pediatrics, 126,</u> 191-197.

Belenky, M.F., Clinchy, B.M., Goldberger, N.R., & Tarule, J.M. (1986) Women's Ways of Knowing: The Development of Self, Voice, and Mind. New York: Basic Books, Inc.

Bentley, M.E., Caulfield, L.E., Gross, S.M., Bronner, Y., Jensen, J., Kessler, L.A., & Paige, D.M. (1999) Sources of influence on intention to breastfeed among African-American women at entry to WIC. Journal of Human Lactation, 15, 27-34.

Bocar, D.L. & Riordan, J. (1999) Breastfeeding education. In J. Riordan & K.G. Auerbach (Eds.), Breastfeeding and Human Lactation, Second Edition (pp. 241-277). Sudbury, MA: Jones and Bartlett Publishers.

Boling, E. (1994) Meeting the challenge of the electronic page: extending instructional design skills. Educational Technology, 34, 7, 13-18.

Brewer, J.L., Blake, A.J., Rankin, S.A. & Douglass, L.W. (1999) Theory of reasoned action predicts milk consumption in women. Journal of the American Dietetic Association, 99, 39-44.

Brinton, L.A., Potischman, N.A., Swanson, C.A., Schoenberg, J.B., Coates, R.J., Gammon, M.D., Malone, K.E., Stanford, J.L., and Daling, J.R. (1995) Breastfeeding and breast cancer risk. Cancer Causes and Control, 6, 199-208.

Bronner, Y.L., & Auerbach, K.G. (1999) Maternal Nutrition During Lactation. In J. Riordan & K.G. Auerbach (Eds.), Breastfeeding and Human Lactation, Second Edition (pp. 515-539). Sudbury, MA: Jones and Barlett Publishers.

Brown, K.M. (1999) Theory of reasoned action/theory of planned behavior. [On-line], 1-7. Available: http://www.med.usf.edu/~kmbrown/TRA_TPB.htm.

Campbell, D.T. & Stanley, J.C. (1967) Experimental and Quasi-experimental Designs for Research. Chicago: Rand McNally & Company.

Carfagna, R. (1995) A Developmental Core Curriculum for Adult Women Learners. In K.Taylor & C. Marienau (Eds.), Learning Environments for Women's Adult Development: Bridges Toward Change (pp. 43-61). San Francisco: Jossey-Bass Publishers.

Coates, M. (1999) Tides in breastfeeding practice. In J. Riordan & K.G. Auerbach (Eds.), Breastfeeding and Human Lactation, Second Edition (pp. 3-28). Sudbury, MA: Jones and Bartlett Publishers.

Cohen, R., Mrtek, M.B., & Mrtek, R.G. (1995) Comparison of maternal absenteeism and infant illness rates among breastfeeding and formula-feeding women in two corporations. American Journal of Health Promotion, 10, 148-153.

Collins, R.C. (1993) Head Start: Steps toward a two-generation program strategy. Young Children, 48, 25-33 and 72-73.

Contento, I., Balch, G.I., Bronner, Y.L., Lytle, L.A., Maloney, S.K., White, S.L., & Swadener, S.S., Randell, J.S. (1995a) Executive summary. Journal of Nutrition Education, 27, 279-283.

Contento, I., Balch, G.I., Bronner, Y.L., Lytle, L.A., Maloney, S.K., White, S.L., & Swadener, S.S., Randell, J.S. (1995b) Nutrition education for adults. Journal of Nutrition Education, 27, 312-328.

Contento, I., Balch, G.I., Bronner, Y.L., Lytle, L.A., Maloney, S.K., White, S.L., & Swadener, S.S., Randell, J.S. (1995c) Nutrition education for preschool children. Journal of Nutrition Education, 27, 291-297.

Contento, I., Balch, G.I., Bronner, Y.L., Lytle, L.A., Maloney, S.K., White, S.L., & Swadener, S.S., Randell, J.S. (1995d) Nutrition education for school-aged children. Journal of Nutrition Education, 27, 298-311.

Contento, I., Balch, G.I., Bronner, Y.L., Lytle, L.A., Maloney, S.K., White, S.L., & Swadener, S.S., Randell, J.S. (1995e) Theoretical frameworks or models for nutrition education. Journal of Nutrition Education, 27, 287-290.

Cummings, R.G., & Klineberg, R.J. (1993) Breastfeeding and other reproductive factors and the risk of hip fractures in elderly women. International Journal of Epidemiology, 22, 684-691.

Curtis, D.D. (1997) Student-Centred Learning. [On-line], 1-4. Available: http://www.roma.unisa.edu.au/staff/davidcurtis/paper/sclteach.htm

Damron, D., Langenberg, P., Anliker, J., Ballestros, M., Feldman, R. & Havas, S. (1999) Factors associated with attendance in a voluntary nutrition education program. American Journal of Health Promotion, 13, 268-275.

Dean, A.G., Dean, J.A., Coulombier, D., Brendel, K.A., Smith, D.C., Burton, A.H., Dicker, R.C., Sullivan, K., Fagan, R.F., Arner, T.G. (1994) Epi Info, Version 6: A Word-Processing, Database, and Statistics Program for Public Health on IBM-compatible Microcomputers. Atlanta, GA: Centers for Disease Control and Prevention.

Demick, J. & Nazzaro, N.A. (1994) Adult Learning Environments: Perspectives from Environmental Psychology. In J.D. Sinott, (Ed.), Interdisciplinary Handbook of Adult Lifespan Learning (pp. 137-158). Westport, CT: Greenwood Press.

Dewey, K.G., Heinig, M.J., & Nommsen-Rivers, L.A. (1995) Differences in morbidity between breastfed and formula-fed infants. Journal of Pediatrics, 126, 696-702.

Dodgson, J.E., & Duckett, L. (1997) Breastfeeding in the workplace. American Association of Occupational Health Nursing Journal, 45, 290-298.

Donald, J. (1997) Improving The Environment for Learning: Academic Leaders Talk About What Works. San Francisco: Jossey-Bass Publishers.

Duncan, B., Ey, J., Holberg, C.J., Wright, A.L., Martinez, F.D., & Taussig, L.M. (1993) Exclusive breastfeeding for at least 4 months protects against otitis media. Pediatrics, 91, 867-871.

Elder, A.N. (1994) Meeting educational needs with a poster display. Journal of Nursing Staff Development, 10, 224-225.

Farrah, S.J. (1998) Lecture. In M.W. Galbraith (Ed.), Adult Learning Methods: A Guide for Effective Instruction, Second Edition (pp. 143-168). Malabor, FL: Krieger Publishing Co.

Francis, .J.B. (1990) Many Lives to Lead: The Adult Professional's Quest. In Rossman, M.H., & Rossman, M.E. (Eds.), Applying Adult Development Strategies.
(pp. 37-48). San Francisco: Jossey Bass Publishers.

Fredrickson, D.D. (1993) Breastfeeding research priorities, opportunities, and study criteria: what we learn from the smoking trail. Journal of Human Lactation, 9, 147-150.

Freed, G.L. (1993) Breastfeeding: Time to teach what we preach. Journal of the American Medical Association, 269, 243-245.

Freed, G.L., & Fraley, J.K. (1993) Effect of expectant mother's feeding plan on prediction of father's attitudes regarding breastfeeding. American Journal of Perinatalogy, 10, 300-303.

Freed, G.L., Jones, T.M., & Schanler, R.J. (1992) Prenatal determination of demographic and attitudinal factors regarding feeding practice in an indigent population. American Journal of Perinatology, 9, 420-424.

Gajdusek, L., & Gillotte, H. (1995) Teaching to the Development Needs of Non-mainstream Learners. In K. Taylor & C. Marienau (Eds.), Learning Environments for Women's Adult Development: Bridges Toward Change (pp. 45-52). San Francisco: Jossey-Bass Publishers.

Gray, R.H, Campbell, O.M., Apelo, R., Eslami, S.S., Zacur, H., Ramos, R.M., Gehret, J.C., & Labbok M.H. (1990) Risk of ovulation during lactation. The Lancet, 335, 25-29.

Griffin, G.C. (1990) Medical school without lectures! Postgraduate Medicine, 87, 15-20.

Gross, S.M., Caulfield, L.E., Bentley, M.E., Bronner, Y., Kessler, L., Jensen, J., & Paige, D.M. (1998) Counseling and motivational videotapes increase duration of breastfeeding in African-American WIC participants who initiate breastfeeding. Journal of the American Dietetic Association, 98, 143-148.

Hashim, I.B., Resurreccion, A.V.A., & Mcwatters, K.H. (1995) Consumer acceptance of irradiated poultry. Poultry Science, 74, 1287-1294.

Holli, B.B., & Calabrese, R.J. (1998) Communication and Education Skills for Dietetics Professionals, Third Edition. Baltimore: Williams & Wilkins.

Houle, C.O. (1992) The Literature of Adult Education: A Bibliographic Essay. San Francisco: Jossey-Bass Publishers.

Howie, P.W., Forsyth, J.S., Ogston, S.A., Clark, A. & Florey, C.V. (1990) Protective effect of breastfeeding against infection. British Medical Journal, 300, 11-16.

Humenick, S.S., Hill, P.D., & Spiegelberg, P.L. (1998) Breastfeeding and health professional encouragement. Journal of Human Lactation, 14, 305-310.

Ingram, M. (1994) Legibility standards. Class hand-out. University of Wisconsin-Stout.

Institute of Medicine (1992) Nutrition During Pregnancy and Lactation. Washington, D.C.: National Academy Press.

Interpersonal Communications (accessed 8/20/99) Presentation skills. [On-line], 14-34. Available: http://www.mcb.co.uk/services/coursewa/bmgt/bm8.htm

Izatt, S.D. (1997) Breastfeeding counseling by health care providers. Journal of Human Lactation, 13, 109-113.

Keller, J. & Burkman, E. (1993). Motivation Principles. In M. Fleming & Levie, W.H. (Eds.), Instructional Message Design, Second Edition (pp. 3-53). Englewood Cliffs, NJ: Educational Technology Publications.

Kennedy, K.I., & Kotelchuck, M. (1998) Policy considerations for the introduction and promotion of the Lactational Ammenorhea Method: advantages and disadvantages of LAM. Journal of Human Lactation, 14, 191-203.

Kennedy, K.I., & Visness, C.M. (1992) Contraceptive efficacy of lactational amenorrhoea. The Lancet, 339, 227-230.

Kessler, L.A., Gielen, A.C., Diener-West, M. & Paige, D.M. (1995) The effect of a woman's significant other on her breastfeeding decision. Journal of Human Lactation, 11, 103-109.

Kistin, N., Benton, D., Rao, S., & Sullivan, M. (1990) Breastfeeding rates among black urban low-income women: effect of prenatal education. Pediatrics, 86, 741-746.

Kloeblen, A.S. (1999) Folate knowledge, intake from fortified grain products, and periconceptional supplementation patterns of a sample of low-income pregnant women according to the health belief model. Journal of the American Dietetic Association, 99, 33-38.

Krebs, N.F., & Murtaugh, M.A. (1997) Position of the American Dietetic Association: Promotion of breastfeeding. Journal of the American Dietetic Association, 97, 662-666.

La Leche League, International (1997a) Diagram from Tear-off sheet "Are your nipples sore?" Publication number 473.

La Leche League, International (1997b) The Womanly Art of Breastfeeding, Schaumburg, IL: La Leche League International.

Langdon, G. (1931) Home Guidance for Young Children: A Parents' Handbook. New York: The John Day Company.

Leshin, C.B., Pollock, J., Reigeluth, C.M. (1992) Instructional Design Strategies and Tactics. Englewood Cliffs, NJ: Educational Technology Publications.

Lewis, C.S. (1997) Interactive multimedia brings new possibilities to adult learning. Adult Learning, 8, 23-25.

Long, H.B. (1998) Understanding Adult Learners In M.W. Galbraith (Ed.), Adult Learning Methods: A Guide for Effective Instructors, Second Edition (pp. 21-35). Malabor, FL: Krieger Publishing Co.

Lopez-Alarcan, M., Villalpando, S., & Fajardo, A. (1997) Breastfeeding lowers the frequency and duration of acute respiratory infection and diarrhea in infants under six months of age. Journal of Nutrition, 127, 436-443.

Lyons, L. (1997) Breastfeeding benefits cross socioeconomic lines. Journal of the American Dietetic Association, 97, 385.

Maciuika, L.V., Basseches, M. & Lipson, A. (1994) Exploring Adult Learning from Learner's Perspectives. In J.D. Sinott (Ed.), Interdisciplinary Handbook of Adult Lifespan Learning (pp. 249-269). Westport, CT: Greenwood Press.

McBride & McBride (1990) The changing roles of fathers: some implications for educators. Journal of Home Economics, 82, 6-10.

McCamman, S. & Page-Goertz, S. (1998) Breastfeeding success: you can make the difference. Building Block For Life: A Publication of the American Dietetic Association's Pediatric Nutrition Practice Group, 22, (1), 1-10.

McKinney, K. (1996) Technology in community colleges. [On-line], 1-3. Available: http://www.ed.gov.databases/ERIC_Digests/ed399992.html

Mandoli, D.F. (1996) How to make a great poster. [On-line], 1-5. Available: http://www.aspp.org/education/poster.htm

Marienau, C. (1995) In Their Own Voices: Women Learning About Their Own Development. In K. Taylor & C. Marienau (Eds.), Learning Environments for Women's Adult Development: Bridges Toward Change (pp. 37-44). San Francisco: Jossey-Bass Publishers.

Mohrbacher, N. & Stock, J. (1997) The Breastfeeding Answer Book, Revised Edition. Schaumburg, IL: La Leche League International.

Montgomery, D.L., & Splett, P.L. (1997) Economic benefit of breastfeeding infants enrolled in WIC. Journal of the American Dietetic Association, 97, 379-385.

Motherwear (1995) Color photographs from Complete Catalog for the Nursing Mother.

Newcomb, P.A., Storer, B.E., Longnecker, M.P., Mittendorf, R., Greenberg, E.R., Clapp, R.W., Burke, K.P., Willett, W.C., & MacMahon, B. (1994) Lactation and a reduced risk of premenopausal breast cancer. The New England Journal of Medicine, 330, 81-87.

Nitzke, S. & Phillips, B. (1996) Breastfeeding education for audiences with limited reading skills. Handout from session at seminar "Breastfeeding: From the Hospital and Beyond", presented in Wausau, Wisconsin.

Office of Analysis and Eval (1997) USDA WIC infant feeding practices study summary of findings. Food and Nutrition Service.

Perez-Escamilla, R., Himmelgreen, D., Segura-Millan, S., Gonzalez, A., Ferris, A.M., Damio, G., & Bermudez-Vega, A. (1998) Prenatal and perinatal factors associated with breastfeeding initiation among inner-city Puerto Rican women. Journal of the American Dietetic Association, 98, 657-663.

Popkin, B.M., Adair, L., Akin J.S., Black, R. Briscoe, J. & Flieger, W. (1990) Breastfeeding and diarrheal morbidity. Pediatrics, 86, 874-882.

Preparing and Giving a Presentation. (Accessed 8/20/1999) [On-line], 1-5. Available: http://psych.st-andrews.ac.uk:8080/resources/present.html

The Print Shop Deluxe (1995) Computer software. Novato, CA: Broderbund.

Quarles, A., Williams, P.D., Hoyle, D.A., Brimeyer, M., & Williams, A.R. (1994) Mother's intention, age, education and the duration and management of breastfeeding. Maternal-Child Nursing Journal, 22, 102-108.

Raisler, J., Alexander, C., & O'Campo, P. (1999) Breastfeeding and infant illness: A dose-response relationship? American Journal of Public Health, 89, 25-30.

Reifsnider, E. & Eckhart, D. (1997) Prenatal breastfeeding education: its effect on breastfeeding among WIC participants. Journal of Human Lactation, 13, 121-125.

Riordan, J. & Auerbach, K.G. (1999) Work Strategies and the Lactation Consultant. In J. Riordan & K. G. Auerbach (Eds.), Breastfeeding and Human Lactation, Second Edition (709-746). Sudbury, MA: Jones and Bartlett Publishers.

Riordan, J. (1999a). The Cultural Context of Breastfeeding. In J. Riordan & K.G. Auerbach (Eds.), Breastfeeding and Human Lactation, Second Edition (pp.29-52). Sudbury, MA: Jones and Bartlett Publishers.

Riordan, J. (1999b) The Ill Breastfeeding Child. In J. Riordan & K.G.Auerbach (Eds.), Breastfeeding and Human Lactation, Second Edition (pp. 637-673). Sudbury, MA: Jones and Bartlett Publishers.

Romieu, I., Hernandez-Avila, M., Eduardo, L., Lopez, L., & Romero-Jaime, R. (1996) Breast cancer and lactation hisory in Mexican women. American Journal of Epidemiology, 143, 543-552.

Rosenblatt, K.A., & Thomas, D.B. (1993) WHO collaborative study of neoplasia and steroid contraceptives. International Journal of Epidemiology, 22, 192-197.

Rourke, J. (1997) Dads can help their babies by supporting breastfeeding. Texas WIC News, June, 2.

Royak-Schaler, R. & Alt, P.M. (1994) The Process of Health Behavior Change: Individual Factors and Planning Models. In J.D. Sinott, (Ed.), Interdisciplinary Handbook of Adult Lifespan Learning (pp. 325-336). Westport, CT: Greenwood Press.

Ryan, A.S. (1997) The resurgence of breastfeeding in the United States. Pediatrics, 99, e12. URL: http://www.pediatrics.org/cgi/content/full/99/4/e12

Sanacore, J. (1995) What to look for in whole language content area classrooms. Journal of Adolescent & Adult Literacy, 39, 240-243.

Schy, D.S., Maglaya, C.F., Mendelson, S.G., Race, K.E.H., & Ludwig-Beymer, P. (1996) The effects of in-hospital lactation education on breastfeeding practice. Journal of Human Lactation, 12, 117-122.

Sciacca, J.P., Phipps, B.L., Dube, D.A., & Ratliff, M.I. (1995) Influences on breastfeeding by lower-income women: an incentive-based, partner-supported educational program. Journal of the American Dietetic Association, 95, 323-328.

Shafer, L., Gillespie, A., Wilkins, J.L., & Borra, S.T. (1996) Position of the American Dietetic Association: Nutrition education for the public. Journal of the American Dietetic Association, 96, 1183-1187.

Sharma, M., & Petosa, R. (1997) Impact of expectant fathers in breastfeeding decisions. Journal of the American Dietetic Association, 97, 1311-1313.

Shepherd, S.K., Sims, L.S., Davis, C.A., Shaw, A. & Cronin, F.J. (1994) Panel versus novice focus groups: Reactions to content and design features of print materials. Journal of Nutrition Education, 26, 10-14.

Siegel, M.A. & Sousa, G.A. (1994) Inventing the virtual textbook: Changing the nature of schooling. <u>Educational Technology</u>, 34, 7, 49-53.

Smith, S. (1998) Introduction to poster session. [On-line], 1-2. Available: http://www.prenataled.com.poster1.htm

Steinhart, F. (1996) Guidelines for poster preparation and presentation. [On-line], 1. Available: http://www.npcts.edu/acad/soc/acca/acca_posters.html

Taylor, K. & Marienau, C. (1995) Bridging Practice and Theory for Women's Adult Development. In K. Taylor & C. Marienau (Eds.), <u>Learning Environments for Women's Adult Development: Bridges Toward Change</u> (pp. 5-12). San Francisco: Jossey-Bass Publishers.

Tennant, M. (1991) The Psychology of Adult Teaching and Learning. In P. Jarvis & J.M. Peters (Eds.), <u>Adult Education: Evolution and Achievements in a Developing Field of Study</u> (pp. 191-216). San Francisco: Jossey-Bass Publishers.

Thurber, R.F., & Asselin, M.E. (1999) An educational fair and poster approach to organization-wide mandatory education. <u>The Journal of Continuing Education in Nursing, 30,</u> 25-29.

Tight, M. (1996) <u>Key Concepts in Adult Education and Training.</u> London: Routledge.

Tuttle, C.R. & Dewey, K.G. (1996) Potential cost savings for Medi-Cal, AFDC, Food Stamps, and WIC programs associated with breastfeeding among low-income Hmong women in California. <u>Journal of the American Dietetic Association, 96,</u> 885-890.

Underwood, M.K. & Wald, R.L. (1995) Conference-style learning: A method for fostering critical thinking with heart. <u>Teaching of Psychology, 22,</u>17-21.

University of Kansas Communications Studies Department. (accessed 8/20/99) Using visual aids. [On-line], 1-3. Available: http://www.ukans.edu/cwis/units/coms2/vpa/vpa7.htm

University of Wisconsin Extension (UWEX) (1996) Tips for preparing written materials that are easy to read. Cooperative Extension.

Vella, J. (1995) Promoting Effective Learning and Change with Adults. San Francisco: Jossey-Bass Publishers.

Visness, C.M., & Kennedy, K.I. (1997) Maternal employment and breastfeeding: findings from the 1988 National Maternal and Infant Health Survey. American Journal of Public Health, 87, 945-950.

Wagschal, K. (1997) I became clueless teaching the genXers: Redefining the profile of the adult learner. Adult Learning, 8, 21-25.

Wambach, K.A. (1998) Maternal fatigue in breastfeeding primiparae during the first nine weeks postpartum. Journal of Human Lactation, 14, 219-229.

White, H.B. (1996) Dan tries problem-based learning: A case study. [On-line], 1-10. Available: http://www.udel.edu/pbl/dancase3.html

Whitney, E.N., Cataldo, C.B., & Rolfes, S.R. (1994) Understanding Normal and Clinical Nutrition, Fourth Edition. Minneapolis/St. Paul: West Publishing Company.

Wiemann, C.M., DuBois, J.C., & Berenson, A.B. (1998) Racial/ethnic differences in the decision to breastfeed among adolescent mothers. Pediatrics, 101, 1068.

Winn, W. (1993) Perception Principles. In M. Fleming & W.H. Levie (Eds.), Instructional Message Design (pp. 55-126). Englewood Cliffs, NJ: Educational Technology Publications.

Wisconsin WIC (1995) Nutrition Services Planning and Evaluation: Goals of Nutrition Services. Operations Manual (pp. 3.1-1-3.1-4). Madison, WI: Wisconsin WIC Program.

Wisconsin WIC (1997) Breastfeeding incidence and duration by county. Report I.D. WIC 820, 1-2.

Wisconsin WIC (1998) Breastfeeding Promotion Tips. Breastfeeding Orientation Manual (pp. 3-7). Madison, WI: Wisconsin WIC Program.

Wlodkowski, R.J. (1998) Strategies to Enhance Adult Motivation to Learn. In M.W. Galbraith, (Ed.) Adult Learning Methods: A Guide for Effective Instruction, Second Edition. (pp. 91-111). Malabor, FL: Kreiger Publishing Co.

Woods, D.R. (1994) <u>Problem-based Learning: How to Gain the Most from PBL.</u> Waterdown, ON: Donald R. Woods.

Wright, A., Rice, S., & Wells, S. (1996) Changing hospital practices to increase the duration of breastfeeding. <u>Pediatrics, 97,</u> 669-675.

Appendix A Curriculum Development

- Outline of Curricular Content
- Lecture Notes

Appendix A1 Outline of Curricular Content

I. Introduction
  A. Three reasons given why women often quit breastfeeding early
    1. Returning to work or school
    2. Sore nipples
    3. Afraid the baby is not getting enough milk
  B. There are ways to overcome these difficulties

II. Breastfeeding and Working
  A. Pumping
  B. Nursing at breaktime
  C. Nursing at home—formula at sitter's
  D. Combination of above

III. Prevention of Sore Nipples
  A. Position baby properly
  B. Carefully break suction
  C. Don't use substances that dry out skin
  D. Empty breasts regularly

IV. Proper latch-on
  A. Mother gets comfortable
  B. Hold baby facing mother
  C. Tickle baby's bottom lip with nipple to get baby to open wide
  D. When baby opens mouth, pull baby on quickly to the breast, past the nipple

V. Baby's whole body needs to face the mother because:
  A. Difficult for baby to swallow with head turned
  B. Proper latch-on easier

VI. Afraid the baby is not getting enough milk
  A. To be sure baby is getting enough milk
    1. More than two bowel movements per day
    2. At least six wet diapers after the first week
    3. Weight gain of at least 4-8 ounces per week
  B. Importance of nursing at least 8-12 times per day to establish milk supply
    1. Human milk easily digested—hungry every two hours, night feedings
    2. Cluster nursing
  C. Breasts adjust and aren't so full after 10-14 days
  D. Growth spurts

VII. Conclusion
  A. Pay attention to baby's needs and own mothering instincts

Appendix A2 Lecture Notes

Women often quit breastfeeding early for one of the following reasons:

1) They are returning to work or school
2) They have sore nipples
3) They are afraid the baby is not getting enough milk

However, there are ways to overcome these situations. Today we will discuss how to manage breastfeeding to eliminate these common concerns.

First we will discuss breastfeeding and working. Breastfeeding is now more common for working women. They do this by:

* Pumping milk one day for the baby to have at the sitter's the next day
* Being able to nurse the baby at breaktime
* Nursing when they're not at work and having the sitter give formula.
* A combination of the above depending upon the baby's age

The second reason given why women often quit breastfeeding early was sore nipples. Sore nipples should not occur during breastfeeding and can be avoided by:

* Positioning the baby properly
* Carefully breaking suction after nursing by inserting little finger at the side of the baby's mouth rather than just pulling the baby off
* Not using products on the nipples that will dry out the skin, such as alcohol or harsh soap
* Emptying the breasts regularly

The one most common reason women have sore nipples is improper latch on of the baby to the breast.

To position the baby properly:

* Mother gets comfortable
* Hold baby with his/her whole body facing the mother
* Tickle baby's bottom lip with the nipple, this makes the baby open mouth
* When baby opens up wide, quickly pull baby onto the breast, making sure his/her mouth is past the nipple

The baby's whole body needs to face the mother because:

* it is difficult for the baby to swallow with his/her head turned
* proper latch on is easier for the baby in this position

Lecture Notes continued

The third reason given why women often quit breastfeeding early is because they are afraid the baby is not getting enough milk.

You can be sure your breastfed newborn is getting enough milk if he or she has:

* More than two bowel movements per day (they will be soft)
* At least six wet diapers per day after the first week (the guideline for the first week is one wet diaper per day for each day of life)
* Weight gain of at least 4 to 8 ounces per week

Newborns need to nurse at least 8 to 12 times per day to gain weight well and to establish a good milk supply.

Human milk is easily digested, therefore it is perfectly normal for breastfed newborns to be hungry every 2 hours. They may go longer between feedings at night, but at least one night feeding is important for baby's growth.

Some babies "cluster nurse", that is, they have a certain time of day when they need to nurse more often than at other times.

At about 10 days to two weeks, the breasts adjust to how much milk the baby needs, and they begin to feel softer. This does not mean there is no more milk there!

Babies have growth spurts at about age 2-3 weeks, 2-3 months and around six months, and they are hungrier than usual. This does not mean there isn't enough milk, they just need to nurse more often, and the breasts will produce more milk for the baby's needs.

Paying attention to your baby's needs and listening to your own mothering instincts will help get breastfeeding off to a good start.

<u>   Appendix B Permission to use Copyrighted Materials</u>

- Motherwear, color photographs
- La Leche League International, diagram

Appendix B1 Motherwear, color photographs

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Motherwear
The Complete Catalog for the Nursing Mother

Marsha Stoeberl
University of Wisconsin

December 1, 1999

Dear Marsha,

I am writing to give you permission to use the photo from Motherwear's 1995 advertisement in your graduate school research paper. Please credit the photo to Motherwear's *Complete Catalog for the Nursing Mother*.

Good luck in your studies.

Best Regards,

Susan Rose
Director of Public Relations & Outreach
Motherwear
Phone: 413-586-1978 Ext. 108
Fax: 413-586-2712

320 Riverside Drive - Northampton, MA 01060
(800) 950-2900 - (413)586-1978 - fax (413) 586-2712 - www.Motherwear.com

Appendix B2 La Leche League, International, diagram

November 24, 1999

Judy Torgus
LLLI, Inc.
1400 Meacham Road
P.O. Box 4079
Schaumburg, IL 60168-4079

Dear Judy,

I have been a La Leche League leader for 18 years, an IBCLC for 2 years and am currently a graduate student in Nutrition. For my research project for my Master's Degree I am developing and testing breastfeeding education materials to be used at WIC. I spoke with someone at LLLI this morning about permission to use the series of three drawings showing positioning and latch-on which is on the tear-off sheet "Are Your Nipples Sore?" Since you were out of the office, she said I should write to you for permission to do this. Credit would be given to LLLI.

The curricular content of the breastfeeding education materials is why some women stop breastfeeding early and addresses working or going to school and breastfeeding, preventing sore nipples (which is why I need a good diagram of proper latch-on) and perceived milk insufficiency. You may call me if you wish, number below, or use the enclosed SASE to send me a note. My paper is due the end of December, so a quick reply would be very much appreciated. Thank-you, Judy!

Sincerely,

Marsha JC Stoeberl

Marsha JC Stoeberl

Of course you may have permission. Sounds like a good project!

Judy Torgus

Appendix C Instruments

- Consent/Demographic Form
- Evaluation Instrument

The purpose of this study is to find out if one of the two methods of breastfeeding instruction, the walk-by display or the short class, will result in better remembering the material.

Taking part in this research is voluntary. Your consent is given by filling out the evaluation form after the presentation. Your name will not be used in any way, please do not put your name on this form or the evaluation form.

Below please provide information that will help us know who our groups are, it will not be used to identify any individuals. Please remember we are testing the value of the educational materials, not you.

Your age: Your Family's yearly income:

under 20 _____   Below $10,000   _____
20-25   _____ $10,000-15,000   _____
25-30   _____ $15,000-20,000   _____
30-35   _____ $20,000-25,000   _____
35-40   _____ $25,000-30,000   _____
over 40 _____   Over $30,000   _____

Please check highest level   Do you currently
of education completed: work outside the
                                          home?

10th Grade   _____   yes_____ no_____
High School Diploma   _____
Attended Vocational School   _____   If yes, do you
Completed Vocational Training _____   work:
Attended college   _____
Associate's Degree   _____   Full time_____
Bachelor's Degree or higher   _____   Part time_____

Are you pregnant now?
yes _____   no _____

Number of children:

Pregnant, no other children _____   1 child _____

2 _____   3 _____   4 _____   5 _____   6 or more _____

If pregnant, are you planning to breastfeed? yes _____ no _____

Have you ever breastfed a baby? yes _____   no _____

Would you ever consider breastfeeding a baby in the future?

              yes _____   no _____

Based on information given today, please answer the following questions.

1. List two reasons given why women often stop breastfeeding early.

2. Breastfeeding is now _____ common for working women.

        more_____ less_____

3. What is the one most common reason breastfeeding women have sore nipples?

4. Give one reason why the baby's whole body needs to face the mother for breastfeeding.

5. List two ways given that you can tell a breastfed baby is getting enough milk in the early weeks.

6. Is it normal for breastfed newborns to be hungry every two hours?

        yes_____   no_____

Appendix D Replicas of Poster Panels

- First Poster Panel
- Second Poster Panel
- Third Poster Panel

Appendix D1 First Poster Panel

*W*OMEN OFTEN *stop* BREASTFEEDING EARLY

for one of the following reasons

a *They are returning to work or school*
b *They have sore nipples*
c *They are afraid the baby is not getting enough milk*

However, there are ways to overcome these situations.

RETURNING TO WORK OR SCHOOL

Breastfeeding is now more common for working women. They do this by

- Pumping milk one day for the baby to have at the sitter's the next day
- Being able to nurse the baby at break-time
- Nursing when not at work and having the sitter give formula
- A combination of the above depending upon the baby's age

Motherwear, The Complete Catalog for the Nursing Mother, 1

SORE NIPPLES

Sore nipples should not occur during breastfeeding and can be avoided by

positioning the baby properly

- Carefully breaking suction after nursing by inserting your little finger at the side of baby's mouth
- Not using products on the nipples that will dry out the skin, such as alcohol or harsh soap
- Emptying the breasts regularly

The one most important reason women have sore nipples is improper latch on of the baby to the breast.

to position the baby properly

- Mother gets comfortable
- Hold baby with his/her whole body facing the mother
- Tickle baby's bottom lip with the nipple, this makes the baby open mouth
- When baby opens up wide, quickly pull the baby onto the breast, making sure his/her mouth is past the nipple

Motherwear, The Complete Catalog
for the Nursing Mother, 1995

La Leche League, Int'l, 1997

The baby's whole body needs to face the mother because

- It is difficult for the baby to swallow with his/her head turned
- Proper latch on is easier for the baby in this position

Appendix D3 Third Poster Panel

AFRAID THE BABY IS NOT GETTING ENOUGH MILK

You can be sure your breastfed newborn is getting enough milk if he or she has

- More than two bowel movements per day (they will be soft)
- At least six wet diapers per day after the first week (the guideline for the first week is one wet diaper per day for each day of life)
- Weight gain of at least 4 to 8 ounces per week

At about 10 days to two weeks, the breasts begin to adjust to how much milk the baby needs, and they begin to feel softer. This does not mean there is no more milk there!

Babies have growth spurts at about age 2-3 weeks, 2-3 months, and around six months, and they are hungrier than usual. This does not mean there isn't enough milk, they just need to nurse more often, and the breasts will produce more milk for the baby's needs.

Newborns need to nurse at least 8 to 12 times per day to gain weight well and to establish a good milk supply.

Human milk is easily digested, therefore it is perfectly normal for breastfed newborns to be hungry every 2 hours.

They may go longer than 2 hours between feedings at night, but *at least* one night feeding is important for baby's growth.

Some babies *cluster nurse*, that is, they have a certain time of day when they need to nurse more often than at other times.

Motherwear, The Complete Catalog for the Nursing Mother, 1995

Paying attention to your baby's needs and listening to your own *mothering* instincts will help get breastfeeding off to a good start.

Appendix E Samples of Overhead Transparencies

Appendix E1 Sample Overhead Transparency

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𝒲OMEN OFTEN stop BREASTFEEDING EARLY

for one of the following reasons

a *They are returning to work or school*

b *They have sore nipples*

c *They are afraid the baby is not getting enough milk*

However, there are ways to overcome these situations.

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Appendix E2 Sample Overhead Transparency

Sore nipples should not occur during breastfeeding and can be avoided by

positioning the baby properly

■ Carefully breaking suction after nursing by inserting your little finger at the side of baby's mouth

■ Not using products on the nipples that will dry out the skin, such as alcohol or harsh soap

■ Emptying the breasts regularly

Appendix E3 Sample Overhead Transparency

You can be sure your breastfed newborn is getting enough milk if he or she has

■ More than two bowel movements per day (they will be soft)

■ At least six wet diapers per day after the first week (the guideline for the first week is one wet diaper per day for each day of life)

■ Weight gain of at least 4 to 8 ounces per week

Motherwear, Complete Catalog for the Nursing Mother, 1993

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Appendix E4 Sample Overhead Transparency

Newborns need to nurse at least 8 to 12 times per day to gain weight well and to establish a good milk supply.

Human milk is easily digested, therefore it is perfectly normal for breastfed newborns to be hungry every 2 hours.

They may go longer than 2 hours between feedings at night, but *at least* one night feeding is important for baby's growth.

Some babies *cluster nurse*, that is, they have a certain time of day when they need to nurse more often than at other times.

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Appendix E5 Sample Overhead Transparency

At about 10 days to two weeks, the breasts begin to adjust to how much milk the baby needs, and they begin to feel softer. **This does not mean there is no more milk there!**

Babies have growth spurts at about age 2-3 weeks, 2-3 months, and around six months, and they are hungrier than usual. **This does not mean there isn't enough milk,** they just need to nurse more often, and the breasts will produce more milk for the baby's needs.

Appendix F Recruitment Materials

- Flyer for Dunn County WIC
- Newsletter Article for Dunn County WIC
- Invitation to Eau Claire County WIC class

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A Unique Opportunity for You to be a Part of University Research

where: WIC draft pickup at Courthouse Auditorium (Basement) in Menomonie

when: Thursday, August 6, 9:00 AM to 4:00 PM

how: In a half-hour or less, you attend either a 20 minute class or visit a walk-by display about breastfeeding, then answer some questions. We're testing the methods, not you!

Display available 9:00-10:45 AM and 12:30-2:30 PM and classes at 11:00 and 11:45 AM and 2:45 and 3:30 PM

who: All WIC clients, regardless of breastfeeding experience or intent

What do you get? Breastfeeding information and a good feeling from being a part of helping babies be healthier.

Questions? Please call Marsha at

Appendix F2 Newsletter Article for Dunn County WIC

Everyone who attends the August 6 draft pickup in Menomonie will have the chance to participate in research. It will take only about a half-hour, but you will be helping us find out some valuable information! You can attend either a 20 minute class or view a walk-by display. Both will have the same information about some of the reasons why women give up breastfeeding early and how to handle those situations. Then we'll have you answer some questions about what was presented. Don't worry—we're not testing you, we're testing how good the educational materials are. The display will be available from 9:00 to 10:45 and from 12:30 to 2:30. The class will be offered at 11:00, 11:45, 2:45 and 3:30. Please help us get this important information!

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Appendix F3 Invitation to Eau Claire County WIC class

You're
Invited!

Please come to a breastfeeding class on August 10 at 1:00.
It will be held in the room next to the
WIC office and will last about 20
minutes. What you learn may help
you have a healthier baby! You may
call the WIC office to make an
appointment to pick up your WIC
drafts either just before or just
after this short class, or if you
have any questions.