



Evaluation of a well child clinic group education program
by Linda Lee Henderson

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University

© Copyright by Linda Lee Henderson (1988)

Abstract:

Well child clinics provide valuable services to children through immunizations and health exams. The clinics also provide service to parents through parent education on child health care issues. This experimental study investigated the effectiveness of well child clinic education provided in a structured group format for an age-specific clinic versus unstructured information provided in the traditional well child clinic. The literature revealed that structured group education could be more effective and less costly than individual unstructured education in providing information for parents attending well child clinics.

Using a posttest-only control group design, knowledge levels of mothers attending an age-specific well child clinic with a group education format were compared to knowledge levels of mothers attending traditional well child clinics where information is provided in an individual unstructured format. Home visits were conducted by the researcher to administer the evaluative questionnaire. Ten evaluations were completed for each of the research groups using the Anticipatory Guidance Inventory developed by this researcher.

A t test was utilized to determine that the difference in total mean scores on the Anticipatory Guidance Inventory between the control and the experimental groups was not significant ($p < .05$). Correlations between mean scores on the Anticipatory Guidance Inventory and five independent variables were conducted for both the experimental and control groups. A significant correlation was identified in the experimental group between the subject's score and the subject's exposure to other sources of child care information.

Recommendations for future research include: (a) allocation of sufficient time for the group education to be completed prior to children being examined, and (b) assignment and maintenance of subjects in their respective study groups. Consideration could also be given to modifying the study design from a posttest-only control group design to a pretest-posttest design to possibly increase the significance of data obtained from a limited number of subjects.

EVALUATION OF A WELL CHILD CLINIC
GROUP EDUCATION PROGRAM

by

Linda Lee Henderson

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

of

Master of Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

September, 1988

© COPYRIGHT

by

Linda Lee Henderson

1988

All Rights Reserved

N 378
H 3834

APPROVAL

of a thesis submitted by

Linda Lee Henderson

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

9/14/88
Date

Karen A. Stengel
Chairperson, Graduate Committee

Approved for the Major Department

9/15/88
Date

Anna M. Shannon
Head, Major Department

Approved for the College of Graduate Studies

10/27/88
Date

Henry L. Parsons
Graduate Dean

STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a master's degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library. Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgement of source is made.

Permission for extensive quotation from or reproduction of this thesis may be granted by my major professor, or in her absence, by the Dean of Libraries when, in the opinion of either, the proposed use of the material is for scholarly purposes. Any copying or use of the material in this thesis for financial gain shall not be allowed without my written permission.

Signature

Linda R. Henderson

Date

September 14, 1988

VITA

Linda Lee Henderson was born the daughter of Clyde, Jr. and Rita Henderson on January 2, 1960. She spent her youth on the family farm in central Missouri, graduating from Vienna High School in 1978. She received her Bachelor of Science in Nursing from Northeast Missouri State University, Kirksville, Missouri in 1982.

ACKNOWLEDGEMENTS

I express my appreciation to the following people who made this study possible:

Karen Stinger, R.N., M.S., committee chairperson, for her expert knowledge, inspiration, and continued encouragement throughout this study;

Barbara Rogers, R.N., Ph.D., committee member, for her expert knowledge of, and assistance with, the research design;

Beth Metzgar, R.N., M.P.H., committee member, for her guidance and patience;

The Missoula City-County Health Department, especially Kay Frey, R.N., Roxie Anderson, R.N., and Dennis Lang, R.N. for use of the well child clinics and their encouragement throughout this study;

David Cole, for his patience, encouragement and support.

TABLE OF CONTENTS

	Page
LIST OF TABLES	viii
ABSTRACT	ix
1. INTRODUCTION	1
Identification and Discussion of the Problem	1
Statement of the Purpose	4
Research Question	5
Research Hypothesis	5
Definitions	5
Conceptual Definitions	5
Operational Definitions	6
Significance to Nursing	9
Assumptions	10
2. REVIEW OF LITERATURE	14
Overview	14
Structured Versus Unstructured Health Teaching	15
Structured Health Teaching: Individual Versus Group	25
Group Health Education in Well Child Clinics	27
Conceptual Framework	32
Application of Conceptual Framework to this Study	40
3. METHODOLOGY	43
Overview	43
Research Design	43
Sample Characteristics and Sample Selection	44
Protection of Human Subjects	46
Development of the Research Instrument	49
Reliability and Validity	50
Data Collection	52
Data Analysis	53

TABLE OF CONTENTS (Continued)

	Page
4. RESULTS	54
Statistical Findings	54
Additional Descriptive Statistics	62
5. DISCUSSION	64
Implications for Nursing	70
Recommendations for Further Study	71
Implications for Future Research	72
REFERENCES CITED	76
APPENDICES	80
Appendix A--Guidelines and Consents	81
Letter to Director of Health Services	82
Letter from Director of Health Services	85
Instructions for Assignment of	
Subjects to Research Groups	86
Initial Contact for Well Child Clinic Appointments	87
Phone Contact for Home Visits	88
Letter Contact for Home Visits	89
Information for Participant Consent	90
Agreement to Participate	92
Appendix B--Instrument	93
Anticipatory Guidance Inventory	94
Anticipatory Guidance Inventory Scoring Copy	102

LIST OF TABLES

Table		Page
1	Mean Scores on the Anticipatory Guidance Inventory for the Control and Experimental Groups.	55
2	Mean Scores on the Anticipatory Guidance Inventory, Standard Deviations, Range of Scores and <i>t</i> Score for the Control and Experimental Groups.	56
3	Characteristics of Mothers in the Control and Experimental Groups.	57
4	Correlations between Scores on the Anticipatory Guidance Inventory and the Independent Variables for the Control Group.	59
5	Correlations between Scores on the Anticipatory Guidance Inventory and the Independent Variables for the Experimental Group.	59

ABSTRACT

Well child clinics provide valuable services to children through immunizations and health exams. The clinics also provide service to parents through parent education on child health care issues. This experimental study investigated the effectiveness of well child clinic education provided in a structured group format for an age-specific clinic versus unstructured information provided in the traditional well child clinic. The literature revealed that structured group education could be more effective and less costly than individual unstructured education in providing information for parents attending well child clinics.

Using a posttest-only control group design, knowledge levels of mothers attending an age-specific well child clinic with a group education format were compared to knowledge levels of mothers attending traditional well child clinics where information is provided in an individual unstructured format. Home visits were conducted by the researcher to administer the evaluative questionnaire. Ten evaluations were completed for each of the research groups using the Anticipatory Guidance Inventory developed by this researcher.

A *t* test was utilized to determine that the difference in total mean scores on the Anticipatory Guidance Inventory between the control and the experimental groups was not significant ($p < .05$). Correlations between mean scores on the Anticipatory Guidance Inventory and five independent variables were conducted for both the experimental and control groups. A significant correlation was identified in the experimental group between the subject's score and the subject's exposure to other sources of child care information.

Recommendations for future research include: (a) allocation of sufficient time for the group education to be completed prior to children being examined, and (b) assignment and maintenance of subjects in their respective study groups. Consideration could also be given to modifying the study design from a posttest-only control group design to a pretest-posttest design to possibly increase the significance of data obtained from a limited number of subjects.

CHAPTER 1

INTRODUCTION

Identification and Discussion of the Problem

Well child clinics are a standard practice in most health departments today. These clinics originated in 1892 with the establishment of milk distribution centers in urban areas in an attempt to reduce a high infant mortality (Lesser, 1985). Once milk sanitation improved and infant feeding practices were simplified there was little use for these centers in this capacity. However, the centers had established an effective means for health supervision so they continued to be utilized for this purpose (Barsky, 1969).

Today, well child clinics provide a variety of services for children 2 months through 5 years of age. Services commonly provided to children attending well child clinics include a health history, physical examination, health screenings, a developmental assessment, and required immunizations (Coleman & Petrowski, 1984). Many clinics are typically organized to see children of all the identified age groups at the same time.

In addition to services provided directly to the child, well child clinics traditionally have provided parents with anticipatory guidance, or education needed to care for their child (Coleman & Petrowski, 1984). Standardized parental education or anticipatory guidance is difficult to effectively provide to parents because all age groups of children are seen at any one clinic. A protocol is usually available in health departments for utilization by the staff that identifies developmental tasks for specific age groups. Anticipatory guidance information is currently selected by the health care provider, primarily based on questions asked by the parent, or needs for information as assessed by the health care provider, and is provided to the parent in an unstructured format. It is difficult to assure consistency of knowledge presented for each parent because of the inconsistent manner in which the parent may have been exposed to the information.

A city-county health department in a Northwestern city, in an effort to remedy the problem of inconsistency in content presented to parents, conducted a needs assessment. Parents of children attending the well child clinics were asked to indicate what they felt were their informational needs. Health care personnel conducting the well child clinics were also surveyed regarding what they assessed as parents' needs for child care information. The health department, utilizing the information gained from the

needs assessment, subsequently divided the well child clinics into age-specific groups of children to allow for an organized method of presenting a group educational program. Educational programs containing information for the specific age groups of children were then developed for the parents.

The health department, after having implemented the group educational program, identified a need to evaluate the effectiveness of the reorganization of the educational presentation. In consultation with the health department staff it was determined that the program evaluation should begin by focusing on the knowledge attained by the parents attending the group educational program of a particular age-specific group.

This nurse researcher was interested in developing further expertise in community health nursing, particularly in child health care. A major intervention used by nurses is the provision of education to patients and families. This nurse researcher had an interest in evaluating an educational intervention to determine its effectiveness. Evaluation of the well child clinic education program provided an opportunity for the nurse researcher to further her expertise in community health nursing and child care while also conducting an evaluation of an educational nursing intervention.

Evaluation is a common expectation of most educational programs in order to assess the effectiveness of the program.

Some type of instrument is commonly employed to evaluate the degree to which information taught has been retained. Such evaluation was appropriate for the group educational program conducted at the age-specific well child clinics since a body of information was being provided to clients with the goal that they retain and utilize it in the care of their children.

Nurses have a responsibility to provide health care information to their clients. The group educational program provided one method of allowing nurses to provide information to a large group at one time. Nurses subsequently also have a responsibility to evaluate whether the information they have provided is effective in meeting their clients' health care needs. Evaluation of the group educational program at the health department well child clinics allowed nurses to act on their responsibility to provide and evaluate the effectiveness of the health care information disseminated to well child clinic participants.

Statement of the Purpose

The purpose of this study was to evaluate a portion of the group educational program provided for parents of children attending age-specific well child clinics at a city-county health department in a Northwestern state.

Research Question

The research question formulated for this study was "What is the effect of a group educational program for mothers attending age-specific well child clinics on the mothers' ability to recall and apply the program information to common child health care needs?"

Research Hypothesis

The hypothesis for this study was:

Mothers attending the group educational program for an age-specific well child clinic will score higher on the Anticipatory Guidance Inventory than mothers who attend a traditional well child clinic that was not age-specific.

Definitions

Conceptual Definitions:

traditional well child clinic: a health care program that provides for evaluation of the health status of a well child, 2 months thru 5 years old, through the use of health histories, physical examinations, health screenings, immunizations, and developmental assessments. Parents of children attending these clinics are

provided with anticipatory guidance or education needed to care for their child.

age-specific well child clinic: a health care program that provides for evaluation of the health status of a well child based on the child's age through the use of health histories, physical examinations, health screenings, immunizations and developmental assessments. Children attending this clinic all belong to a defined age group. Parents of children attending this clinic are provided with anticipatory guidance through the use of a planned group educational program.

group educational program: Information provided in a structured format to a group of people.

anticipatory guidance: education provided to parents at well child clinic visits that is designed to help the parent anticipate child rearing needs or to deal with existing needs. Anticipatory guidance is synonymous with parent education.

knowledge level: a measurement to determine if information provided by an educational program is accurately retained and applied by the participants.

Operational Definitions:

traditional well child clinic: a health care program conducted at a Northwestern city-county health department that provides for evaluation of a well child's health status through the use of health

histories, physical examinations, health screenings, immunizations, and developmental assessments. Parents of children attending these clinics are provided with anticipatory guidance or education needed to care for their child.

age-specific well child clinic: a health care program conducted at the same Northwestern city-county health department that provides for evaluation of the health status of a well child based on the child's age through the use of health histories, physical examinations, health screenings, immunizations and developmental assessments. Age groups were determined by examining educational and well child visit needs for all ages of children traditionally attending well child clinics. The specific group for this study consists of 2 to 6 month old children.

group educational program: Information provided in a structured format consisting of discussion, videotapes, and printed informational handouts presented to a group of mothers at the age-specific group well child clinic for 2 to 6 month old children. This information is considered part of the anticipatory guidance provided by well child clinics. Topics included in the group educational program for mothers of 2 to 6 month old children consisted of: immunizations; fever management and taking temperatures; recognition and treatment of choking; giving

medications; recognizing signs and symptoms of ear infections and how to treat them; and care of the sick baby.

knowledge level: a measurement to determine if information provided by the group educational program to mothers of 2 to 6 month old children attending the age-specific well child clinic was accurately retained and applied by those mothers. The knowledge level of the mothers attending the group educational program for the 2 to 6 month old age-specific well child clinic was measured by test scores attained on the Anticipatory Guidance Inventory developed by this investigator. The knowledge level of a control group of mothers with children of similar age to those in the group educational program was also evaluated using the Anticipatory Guidance Inventory (Appendix B).

Anticipatory Guidance Inventory: a tool developed by this investigator to measure the knowledge level, and application of that knowledge to their daily child rearing pattern, of mothers of 2 to 6 month old children attending the age-specific and traditional well child clinics. This test includes the following sections:

Part I consists of questions that elicit knowledge of immunizations, taking temperatures and treating fever, recognizing and treating choking, recognizing and treating ear infections, giving medications, and recognizing signs and symptoms of a sick baby (Appendix B).

Part II contains items that the investigator observed. Some items in this section are objects that can be observed to be present in the home. Other items consist of observing the parent perform a task (Appendix B).

Significance to Nursing

Relevant to the evaluation of the group educational program were the nursing research priorities for the 1980s identified by the Commission on Nursing Research (1980, p.219) which state nursing research should "generate knowledge to guide practice in promoting health, well-being, and competency for personal care among all age groups." The evaluation of the group educational program will provide knowledge necessary to guide the health care providers in their practice and in modification needed in the group educational program for the age-specific well child clinics.

Another research priority identified by the Commission on Nursing Research (1980, p. 219) was the need for research in preventive care throughout life, especially those health problems that "have the potential to reduce productivity and satisfaction". Information provided in the group educational program consisted of measures to prevent illness or injury in children or treat childhood illnesses. Whether or not the health department's group educational

program contributes to health promotion and illness prevention in children can be determined only through evaluation research that is designed to measure the degree to which the information presented in the program is retained and applied by the mothers who participated.

An evaluation of the group educational program was also warranted because it was new and innovative within the well child clinic program. Nurses have a responsibility to add to the body of knowledge in nursing. New techniques need to be thoroughly evaluated to identify the value they have in adding to this body of nursing knowledge.

Assumptions

There were four assumptions basic to this study. The first was that anticipatory guidance supplied by health care providers during examinations of children that participated in well child clinics was truly unstructured and inconsistent in the research setting. This assumption allowed for true comparison of the control group to the experimental group to evaluate the effectiveness of the treatment (i.e. standardized group education).

The second assumption was that participants in both the experimental and control groups had equal access to other sources

of child health care information. A wide variety of child health care resources, from books to television to other contacts with health care providers, were available to all socioeconomic levels. Assuming each group had equal access to those resources allowed for equality of information in each group and the ability to accurately evaluate changes in knowledge, and application of that knowledge, based on the treatment delivered.

The third assumption was that sociodemographic characteristics were equally distributed through random assignment of subjects to the control and experimental groups. Random assignment to groups was necessary in a posttest-only control group design in order to provide for a true experimental design (Campbell & Stanley, 1963).

The final assumption basic to this study was that both the control and the experimental groups received the same care for their children at the well child clinics. This assumption was an important consideration in terms of equal, safe health care for each participant's child. This assumption also indicated that the only expected difference for the two groups would be the use of the standardized group educational format provided to the experimental group, thus allowing measurement of that variable to indicate the effectiveness of the treatment.

Overall, the assumptions outlined above allowed for equalization of the control group and the experimental group. The distinct difference occurring between the two groups was the exposure of the experimental group to the standardized group educational program.

Since 1892 well child clinics have been providing a valuable service to the community through health screening of children 2 months through 5 years old. Well child clinics have also provided parents with necessary information regarding care of their child, although in an unstructured manner.

A northwestern city-county health department was endeavoring to improve the dissemination of information to parents attending well child clinics. Well child clinics were structured around age-specific groups of children. Education programs specific to that age group were developed for the parents. The evaluation of a portion of the group educational program conducted at the well child clinics attempted to determine what effect a group educational program had on mothers attending a well child clinic organized around specific age groups of children.

The evaluation contributed to the research priorities identified by the Commission on Nursing Research (1980). Information gained from the evaluation can be used by nurses to guide their practice in ". . . promoting health, well-being, and competency for personal

care . . ." of children (Commission on Nursing Research, 1980, p. 219). The evaluation also provided nurses with guidance for restructuring information presented to well child clinic participants for the purpose of preventing illness and injury of children.

CHAPTER 2

REVIEW OF LITERATURE

Overview

Reports of educational programs for health care clients and methods for evaluating these programs vary widely in the literature. Health care education programs have consisted of both structured and unstructured presentations of information, as well as individual versus group dissemination. Client educational programs have been reported as being conducted in a variety of settings, from hospitals to physicians' offices to the community.

Few reports of studies have centered on a group educational format within the community. Even less literature related to evaluation of group learning in the community was available. Specifically, there were few reported attempts to use a group format within a community based well child clinic setting.

Due to the limited scope of available sources regarding the use of a group education program in a well child clinic, this literature review includes selected studies to examine research on the impact of the following health educational formats: structured versus

unstructured health teaching, the effects of structured health teaching on the individual versus a group, and the effects of group health teaching in well child clinics. Studies reviewed included hospital, physician office, and community settings.

Structured versus Unstructured Health Teaching

A majority of teaching that occurs in the health care field is conducted in an unstructured manner with information being given based on the health care provider's assessment and the client's questions. Gutelius et al. (1977) evaluated the use of intense unstructured counseling as a part of child health supervision provided to primigravidas (n=95) between 15 and 18 years of age and their infants. This counseling was provided on a one-to-one basis by a nurse making home visits and a physician who conducted the child health screening in a van that was parked outside the client's home. A control group (n=47) was established using a table of random numbers that assigned a group to regular well child clinics. The control subjects were seen on an individual basis according to guidelines for well child clinic recommended visits. The number of visits for the control group were approximately one-half the number of visits received by the experimental group (n=48). The

control group received counseling that was primarily confined to questions asked, and problems identified, by the mothers.

Gutelius et al. (1977) utilized mothers' answers to a survey questionnaire to evaluate the effectiveness of counseling. Results indicated that children of mothers in the experimental group were reported to apply counseling information related to nutrition and developmental activities more often than those in the control group. This increase in knowledge and its subsequent application may be associated with the increased attention and number of visits received by the experimental group over the control group. Since information was delivered in an unstructured format, increased visits would allow for increased coverage of missed information on previous visits. Results were also somewhat confounded by the fact that the first half of the experimental subjects received some group counseling and socializing that was later discontinued as the number of experimental subjects increased.

Teaching of groups using unstructured content has also been evaluated for effectiveness through comparison to individual unstructured teaching. McNeil and Holland (1972) examined the effectiveness of group teaching (experimental group) versus individual teaching during home visits (control group) with determination of the costs of the two teaching services being a

secondary purpose. Mothers (n=107) of one month old infants comprised the study population and they were evaluated on their knowledge of specific aspects of infant care utilizing a posttest-only control group design. No attempts were made to influence or control the content of the teaching provided by individual nurses. Results of this study indicated that mothers in the group teaching sessions (n=56) had more knowledge of infant health care than mothers in the home visit group (n=51). An examination of variables that could explain the differences in scores was conducted. All of the variables examined were equally distributed among the two groups and were not found to account for the differences in knowledge.

Although McNeil and Holland's (1972) study design was not as tight as it might have been using a pretest-posttest control group design it did produce some valuable results. One particularly interesting finding was that mother's knowledge of infant health care was not correlated with the age of the mother or previous experiences in child rearing. Differences in knowledge between the two groups might possibly be explained by the phenomenon of the individual personality that desires to join and participate in a group setting. This variable was somewhat controlled for by criteria stipulating that all mothers in the study population would be willing to participate in a group discussion as a substitute for

home visits. One variable not examined was the group interaction effect between the mothers that might have contributed to increased knowledge through the sharing of experiences. The study also failed to show a relationship between the number of nurse contacts and test scores which is in contrast to the study conducted by Gutelius et. al. (1977).

Several secondary benefits of McNeil and Holland's (1972) study were also identified. Costs of conducting the groups sessions were found to be one-third or less than the home visits costs. Also, the evaluation study was reported to spark an interest in staff and supervisors in developing other methods to measure effectiveness.

One of the first studies conducted to evaluate structured versus unstructured teaching in a health care setting was done utilizing individual pre-operative teaching (Lindeman & Aernam, 1971). The unstructured teaching was described simply as inconsistent and vague. The structured teaching consisted of a plan to systematically teach nurses to provide patients with pre-operative health education about coughing and deep breathing, including a demonstration of techniques for effective coughing and deep breathing which then had to be practiced by patients prior to their surgical procedure. A pretest-posttest static group design was utilized to examine the variables of the adult surgical patient's (a) ability to deep breathe and cough 24 hours post-operatively,

(b) length of hospital stay, and (c) post-operative need for analgesia. Results indicated that those patients who received the structured pre-operative teaching (n=126) were able to deep breathe and cough more effectively and had a decreased length of hospital stay than those receiving the unstructured teaching (n=135). The differences in the use of analgesias were not significant.

Increased ventilatory function by the experimental group, according to Lindeman and Aernam (1971), indicated that learning did take place. This learning was adversely affected by incisional pain. The study did not answer whether structured pre-operative teaching reduces postoperative respiratory and circulatory complications. Objective data regarding the status of these two physiological systems would need to be obtained pre- and post-operatively to adequately evaluate the full benefits of this teaching technique.

The Lindeman and Aernam (1971) study design has been replicated with coronary patients with the addition of a third group (n=8) to control for the influence of pretesting (Milazzo, 1980). Results of the Milazzo study indicated that the experimental group (n=9) who received formal, structured teaching was not primed by the pretest to perform well on the posttest. The experimental group (n=9) did show a significant increase in knowledge over the control group (n=8). Due to the small sample size and limited scope of the study, results could not be generalized.

Both the Lindeman and Aernam (1971) and Milazzo (1980) studies seemed to indicate that structured teaching for individual clients was the preferred method over unstructured teaching for achieving gains in knowledge by patients. Results of these studies did not address the significant questions of prevention of health problems or health care compliance subsequent to knowledge gains.

Chamberlin, Szumowski & Zastowny (1979) evaluated the efforts of health care providers to educate mothers (n=478) regarding child development in pediatric office practices. Portions of the information provided to mothers could be considered structured teaching. Included in the structured teaching aspects were educational pamphlets and materials given to the mother, use of audio-visual materials, and the provision of group teaching sessions. No effort was made to change an individual pediatric practice's style of providing information to mothers. Care providers were interviewed regarding the education techniques they utilized and then providers were ranked as having high, medium or low teaching scores.

Results of the Chamberlin et al. (1979) study indicated that pediatric office practices making at least a moderate effort to educate mothers achieved an increase in the mother's parenting knowledge. The mothers receiving parent education also reported more use of positive contact with their children and that they felt

more supported by their health care providers in their child-rearing role. These relationships were all only moderately significant. No direct positive relationship was found between physician input and the child's behavioral and developmental status.

The above findings seemed to indicate that provision of any education to mothers during well child visits was preferable to none. It also indicated that there was a need for significant improvement in the amount of information given and the teaching techniques employed as well as the development of methods to evaluate improvements.

Several studies have utilized structured teaching methods for well child clinics in office practices. Morris (1976) described such a program that was developed for two to three year olds and was focused on cognitive development. The program was implemented in both a pediatrician's office and a city health department's child health clinic through integration of cognitive development into a play program already available for waiting children. The program was designed to teach parents how to use play activities to stimulate cognitive development. Parents were matched one-on-one with a trainer.

Morris (1976) evaluated the success of the program by determining gains in development by the children. Developmental gains were shown by the program participants and the gains were

maintained six months post-program. The author failed to report the statistical significance of these gains or how much of each gain was due to developmental maturation of the child.

Reasons cited by parents for joining the program centered on helping the child to learn as well as preparing the child for school (Morris, 1976). Most parents were able to identify some type of developmental change in their child that was not present before the program. The benefit of this program appears to be the increased ability of the parent to work with the child in continuing cognitive development throughout the school years.

Dershewitz and Paichel (1984) were able to demonstrate the effectiveness of a structured program to educate mothers (n=69) from a lower socioeconomic group regarding the use of ipecac syrup. Although results were not significant, gains in knowledge were demonstrated using a pretest-posttest design. However, no control group was established. One significant adverse effect of the education program was a response by some mothers indicating they would treat their child with ipecac after ingestion of a caustic substance without first consulting medical personnel.

Dershewitz and Paichel (1984) could have enhanced their study through the use of a control group and possibly a larger sample. The possibility also exists that there are barriers to educating people of a lower socioeconomic level due to the very nature of their

environment. Environmental factors that could affect learning include such things as decreased availability of economic resources to purchase necessary health care items, poor housing conditions, or poor proximity to health care providers. No information was provided regarding previous experience with childhood poisonings.

Casey et. al. (1984) developed an active approach to structured educational intervention for individuals in an office practice. The educational program centered around facts regarding the management of childhood fever and it was administered to parents (n=106) of children older than six months scheduled for well child visits. The study utilized a pretest-posttest control group design as well as illness diaries kept by the parents of both groups. Pretest information was obtained by an interview questionnaire. Treatment information was given initially by an educational interview and was followed two months later by a mailed intervention sheet. Sociodemographic data indicated that the subject population was relatively well educated with the majority of parents having completed high school and some college education. Both the control (n=53) and experimental (n=53) groups showed similar increases in knowledge, but the experimental group also had changes in fever management patterns not seen in the control group.

The significant changes demonstrated in fever management by the experimental group in Casey et al.'s (1984) study may be accounted for by the use of mailed follow-up information. Both the control and experimental groups were actively engaged in keeping illness diaries. The experimental group also actively participated by reading thermometers and interpreting temperature charts during the information interview.

Casey et al. (1984) may have failed to show significant changes in knowledge between the two groups because the initial knowledge assessment triggered an awareness of the need for information in the control group. The control group may subsequently have gained the knowledge through questioning the health care provider and/or other sources. These results also demonstrated that a gain in knowledge does not imply application of knowledge.

Generalizability of the Casey et al. (1984) study was limited due to the high educational level of the participants and obvious high compliance noted by bringing in their children for regular well child visits. The participants also related to one main health care provider. The above demographic characteristics are not as common at a typical well child clinic in a health department setting.

Structured Health Teaching: Individual versus Group

In moving toward a comparison of individual versus group structured education, Lindeman (1972) expanded upon her original study of pre-operative teaching. The control group consisted of subjects receiving individual structured education (n=178). The experimental group consisted of subjects provided structured information in a group format (n=173). Results found to be significant included: (a) a shorter hospital stay for the group instruction of those in the "other" site of incision category of surgeries (i.e. surgeries other than those involving the major chest, neck, upper abdominal and lower abdominal), and (b) a shorter length of learning time for participants in group instruction. Although data analysis of different variables becomes rather complex, no matching of variables showed the individual teaching method (n=178) to be better than the group method (n=173). This study primarily demonstrated the effectiveness of structured group education both in terms of knowledge gained as well as conservation of time. This study, like the earlier Lindeman study (1971), did not attempt to demonstrate prevention of postoperative complications of respiratory and circulatory function.

In reviewing the above studies that have utilized group education, be they structured or unstructured, it becomes apparent

that group education is a cost effective means for disseminating information. This can be an especially useful method when attempting to supply information to individuals in a community setting. Because of the cost effectiveness of group education within a community setting, Ashikaga, Vacik & Lewis (1980) utilized a community based group education approach for individuals with chronic obstructive pulmonary disease (n=48). The main objective of the program was to "assist individuals in developing preventive and restorative health care behavior by imparting knowledge and increasing motivation" (Ashikaga, Vacik & Lewis, 1980, p. 23). A secondary objective was to provide a psychological support framework for the individual and his/her family after the termination of the education sessions. Results of the evaluation indicated that the treatment group (n=25), which received the information in a group format, demonstrated increased knowledge as well as application of the knowledge. This is particularly significant when considering the fact that both groups received the information booklets containing the necessary information to accurately complete the knowledge questionnaire and they also provided detailed instructions for behavioral changes. Obviously, the group format was a more effective method for disseminating the information. More objective measures of behavioral compliance, which is indicative of application of

knowledge, would have strengthened the results. Generalizability of the study may be limited for this population due to the fact that subjects volunteered their participation. Information regarding long-term effects was not currently available.

Group Health Education in Well Child Clinics

In reviewing studies of group education at well child clinics both unstructured and structured presentations of information have been utilized. Stein (1977) described a program established in a community clinic that provided three groups for well child care with five to six parent-child dyads in each group. These three groups met for two hours each month for a one year period. Ages of the children varied from two weeks to one year. During group sessions, the first hour was devoted to discussion centered on child care, with the second hour allotted to individual exams of each child in the presence of the group. The group discussion hour was generally open-ended with most topics generated from parent questions, although the pediatrician did come prepared with a list of topics. Unfortunately Stein's (1977) study did not present any quantifiable objective data of the effectiveness of the program. Results reported were subjective and included a sharing of information regarding normal child development and health care

methods among participants, as well as living examples among the group's children who demonstrated changes in development and who exhibited some common childhood illnesses, such as otitis media. These "living examples" sparked interest and an exchange of information among the group participants. The author indicated his impression of the study's impact was "that many more topics of well-baby care were discussed in greater depth than ordinarily occurs in traditional pediatric practices" (Stein, 1977, p. 828).

Osborn & Woolley (1981), utilizing unstructured education, examined the efficiency, effectiveness, content of visits and patient satisfaction with the use of group well child care. A control group (n=36) was established to receive regular well child visits on an individual basis. Results indicated that the group (n=42) was as effective as the individual (n=36) well child visits when measured by amount of clinician time expended. The efficacy of the two groups was essentially the same although mothers in the experimental group (n=42) tended to be slightly more compliant with well child visits. The content of well child visits tended to change from very limited explanations of child care to an increase in explanations provided by the clinician. This increase in explanations was initially established in the sample having group visits, with clinicians gradually adopting the explanations to the sample group having individual visits. Surprisingly, a lack of

anticipatory guidance was noted in both the control and group visits as well as the baseline visits established prior to the study. Both groups were equally satisfied with care.

For purposes of this literature review, the Osborn and Woolléy (1981) study was limited due to a failure to document any changes in knowledge or its application other than the greater incidence of group mothers who complied with well child visits.

Generalizability of the results was limited due to sequential selection of subjects rather than randomization. The sociodemographic variables of this study also posed a severe limitation because the subjects were all white, middle class and predominantly Mormons, who tend to be strongly community and family oriented.

The most relevant literature to the present study consisted of an evaluative study of parent group education for improving burn prevention practices in the home (Thomas, Hassanein & Christopherson, 1984). The parent group education program was conducted in a well child clinic setting. This study evaluated effectiveness of the structured educational program by the use of home visits to check on application of knowledge in the home setting through the use of both testing and examining the environment for proper hot water heater temperature settings, as well as the presence of smoke detectors. Subjects (n=55) were

chosen from members of a health maintenance organization who chose to attend well baby classes designed for an educational purpose. A posttest-only control group design was utilized. Both the control and experimental groups received the same standard content regarding child health care, which was presented in a group format, with the experimental group receiving additional verbal and written information regarding burn prevention. Parents of both groups were tested during a home visit four to six weeks after the classes ended.

Results from the Thomas et al. (1984) study identified that the experimental group ($n=29$) was significantly more compliant with setting proper hot water temperatures and the group scored significantly higher on the knowledge test. There was no significant difference in the number of observed smoke alarm installations between the two groups, although a significantly higher number of parents in the experimental group reported installation after the information provided in class.

Sociodemographic variables between the two groups were comparable. Safe hot water settings for both groups were significantly correlated with home ownership, probably due to the ability of the parent to control the temperature for a single family.

Once again results of this study were limited in generalizability due to the fact that the families were "typically employed, married,

in their late 20s, and volunteered for the well child classes" (Thomas, Hassanein & Christopherson, 1984, p.88). Based on this researcher's experience, finding this degree of demographic homogeneity is doubtful within a health department based well child clinic. However, the results are promising because they demonstrate that the use of a group education program in a well child clinic setting to disseminate information leads to an increase in knowledge and application of knowledge, which increases health behavioral changes in this population.

Reported studies of structured patient education versus unstructured patient education on an individual basis indicated that clients tended to remember more and were more compliant when a structured format was utilized. When reviewing studies conducted using groups and structured versus unstructured educational techniques the results were less clear. What did seem to be apparent was that group education was preferable to individual contact with regard to efficiency in dissemination of information and cost, regardless of the form in which the information was presented.

Although evaluation of nursing interventions and educational programs was an expectation, few studies were found that dealt specifically with evaluation of knowledge gained through group well child clinics. Stein (1977) and Osborn and Woolley (1981)

reported that group well child clinics could be effective means for stimulating discussion and providing information to parents regarding child care but failed to specifically evaluate knowledge achieved by participants in these groups. To date, Thomas, Hassanein & Christophersen (1984) appear to have conducted the best reported evaluation study on the effectiveness of an educational program in a group well child clinic setting. The Thomas, et al. study, through the use of a control group, showed that group education for parents attending well child clinics was effective in demonstrating a knowledge gain by the participants and demonstrated use of that knowledge through compliant behaviors.

Conceptual Framework

The focus of this study is on health education and the evaluation of that education. The conceptual framework that is appropriate to this study evolves from learning theories, evaluation research, and theories that are part of the health education literature. The following discussion summarizes the various categories of learning theory and the role of health education and evaluation within this framework.

Dembo (1977) identifies, through a summary of a wide range of literature, that there are essentially three categories of learning

theories: behavioristic, cognitive/developmental, and humanistic. Two relevant points are made by Dembo regarding these three categories and educational practices: (a) "There is no one behavioristic, cognitive (developmental), or humanistic theory"; and (b) "not all educational practices are backed by one specific theory" (1977, p: 204). The brief descriptions of each learning category that follow have been simplified to reflect the basic underlying concepts.

The behavioristic perspective of learning evolves from the simple principle that a stimulus can evoke a response. In terms of learning, environmental factors (stimuli) presented to students evoke certain behaviors (responses). The extent to which the behavior continues may be controlled through reinforcement of that behavior. This viewpoint of learning assumes that all behavior is learned through some system of reinforcement. The teacher's responsibility is to provide the appropriate environment which maximizes reinforcement of appropriate/desired student behavior (Dembo, 1977).

Teachers who ascribe to the cognitive/developmental perspective of learning believe that behavior exhibited by a person is based on ". . . knowing or thinking about the situation in which behavior occurs" (Dembo, 1977, p. 255). This learning theory is based on cognitive processes and is therefore concerned with how

knowledge/information is organized and processed to reach a decision. The cognitive process involved in learning is believed to change as a child develops into an adult; thus, this cognitive theory of learning may also be referred to as the developmental learning theory. The teacher's role is to understand how each student processes information and to provide information to the student accordingly.

The third and last category of learning theories is the humanistic approach. The humanistic approach to learning reflects a belief that the material presented to the student must be important or have personal meaning to the student in order to increase the likelihood that learning will take place. The feelings of the learner are emphasized as much as the way the learner thinks or behaves. The growth of the individual in whatever area he/she chooses is emphasized. The role of the teacher utilizing the humanistic approach is to "create an educational environment that fosters self-development and understanding leading to self-actualization" or personal growth (Dembo, 1977, p. 204).

The above discussion outlines the three groups of learning theories. The behavioristic group focuses on behavior or actions of the learner. The cognitive/developmental group focus on cognitive or thinking processes. The humanistic group focus their theory on affect or feeling. Dembo (1977) has emphasized that educational

practices rarely rely on one specific theory. Young (1984) reiterates this viewpoint, identifying that the literature does not indicate "one best method" for teaching students. Descriptions of these three categories of learning theories would lead one to believe that perhaps a combination of the learning theories is the best choice in reaching a wide variety of students. This writer submits that a combination of the above learning theories is the best choice when dealing with health education at the community level where a wide variety of students need to be served.

Redman (1988) identifies that "health education is concerned with a person's learning to live life in the healthiest way possible" (p.6). Health education can help promote, prevent, maintain or modify health related behaviors in order to reach the healthiest way of living. Redman also identifies that ". . . every person who receives health care has some need to learn" (1988, p.8). Nurses, by virtue of providing health care and being knowledgeable about health, have a responsibility to act as teachers and assist individuals in learning to live in a healthy way.

The need for learning can be identified by both the client and/or the nurse. The role of the nurse as teacher involves providing "activities to promote learning and to assess learning that should take place or has taken place" (Redman, 1988, p.15). The role of the client as student or learner is to "participate in or initiate

activities that lead toward the desired cognitive behavioral change" (Redman, 1988, p.15).

The nurse working in the community setting comes in contact with a variety of clients who have different learning needs. The previous discussion of learning theories has identified that there is no one way of learning. It can therefore be assumed that not all clients who have learning needs can be effectively taught in the same manner. Teaching activities provided by the nurse should attempt to tap all three areas of learning: cognitive, behavioral and humanistic/affective in order to meet the variety of learning needs exhibited by clients. Redman (1988, p.86) would appear to support this premise as she identifies that "for most learners, a combination of sense experiences, and conversation or reading serves to develop a concept" or idea.

Group instruction can serve as an economical means of providing the cognitive/behavioral/affective combination. Clients benefit from the experience of being part of the group through the sharing of their experiences, and learning from the experiences of others. Facts and concepts presented by written materials and audiovisual aides can be elaborated upon by group discussion and the sharing of experiences (Redman, 1988).

As identified earlier in the role of nurse as teacher there is a need to not only "provide activities to promote learning" but also to

assess, or evaluate, if learning has taken place (Redman, 1988, p.15). Evaluation is necessary to determine if the desired behavioral change, resulting in a healthier way of living, has occurred. Evaluation "is accomplished by observation of the behavior and by oral and written questioning" (Redman, 1988, p.17).

Direct observation of behavior is one technique that can be used to evaluate learning. Direct observation can evaluate whether or not application of knowledge has led to a change in behavior, such as having available and correctly utilizing a needed health care item. For example, is a thermometer available in the home for use to determine a child's temperature, since anti-pyretic medication would only be indicated if the child had a fever. Anti-pyretic medication should not be administered simply because the child "felt hot" to the touch of the parent. Direct observation can be used to evaluate behavior in a given situation, such as motor skills necessary to perform a particular task (Redman, 1988). The behavior is then identified as appropriate or inappropriate based on a set of criteria for the situation.

Oral questioning is a second evaluation technique that can be particularly useful in evaluating thought processes (Redman, 1988). Oral questioning can be effectively used in combination with other evaluation techniques, such as direct observation. Evaluation of whether the patient understands the rationale for a psychomotor

skill can be achieved through the use of oral questioning. This evaluation technique also allows for "construction of hypothetical situations that are not present in the actual teaching environment" (Redman, 1988, p.227).

Written measurement is the third method of evaluation. It requires that the participant have some reading and writing skills to complete the test. Written measurement provides an opportunity to "measure learning at all levels of the cognitive domain" (Redman, 1988, p.229). In order to accurately measure learning, written tests must be studied for evidence that the test accurately measures the subject matter it claims to measure. Few standardized tests are available for health care providers that have been proven to be valid and reliable in measuring specific health care objectives (Woods & Catanzaro, 1988).

Effective evaluation of learning is best accomplished by using a combination of the techniques described above. A combination of techniques allows for accurate evaluation even when individuals have difficulty expressing themselves orally or in writing. Conversely, if individuals are quite fluent in both oral or written skills, combining evaluation techniques may provide a truer picture of actual understanding than a single method (Redman, 1988).

Evaluation, in whatever form, can measure only the products of learning, not learning itself. By measuring a level of performance

we can infer that learning has taken place but "absence of correct performance need not imply that no learning has occurred" (Wingfield, 1979, p. 13).

Evaluation of health care activity or health care knowledge often focuses on the individual's ability to accurately complete a task or follow directions. Individuals are evaluated to determine if they are utilizing information that was provided to help deal with a health care issue. For example, does a mother know how to correctly take a temperature and read the thermometer (application of learned knowledge) after instruction and demonstration of the technique? Does she perform this technique accurately whenever she feels that her child has a fever? Evaluation of the above would provide a health care worker with information about the mother's ability to deal with her child's fever, or to apply knowledge learned from information provided.

The client's ability to learn and apply recommendations, or information provided, is influenced by a number of factors. Poverty may limit the application of learning because of the inability of the individual to purchase the necessary equipment that is needed for a task; for example, a thermometer is needed to take a temperature. Poor physical health as a source of distraction at the time of education may limit the individual's ability to recall and utilize the information given. A physical environment that is not conducive to

the individual's learning, such as loud background music, may also inhibit abilities to later utilize the information that was presented. The factors listed above are just a few of the problems inhibiting learning of, and later application of, health care information.

Health education or teaching encompasses three categories of learning theories in an attempt to meet the diversity of learning needs presented by clients in a community setting. Evaluation of health teaching continues the use of the cognitive / behavioral / affective combination of theories through the use of a variety of methods to determine if learning has occurred. The most effective means of evaluating learning and application of learning rely on the use of a combination of approaches that include direct observation, oral questioning, and written measurement.

Application of Conceptual Framework to this Study

The group educational format presented for mothers participating in age-specific well child clinics allowed for the use of a variety of the learning techniques outlined earlier. A variety of techniques, such as the use of handouts, audiovisual aides and group interaction, were used in this study to tap cognitive learning skills of individual mothers. Reinforcement of behavior occurred

through the use of group discussion and demonstrations. In this study, the humanistic model was utilized through implementation of a group educational format which allowed individual mothers to discuss similar situations relevant to them.

Evaluation of the knowledge learned in the age-specific well child clinics continued the use of the above three learning theories: the behavioral, cognitive and humanistic learning theories. The Anticipatory Guidance Inventory, developed by the researcher, required the researcher to evaluate application of knowledge through observing the mother's ability to perform specific learned behaviors such as taking a temperature or administering types of medications. Cognitive skills were evaluated when mothers were asked to identify which item would accurately measure medication or what items on a medicine bottle needed to be checked prior to administering medication to their child. The humanistic theory was utilized through oral questioning of mothers about activities such as care of their sick child, recognition of signs and symptoms of ear infections, or immunizations.

The group educational format provided individual mothers with children of similar ages an opportunity to learn child care information through a variety of teaching/learning techniques. The evaluation of knowledge learned in that group setting continued the

use of the learning theories through a variety of evaluation techniques encompassed in the Anticipatory Guidance Inventory.

CHAPTER 3

METHODOLOGY

Overview

The purpose of this study was to evaluate a portion of a group education program for parents of children attending an age-specific well child clinic. This chapter describes the methodology used in conducting this evaluation including descriptions of the design, sample selection, protection of human rights, development of the data collection instrument, the data collection method and data analysis.

Research Design

A posttest-only control group design was utilized for this study. This method is appropriate when utilizing a new method for introducing subject matter for which a pretest is inconvenient (Campbell & Stanley, 1963). Campbell & Stanley (1963) cite this as a true experimental design if random assignment to groups is used. Within the proposed study, a pretest would have been difficult to arrange with the subjects, and a pretest may have caused possible

sensitivity to information at the well child clinics. In determining financial feasibility of the study, the posttest-only design contributed to the likelihood of completing the evaluative study in an economic manner. This is also an appropriate design when considering the number of other sources of information regarding child health care available to parents, which limits the researcher's control of important influencing factors.

There were limitations in this design. The statistical tests available for this design are less powerful than for a pretest-posttest control group design. The above limitation was counterbalanced by the use of the *t* test which was identified as optimal for this design (Campbell & Stanley, 1963). The elimination of a pretest prevented the researcher from being absolutely certain that the two groups were equal before the treatment. However, random assignment to groups adequately eliminated any biases between the two groups.

Sample Characteristics and Sample Selection

The sample population consisted of all mothers of 2 month old infants who applied to the well child clinics. To ensure that conflicts did not arise in assigning a subject to one group or the other, the mother must have been able to attend any of the well

child clinic appointment times. Ability to attend any of the well child clinic appointment times was determined by a question on the well child clinic application form (Appendix A). Also attached to this form was a request for the subject to participate in an evaluation of the services provided by the well child clinics. Informed consent was not obtained at that time to avoid biasing the results through increasing the awareness of the subjects during the education program. Actual manipulation of experimental conditions by the researcher occurred after the education program at which time individuals were provided with information for informed consent before any evaluation occurred. Individual consent was obtained in writing prior to conducting any portion of the evaluation. All children received traditional well child care at the clinics regardless of the group in which they were placed. Mothers who agreed to participate and had no time constraints were included in the sample. Mothers were also required to be able to read and/or understand English.

A table of random numbers was used to assign subjects to the two groups prior to receiving applications for the well child clinics. Randomization was deemed to be the most effective way to eliminate bias between the two groups. The first 15 unique numbers between 1 and 30 were assigned to one group with the remaining 15 assigned to a second group. The numbers 1 and 2 were

assigned to the control group and experimental group respectively. Applications were numbered sequentially from 1 to 30 as they were filled out and accepted for the study. Subjects were then assigned to a group based on their application number and the group into which it fell. Sample size at the completion of the study consisted of 10 mothers in the control group and 10 mothers in the experimental group. A total of 20 evaluations were completed with 10 from the control group and 10 from the experimental group.

Protection of Human Subjects

Initial consent to participate in the evaluation of the group education program was obtained from all participants prior to being assigned to a well child clinic appointment as described above. Full informed consent in writing was obtained from participants at the time of the home visit (Appendix A). The written consent included a description of the purpose of the study, the risks and benefits of participating in the study, the questionnaire and behavioral observations to be made. Subjects were also informed that they had the right to refuse to answer any question that they so desired and/or to stop the evaluation at any time.

Written consent to utilize the well child clinic setting at the Northwestern city-county health department was obtained from the

director of the health services division. This researcher's responsibilities to the health department were also outlined in writing to the director of the health services division (Appendix A).

The risks to the subjects participating in the study included the possibility of moderate to high anxiety during the completion of the Anticipatory Guidance Inventory. A home visit to administer the questionnaire was deemed to be the most accurate and reliable method of data collection for this study but contributed to the anxiety of subjects since they had to demonstrate their ability to perform tasks for the investigator. The subjects also experienced the inconvenience involved with the time necessary to conduct the evaluation. The fact that subjects in the control group did not receive the educational program could be deemed to be harmful to the control group. However, the information presented in the group educational program of the age-specific well child clinic could be obtained from other health care providers as well as books and magazines available to the general public.

Benefits to the subjects consisted of one-to-one contact with the nurse researcher during the home visit. She provided immediate feedback regarding inappropriate answers. Demonstrations of child care related tasks, as well as individual counseling, were provided by the nurse researcher to assist subjects in the care of their child. Referrals to health care agencies were made when appropriate with

the permission of the subject. At the time of the evaluation, the control group participants were also offered the option of attending the group educational program for 2 through 6 month old age-specific well child clinics where there would be an opportunity to learn basic skills and concepts related to child care regardless of the age of the child.

Confidentiality of the subjects' responses was maintained by avoidance of the subject's name in conjunction with responses. A master key that identified subjects in each group was kept separately from a list that identified the groups only by numbers. Those who had access to the key were limited to the researcher and the assistant who assigned the subjects to groups. Participants' names were not indicated on the questionnaire. Responses were identified by the participant's number only so that the experimental group could be identified from the control group. Completed questionnaires were kept in a locked file and seen by only the researcher and her thesis advisor. Confidentiality was assured by the reporting of group data. Anonymity could not be assured due to the face-to-face nature of the home visits that was necessary for data collection. Completed questionnaires were destroyed after data analysis was completed. Signed consent forms are to be kept in a locked file on the Montana State University College of Nursing

Missoula Extended Campus for a period of 3 years after data collection and then destroyed.

Development of the Research Instrument

Although this study was designed to evaluate educational material deemed by maternal-child specialists and pediatric nurse practitioners to be important to parents of 2 to 6 month old children, the literature failed to reveal a tool that would evaluate parents' knowledge of the specific topics included in the group education program under discussion. The questionnaire used for data collection was developed by the researcher utilizing information available in the child care literature and other information including books available to the general public.

The Anticipatory Guidance Inventory (Appendix B) was a two part questionnaire designed to measure parent knowledge of the following topics: immunizations, taking temperatures and fever management, recognition and treatment of choking, giving medications, recognizing signs and symptoms of ear infections and how to treat them, and care of the sick baby. Part I consisted of open-ended questions regarding each of the 6 topics identified above. Part I also included questions to obtain demographic information for purposes of describing the groups in the study.

Part II consisted of observation items. Examples of observation items included such things as having a thermometer in the home, the ability to read the thermometer, and appropriate measuring devices for medication where applicable (Appendix B).

A predetermined set of acceptable responses was developed through the use of maternal-child and pediatric nurse experts prior to implementing the research. Each item was weighted equally.

Woods and Catanzaro (1988) identified that there are few instruments available to nurse researchers that measure nursing phenomena, thus necessitating that nurse researchers develop appropriate measuring tools. Such was the situation with the present study, necessitating the researcher's development of a tool as described earlier.

Reliability and Validity

Establishing reliability and validity for a research instrument is a complex and time consuming task requiring extensive testing and use of an instrument over time among various populations. Initial use of a new research instrument allows for limited establishment of reliability and validity of that instrument. The following paragraphs identify the researcher's effort to establish

limited reliability and validity for the Anticipatory Guidance Inventory.

The Anticipatory Guidance Inventory was submitted to a group of six maternal-child nursing experts and pediatric nurse practitioners throughout the state of Montana to determine content validity of the questionnaire. The experts were asked to review the questionnaire for validity of content of the questions as well as potential answers that might be provided by the subjects. The content experts were also asked to comment on the reading level and clarity of the questions. The Anticipatory Guidance Inventory was then modified based on the experts' recommendations.

The Anticipatory Guidance Inventory was further modified during pilot testing of the instrument with mothers attending the 7 to 12 month old group well child clinic. The mothers had exposure to some or all of the content being tested and were required to give informed written consent prior to testing. The pilot test assisted in determining that the length of time needed to conduct the evaluative home visit was one hour. The pilot test was utilized to help determine that the individuals would complete Part I of the Anticipatory Guidance Inventory by oral questioning rather than in writing. Questions were refined, eliminated or added based on information received from pilot testing of the questionnaire.

Internal reliability of the knowledge portion of the instrument was established using the Cronbach's alpha on data obtained from the pilot study responses. The Cronbach's alpha calculated for the Anticipatory Guidance Inventory was 0.8184. Unequal measures of the observational items were eliminated by having the same person conduct the home visits.

Data Collection

Once subjects were assigned to a group they participated in a sequence of 3 well child clinic visits over a 5 month period of time. The control group attended the traditional well child clinic in conjunction with parents who had children ranging in age from 2 months to 5 years. The experimental group attended an age-specific well child clinic which included a group education program with parents of children in the same age group as their infant. They received the group education module for each particular clinic visit as well as the traditional well child clinic care.

Data were collected during a home visit utilizing the Anticipatory Guidance Inventory, Part I and II. A home visit was determined to be the most effective method of ensuring complete returns of the questionnaires. The home visit was arranged by phone or by letter if no phone was available. Home visits occurred

4 to 6 weeks after the completion of the third well child clinic visit. Subjects were given a written statement at the time of the home visit that explained the purpose of the study, the risks and benefits of participation, and the questionnaire and the observations to be made. The above ensured informed consent by the subject prior to completion of any evaluative items.

Data Analysis

Parts I and II of the Anticipatory Guidance Inventory were combined to give subjects one score. A *t* test was then utilized to determine the significance of the difference between the means of the two groups. Correlations of selected variables were also examined using the Pearson *r*. The variables included for correlation were the Anticipatory Guidance Inventory score correlated with demographic information such as the number of children in the family, exposure to information regarding child care in addition to the well child clinic education program, health of infant at birth, and age and education of the parent. Descriptive statistics were utilized to characterize the two groups.

CHAPTER 4

RESULTS

The present study was an evaluation of a health department's educational program to increase mothers' knowledge of child health care as part of regular well child clinics. Mothers attended either an age-specific well child clinic with a group education format or a traditional well child clinic. The following were the results of this study.

Of 28 mothers initially assigned to the well child clinic groups for the study, a total of 20 completed the Anticipatory Guidance Inventory. The control group and the experimental group each contained 14 subjects with 10 subjects from each group completing the questionnaire.

Statistical Findings

The Anticipatory Guidance Inventory was a two part questionnaire used to collect data for the present study. Part I consisted of open ended questions while Part II consisted of observation items. The Anticipatory Guidance Inventory had a possible total score of 145 with Part I consisting of a possible 98

points and Part II consisting of a possible 47 points. Mean scores for Part I of the Anticipatory Guidance Inventory were 49.6 out of 98 for the control group and 50.7 out of 98 for the experimental group. Part II mean scores were 31.4 out of a possible 47 for the control group and 30.4 out of 47 for the experimental group. Total mean scores for the Anticipatory Guidance Inventory for the control and experimental groups were very similar, 81 and 81.1 respectively (Table 1).

Table 1. Mean Scores on the Anticipatory Guidance Inventory for the Control and Experimental Groups.

	Mean Scores		
	Part I	Part II	Total
Control Group (Traditional well child clinic)	49.6	31.4	81.0
Experimental Group (Age-specific well child clinic)	50.7	30.4	81.1

A *t* test was utilized to determine the significance of the difference between the mean scores on the Anticipatory Guidance Inventory for the experimental and control groups. The *t* test indicated that the difference between the mean scores of the two groups was not significant ($p < .05$). There was no differential effect on the group that could be attributed to the experimental.

treatment. The mean total scores, standard deviation, range of scores and *t* score for each group are presented in Table 2.

Table 2. Mean Scores on the Anticipatory Guidance Inventory, Standard Deviations, Range of Scores and *t* Score for the Control and Experimental Groups.

	M	S.D.	Range	<i>t</i> Score
Control Group (Traditional well child clinic)	81.0	8.353	64-90	-0.0026*
Experimental Group (Age-specific well child clinic)	81.1	10.567	67-97	-0.0026*

* $p < .05$

Descriptive statistics for the control group are contained in Table 3. The control group consisted of 10 mothers ranging in age from 22 to 37 years with a mean age of 28.3 years. Mothers in this group had a mean educational level of 13 years with a range of 9 to 17 years of completed education. The infants of the mothers in the control group were all healthy at birth. The control group had a mean of 2.3 children. The number of children for each mother ranged from one to four. Eight of the ten mothers had received information regarding care of their child from other sources in addition to the health department well child clinics (Table 3).

Table 3. Characteristics of Mothers in the Control Group (N=10) and the Experimental Group (N=10)

	Control		Experimental	
	N	Percentage	N	Percentage
Age				
15-20	0	0	1	10
21-25	2	20	3	30
26-30	6	60	4	40
31-35	1	10	1	10
36-40	1	10	1	10
Total	10	100	10	100
Education				
9-12	3	30	4	40
13-16	6	60	5	50
17-20	1	10	1	10
Total	10	100	10	100
# of children				
1	3	30	7	70
2	2	20	2	20
3	4	40	1	10
4	1	10	0	0
Total	10	100	10	100
Alternative Information Sources				
0 = No	2	20	0	0
1 = Yes	8	80	10	100
Total	10	100	10	100
Health of child at birth				
0 = Well	10	100	7	70
1 = Ill	0	0	3	30
Total	10	100	10	100

Table 3 also contains descriptive statistics for the experimental group. A group of ten mothers ranging in age from 18 to 37 years, with a mean age of 26.9 years, comprised this group. Mothers in the experimental group had completed a mean of 13.6 years of education with a range of 9 to 18 years of education completed. Three of the infants of these mothers were ill at birth. The mean number of children for each mother was 1.4 with a range of one to three children. All mothers in the experimental group had received information from other sources in addition to the health department well child clinics and the group education program they were exposed to at the well child clinics.

Selected independent variables were correlated with each group's score utilizing the Pearson r . Scores for each group were correlated with 1) age of the mother; 2) education of the mother; 3) health of the infant at birth; 4) exposure to other sources of child care information in addition to the well child clinics; and 5) number of children in the family (Tables 4 and 5).

