PRESCHOOLERS' KNOWLEDGE OF HEALTH AND HEALTHY BEHAVIORS

by

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PRESCHOOLERS' KNOWLEDGE OF HEALTH

This thesis submitted by Rena C. Pearre has been examined and approved by an appointed committee of the School of Graduate Studies of the Medical College of Georgia.

The signatures which appear below verify the fact that all required changes have been incorporated and that the thesis has received final approval with reference to content, form, and accuracy of presentation.

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RENA C. PEARRE
Preschoolers' Knowledge of Health
(Under the direction of DR. CECILIA TILLER)

Children's knowledge and thoughts about health can influence their adult health behaviors, because behaviors learned in childhood are frequently carried throughout life. The purpose of this study was to explore preschoolers' knowledge of health. Twenty preschool children were interviewed using Flaherty's (1986) Preschool Health Picture Interview (PHPI). Data analyzed by t-tests revealed the age of the child to be a significant factor in the childs knowledge of health. The findings of this study suggest that preschoolers recognize pictures that indicate situations that could be hazardous to health as well as activities that promote health. Nurses need to work with preschoolers to promote health education so that these behaviors will continue in adulthood.

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CHAPTER I

Introduction

Children's knowledge and thoughts about health can influence their adult health behaviors, because information learned in childhood is frequently carried throughout life. If this knowledge positively impacts a child's health activities it may positively influence the child for a lifetime.

Children are our greatest resource and must have the opportunity to reach their maximum potential. Optimal health is essential for this. It is imperative that nurses provide the needed health education for children to develop health promoting behaviors.

For nurses to influence children, the nurses must first understand what children know about health. Programs that encourage children to practice positive health behaviors could be developed and implemented in day care centers or as community based programs.

Purpose

Little research has been conducted regarding children's, especially preschoolers', knowledge of health and health behaviors. Nurses need to know what preschoolers

know about health in order to develop appropriate programs. Therefore, the purpose of this study was to explore preschoolers' knowledge about health and health behaviors.

Theoretical Framework

Piaget (1951a, 1951b, 1969) and Erikson (1963) served as the guiding framework for this study. The preschool years, the period from 3 to 5 years of age, comprise the end of early childhood. This is an age of discovery, inventiveness, curiosity, and developing sociocultural patterns of behavior. This period is a critical time for emotional and psychologic development and a time of great influence on the formation of the child.

The preschool child is curious, constantly in motion, loud, aggressive, and goal insistent. The preschooler has a newly acquired sense of guilt and is struggling for autonomy. The child begins to engage in fantasy, both fanciful and fearful, and to have twinges of a conscience (Erikson, 1963). Preschoolers are searching for identity development. "I am what I can imagine I will be," (Erikson, 1963, p. 122).

Erikson (1963) placed the preschooler in the stage of initiative versus guilt. At age three, the child is egocentric, alternates reality with imagination, and shares with others. The three year old is less dependent on parents and tolerates short separations well. The three

year old may be troubled by nightmares and fears of the the dark.

The four year old is both verbally and physically aggressive, as well as sexually curious. A sense of rivalry or competition develops between the same-sex child and parent which may be resolved by the four year old becoming strongly attached to the opposite sexed parent. This age group also plays well with others unless the others are siblings, because a strong sense of rivalry exists (Erikson, 1963).

When the child becomes five years old, fantasy and daydreams become part of the normal developmental process. This age group relates well to nonfamilial adults. The five year old is industrious but needs parental support (Erikson, 1963).

Piaget (1951a, 1951b, 1969) provided more insight to the psychological functioning of the preschool child. Young children take their perceptions as the truth (Piaget, 1951a). To understand why children do this, it is essential to understand their concepts of reality and causality. The world and the child exist with no distinction between "I" and the world. The child and the world are never completely separate (Piaget, 1951a; 1951b).

Children are able to think and verbalize their mental processes without having to act out their thinking. They can only think of one idea at a time. After the preschooler

understands his/her own point of view, the preschooler discovers that others have a point of view. The preschooler then perceives reality based on what is common to all points of view (Piaget, 1951a).

The stage of egocentrism appears around the ages of two or three until ages seven or eight (Piaget, 1951a; 1951b; 1969). Magic is particularly important as a method of causality (Piaget, 1951a). Magical causality occurs when the child regards certain acts or words as causing things. Egocentrism leads to narcissism which gives rise to magical conviction and thought control over nature (Piaget, 1951a; 1951b).

Preschoolers use transductive reasoning which begins by reproducing in their imagination events as presented by immediate reality. Transductive reasoning is carried on by predicative judgements. Transductive reasoning is a simple combination of judgements of irrational passage from particular to particular (Piaget, 1951a).

Both Erikson (1963) and Piaget (1951a) discussed the significance of magic and fantasy in the preschooler's life. Both also recognized that self is the most important aspect of a preschooler's world. Erikson described the preschooler as aggressive, goal insistent, and industrious, while Piaget explained that the preschooler uses transductive reasoning, the association of one event with a simultaneous event. Perhaps viewing self and world as one and the use of

transductive reasoning led to Erikson's labeling of the preschooler as aggressive and goal insistent.

Understanding the emotional and cognitive development of the preschooler allows the nurse to interact more appropriately with the child. Nurses should understand that preschoolers' perceptions are different from adults. As nurses better understand preschoolers' development, programs can be developed at the child's cognitive level. This study will identify preschoolers knowledge about health and health behaviors. This information will help nurses meet preschoolers' needs.

Study Questions

The questions developed for this project are listed below.

1. What do preschoolers know about health?
2. How do preschoolers perceive health and illness?

Definitions of Terms

Health. Health is a state of physical well being.

Healthy Behaviors. Healthy behaviors are actions which maintain or promote physical well being.

Preschooler. Preschooler is a child from age 3 years, 6 months to 5 years, 11 months.

Assumptions

1. A preschooler's conception of health is subjective.
2. Knowledge about health behaviors is developed in childhood.

3. A preschooler's knowledge of health and healthy behaviors is influenced by his/her life experience and cognitive development.

Significance

The significance of this study is the understanding of how preschooler's think about health and healthy behaviors. This knowledge could be used to develop health education programs for day care or community based centers thereby helping to promote positive health practices. This study could identify changes that have occurred in children's knowledge about health and healthy behaviors as trends and parental practices of healthy behaviors have changed.

As health care costs continue to soar, health promotion becomes increasingly important. Health promotion is based on health education. Children are entitled to health care and health education to allow them to maximize their potential. Nursing has a responsibility to provide children with both health care and health education. Health education is the key to health promoting behaviors and disease prevention.

CHAPTER II

Literature Review

This chapter includes a review of the literature that provided support for this study. Because minimal research has been conducted, the literature reviewed included reports related to preschooler's perceptions about health and illness and adult health behaviors.

Preschoolers' Knowledge of Illness

Bibace and Walsh (1980) questioned a group of 24, 4 year olds, (12 male; 12 female) about illness. They found the children were in a prelogical state and related illness causation to phenomenism. The children believed that illness was caused by an external concrete phenomenon. The children mostly viewed illness as a result of wrong doing.

Results of a questionnaire presented to 36 school aged children revealed that children learn about illness through experience (Brodie, 1974). Brodie noted however, that recent illness versus past illness did not affect the results. The children who had been ill within the last month viewed illness the same as children who had not been ill within the last three months.

Perrin and Gerrity (1981) found that kindergarten children typically understand illness causation as quite

magical and/or the consequences of their transgressions from the rules. This idea supported Piaget's (1951a) theories of magical causation and moral consequence. Perrin and Gerrity questioned 26 kindergartners who had difficulty comprehending healthy behaviors to prevent illness. The children's ideas about illness involved punishment, guilt, and self-blame. These results were supported by Thompson's (1985) study. Thompson's study reported that preschoolers associated illness with punishment for actual or imagined transgressions, such as not following directions (going outside without a coat) or self causation. The preschoolers in this study defined health as feeling good and being able to complete activities.

A group of 96 children aged 5 to 16 years were interviewed about illness causality (Perrin, Sayer & Willet, 1991). Forty-nine of the children in the group had a seizure disorder and 47 children had an orthopedic condition. The children were from both private and public schools. The results of the study indicated that children's age and general reasoning skills strongly predicted the child's understanding of illness causality. The older children had a better understanding of illness causality.

Preschoolers believe illness is caused by an external phenomenon (Biface & Walsh, 1980). Robinson (1987) and Perrin and Gerrity (1981) suggested that preschoolers believe illness is caused by magic. Illness was viewed also

as a method of punishment (Perrin & Gerrity, 1981; Robinson, 1987; Thompson, 1985). Preschoolers have no real comprehension of illness causality. Perrin, et al. (1991) found a direct correlation between age and awareness of illness causation, the older children had a more realistic understanding of illness causation.

Preschoolers' Health

A qualitative approach was used by Robinson (1987) to study 21 preschoolers attending conventional day care centers. The children were asked open ended questions to discover what was significant about being healthy or ill. The preschoolers recognized health as the desired state, independent of sickness. The children reported that health was when you feel like playing. They did know that nutrition, rest, and sleep promoted wellness. Preschoolers differentiated between "a little bit" sick or "a lot" sick and recognized that one could be sick and healthy at the same time; i.e. coughs but is still able to attend school. "A lot" sick means you must stay inside the house. The preschoolers stated a positive aspect of being "a lot" sick was getting presents; however, they viewed feeling bad and being afraid as a negative aspect (Robinson, 1987). The children "judged the degree of health and illness based on the nature of activities permitted or encouraged during illness rather than the kind of sickness" (p.94). The preschoolers had a realistic understanding of duration,

severity, and incidence of illness. Hurt was not the same as illness because hurt could be fixed with a bandaid. Recognized treatments for illness included rest, hugs, medicine, and a trip to the doctor if one was "a lot sick".

A survey of 189 children in grades 1, 3, and 6, was conducted by Palmer and Lewis (1976) to obtain definitions of health and illness and concepts of causation and prevention of illness. The conclusion was that the higher the grade and age the greater the awareness of health status. First graders defined illness nonspecifically and relied on adults to tell the child of the illness. The majority of the group surveyed identified an adequate diet as a preventive method.

The correlation between preschoolers' health concepts and their parents' perceptions of the preschooler was the focus of Maheady's (1986) study. Ten, 3 year olds and 20, 4 year olds were asked questions about school attendance, family illness, and medication administration. The parents were then interviewed in a similar fashion. The responses indicated significant accuracy in the preschooler's perception of their own health status.

A study of 91 first graders regarding what is healthy was conducted Natapoff (1987). The children came from a mix of blue collar, white collar and professional families. There were no differences identified based on socioeconomic status. The first graders defined health as feeling good,

being able to do what one wanted, and eating real food. Being sick was equated with specific symptoms and/or diseases. The first graders identified eating vegetables, getting exercise, and keeping clean as ways of staying healthy. Health was being able to play with friends and family and to go outside.

Flaherty (1986) developed the Preschool Health Picture Interview (PHPI) and used it to study 41, 4 and 5 year olds at a day care center. The children were interviewed by using a combination of pictures and questions in regard to health and health related behaviors. They were shown various pictures and questioned about the pictured child's health status. Some pictures were of activities such as swinging or standing in a chair. The children were asked if the activity was healthy or not, or if they were allowed to do the pictured activity.

The children's responses were coded into five categories: behavioral, moral, affective, egocentric, and circular. These categories supported Piaget's (1951a, 1951b, 1969) previous work and reflected the importance of self to the preschooler. Moral responses equated illness with punishment. Transductive reasoning was apparent because these children believed what they said was the truth. The children equated healthy with happy and with participating in the activities shown in the picture. They equated not healthy with being sad and inactive or staying

in bed. Most of the children correctly identified the pictures of hazardous behaviors and the pictures of healthy behaviors. The children ranked eating as the most important way of staying healthy. This was followed by going to the doctor, brushing teeth, sleeping, and running (Flaherty, 1986).

The children recognized the doctor as the person who can help you stay well. This was followed by the nurse, mom, dad, and teacher. Interestingly the doctor was viewed as the examiner and shot giver, while the nurse was viewed as the care giver, giving hugs and support (Flaherty, 1986).

Flaherty's (1986) PHPI was used by Logsdon (1991) to interview 30 children ranging in age from 4 years 0 months to 5 years 10 months. The majority of preschoolers described healthy as being able to play a lot, go to school, or being happy. Healthy was associated with a happy face while not healthy was associated with a sad face. These preschoolers identified brushing teeth and eating good food as health promoting behaviors. The majority of the children correctly identified all hazardous behaviors depicted in the PHPI as hazardous. The majority also correctly identified pictures of health promoting behaviors. The preschoolers differentiated between healthy and not healthy based on activity and facial expressions depicted in the pictures.

Preschoolers have a clear understanding of what it means to be healthy. Preschoolers equate being healthy with

being able to play (Flaherty, 1986). Palmer and Lewis (1976) found a direct correlation between age and comprehension of health status. The younger children relied on an adult to determine the child's health status. The older children were able to determine their own health status. Proper nutrition is a key component of health for preschoolers (Flaherty, 1986; Logsdon, 1991; Natapoff, 1987; Robinson, 1987).

Adult Health Behaviors

A review of the literature in regard to adult health behaviors was conducted to document changing trends over the past few years. The review was restricted to those articles pertaining primarily to health promotion.

A study of 172 nursing clinic patients was conducted in 1988 (Muhlenkamp & Broerman). This study used the Multidimensional Health Locus of Control scale to determine what adults believed about health promotion activities. The study revealed that people who view health as a random event practice fewer health promotion activities. Education had a direct effect on lifestyle, with the more educated participants practicing more health promoting activities. Behaviors, frequently seen as habits, such as smoking, nutrition, and exercise may be the result of parenting, peer pressure, teachers, or other influences.

Zimmerman and Connor (1989) studied 84 adults who were trying to change some health behavior. Questionnaires were

used to elicit health behaviors and the perceived amount of support being given by others. The study revealed a direct correlation in the amount of support received and the success of the change. Family members were most influential followed by friends and co-workers.

Two theories of development of health beliefs were examined in a study by Lau, Quadrel, and Hartman (1990). The first theory was Enduring Family Socialization. This theory proposed that preventive health beliefs and behaviors are learned from families during childhood and remain relatively stable throughout life. Peers and education are considered to be unimportant. The second theory, Lifelong Openness, proposed that children's beliefs were similar to their parent's beliefs but could be changed by education, peers, or the media. Over 500 parent/child pairs of entering college freshmen participated in this study during their first 3 years of college. Questionnaires were sent to each member of the pair each semester for three years and asked about health behaviors and beliefs. Findings suggested that parents strongly influence their children by modeling. Peer influence was strongest during the second college year especially in regard to nutrition, exercise, and alcohol use.

Health promoting behaviors included routine exercise, rest, optimal nutrition, stress reduction, and development of social support systems. How a person defined health

influenced their behavior. The more important health was viewed by the individual, the more likely the individual was to engage in health promoting behaviors. Positive perception of health status increased health promoting behaviors, as did a perception of control over one's health. The more benefit associated with a change in behavior the more successful the change. Other influences on health promoting behavior included family support, physician involvement, past experiences, and media (Palank, 1991).

What people believed about health and themselves directly influences their health promoting behaviors (Muhlenkamp & Broerman, 1988; Lau, et al., 1990; Palank, 1991). Support from family, friends, and others was also very important (Zimmerman & Connor, 1989; Lau, et al., 1990; Palank, 1991). Individuals who believe they can influence their own health status are even more motivated to do so if they believe they have support from their family and friends.

Summary

Preschoolers have not been frequently studied. There is little information about what these children, in their most formative years, believe in regard to health and illness. The majority of research has been conducted with the five to ten year olds rather than the preschool group.

Preschoolers have no real comprehension of illness causality. They believe illness is caused by magic

(Robinson, 1987; Perrin & Gerrity, 1981) or by some external phenomenon (Bibace & Walsh, 1980). There is a direct correlation between age and awareness of health status (Palmer & Lewis, 1976) and illness causation (Perrin, et al., 1991). Children equate healthy with being able to play and eating properly (Flaherty, 1986; Natapoff, 1987; Robinson, 1987; Logsdon, 1991).

Current trends suggest that adult health behaviors are changing as adults become more health conscious. Studies have demonstrated that adults are more motivated to make positive health behavior changes if they feel they will succeed and that they have social support (Muhlenkamp & Broerman, 1988; Zimmerman & Conner, 1989; Lau, et al., 1990; Palank, 1991). It is essential for professionals to determine if children's health behaviors are changing in response to changing adult behaviors. Nurses can provide the proper health education during the children's formative years. Hopefully this study will help to determine the need for health education for preschoolers.

CHAPTER III

Methodology

This chapter describes the design of the study and the instruments that were used to collect data. A description of the subjects, the procedure and the analysis are presented.

Design of the Study

This descriptive study was designed to examine preschooler's knowledge about health and health behavior and was based on Flaherty's (1986) original work. Several changes from Flaherty's original study were made.

Flaherty (1986) studied 4 and 5 year olds using the PHPI. Data analysis was conducted using Chi square to determine if there was a significant difference in mean PHPI scores in relation to age, gender, or socioeconomic status. Changes for this study included enrolling two children aged 3 years 6 months and not evaluating socioeconomic status was because it was found to be nonsignificant in previous studies (Flaherty, 1986; Natapoff, 1987; Logsdon, 1991). Because a small sample (n=20) was obtained for this study, pooled standard deviation t-tests were used to determine if there were any significant differences in mean scores for the preschoolers in relation to age or gender.

Subjects

The 20 subjects, whose parents consented for them to participate, were enrolled at a Southeastern metropolitan day care center. This convenient sample was composed of children aged 3 years 6 months to 5 years 4 months, who were healthy and had no observable problems with growth and development.

Human Assurance

The protocol and consent forms for this study were approved by the institutional review board with which the investigator was affiliated. Permission to conduct the study was obtained from the day care center (Appendix B).

Instruments

Demographic Data Sheet

A demographic data sheet was developed by the investigator. This information was completed by the parent(s) at the time the consent was obtained (Appendix C).

Preschool Health Picture Interview

Flaherty (1986) developed the Preschool Health Picture Interview (PHPI) to investigate preschooler's conceptions about health and illness. The tool included 23 mostly open-ended questions which allowed the child to expound on his/her response (Appendix D). The questions focus on five topics: Topic 1, How one feels when healthy? was determined by asking the child how he/she feels when well; Topic 2, Who is Healthy? was illustrated by a smiling child riding a

tricycle; Topic 3, Health promoting behaviors, used pictures demonstrating brushing teeth, eating, and running; Topic 4, Behaviors hazardous to health, illustrated children smoking and standing in a chair; and Topic 5, who helps children stay healthy? was a direct question posed to the children.

There were 26 pictures used as illustrations for the questions. The original pictures were unavailable for use. Flaherty (1986) enclosed xeroxed copies of the original pictures along with written content information about the tool. Pictures, that reflected the same content as indicated from the information available, were cut by the investigator from magazines and newspapers. All the pictures used in this study were in color except for drawings of happy and sad faces which were black and white. The pictures were displayed in random order, unless otherwise indicated by the interview guide, to reduce selection bias (Appendix E).

Reliability/Validity. Flaherty (1986) reported that the PHPI has stability of response on test/retest which indicates reliability; however, reliability and validity coefficients were not available (Personal Communications, August 15, 1992). The PHPI has been judged by users to have face and content validity (Flaherty). Pediatric clinical nurse specialists, early childhood educators, and Flaherty have used the tool. Flaherty believed the tool has clinical

reliability and validity. The tool has only been used in published research twice (Flaherty, 1986 & Logsdon, 1991), and is still being developed.

Scoring. Scores were assigned to questions 6-11 and 15-21 for (a) identification of the picture, and (b) association of a picture with health status. Questions 6 and 7 did not require identification of a picture but required association with health status. Questions 8-11 and 15-21 required the child to both identify the picture and the health status. The scoring procedure was as follows: 2 points for a correct answer, 1 point for a partially correct answer, 0 points for incorrect or no answer. Highest possible score was 48 points (see Appendix D).

Responses to open-ended questions with pictures were analyzed in accordance with Flaherty's (1986) procedure. A unit is comprised of a subject and predicate. A new unit began whenever the predicate changed unless the dependent clause is necessary for understanding. Response units were then placed in categories. The response units were divided as relevant (logical relationship to picture or question) or irrelevant (no logical relationship to picture or question). Relevant responses were then divided into 5 categories: behavioral, moral, affective, egocentric, and circular.

Flaherty's (1986) definitions of the categories were used. Behavioral responses refer to statements about the depicted behavior and are subcategorized as descriptive,

elaborative, or consequential. Descriptive responses were actual reports of the picture. Elaborative responses were adding details not in the picture. Consequential responses stated a potential outcome of the child in the picture. Moral responses included labeling the picture as good or bad, required or prohibited. Affective responses described a feeling for the picture. Egocentric responses included the child's personal experiences while circular responses included rephrasing the question.

The children were asked to identify behaviors that keep them healthy by selecting from a group of health promotion behavior pictures. The choices were ranked 1, 2, or 3; first, second, and third respectively. The children were asked to differentiate between health and illness and how the child knows if one is ill or not.

Procedure

All interviews were conducted by the investigator. To maintain confidentiality the children were assigned an identification number when enrolled in the study. The children were interviewed in a quiet room at their day care center. The responses were transcribed verbatim onto the answer sheet. The children were asked to select from the two separate group of pictures: Health promotion activities and individuals who help the child maintain health. Choices were ranked by order of selection. Pictures not selected by the subjects were given the lowest ranking.

Data Analysis

Data were scored and grouped the same way as in Flaherty's (1986) original study. Responses to questions were grouped by categories and analyzed for content. Demographic data was tabulated and t-tests at p=.05 were conducted to determine if any significant difference existed between PHPI mean scores and age or gender. The children were divided into 2 groups, under 4 years 6 months (younger group) and over 4 years 6 months (older group). Six focus topics emerged for analysis:

1. Child's comprehension of specific terms (Questions 1-5) (no score given)

2. Association of feeling tone with health (Questions 6 and 7).

3. Identification of healthy and unhealthy children (Questions 8-11).

4. Selection of behaviors that promote health (Questions 12-14).

5. Identification of behaviors hazardous to health (Questions 15-21).

6. Selection of individuals who help child maintain health (Question 23).

Summary

Preschoolers were involved in this exploratory study to learn more about their health behaviors. The children were interviewed using the PHPI. Data were reviewed for differences based on age and gender. Findings are presented in the next chapter.

CHAPTER IV

Data Analysis

This chapter describes the procedure for data analysis. A description of the subjects, their families, and the analysis is included.

Description of the Subjects

Participants in the study were preschool children aged 3 years 6 months to 5 years 6 months (see Table I). All attended a private day care center in a metropolitan area. The parents of the participating students completed an investigator developed demographic data sheet. Of the 20 participants, one child was Hispanic, four (20%) were African-American, and remaining (75%) were European-American. Two (10%) children were from single parent households and one set of parents was separated while the remaining 17 (85%) children came from two parent households.

All of the parents had completed high school and nearly all had some college education. College graduates comprised 60% (12) of the families. Parental income ranged from $10,000 to over $50,000 annually. All of the parents were employed as professionals except for one single family mother who was both a student and worked as a cashier, and

one couple where the father was a student and mother was a clerical worker.

Twelve (60%) of the families had 2 children, while 6 (30%) families had only one child. The remaining two (10%) families each had three or four children. Parents were not asked the birth order of their participating child. The youngest parent was 20 years old and the oldest was 44 years old. Most (70%) of the parents were in their 30's.

Table I

Description of Study Participants

Age of Subjects	Range 42 months to 64 months	
	Mean = 53.4 months	
	Mode = 51 months	
Race	European-American	15 (75%)
	African-American	4 (20%)
	Hispanic	1 (5%)
Parents' Income	$10,000 - $20,000	2 (10%)
	$20,000 - $30,000	1 (5%)
	$30,000 - $40,000	5 (25%)
	$40,000 - $50,000	5 (25%)
	$50,000+	7 (35%)
	Mean = $36,500 Mode = $50,000+	
Parents Education	High school graduate	6 (30%)
	College graduate	12 (60%)
	Post-college education	2 (10%)
Number of Children	Single child	6 (30%)
	Two children	12 (60%)
	Three or more children	2 (10%)

Analysis of Data

Health Status. When shown pictures of happy and sad faces all children correctly identified them. When asked which face they would have if mom gave them an ice cream cone, all stated "happy". One child (age 4 years, 3 months) stated he would be happy if he hurt his knee and both 3 year olds did not know if they had a happy or sad face when healthy or ill. All of the children used feeling bad or sick to describe an unhealthy state.

When shown a sad face, 10 (50%) children equated it to being sick. Of these, one child thought the face was mad and another stated the face had a hurt knee. Two (10%) children said the face was sick but could not identify why. Four (20%) other children stated sick "just because". Three (15%) children did not respond to the question. One child was unable to determine the face's health status.

When shown a happy face, 15 (75%) children associated it with healthy. Ten (50%) of the children mentioned the smile. One child said the face felt better. Another said the face had an ice cream cone. One child said "he learned it" and two stated healthy "just because". No response was given by three (15%) children and two (10%) children were unable to determine the health status.

The smiling boy riding a tricycle was identified as healthy by 17 (85%) of the children. Ten (50%) of these linked his smile to his health. Four children stated "just

because" and one stated "he's not sick". Two children used the rationale, "he's playing". Health status was undetermined by two children.

The picture of children eating was identified as healthy by 17 (85%) children. Six (30%) children rationalized this by "he's eating". Five (25%) children noted the children were happy and five (25%) others said "just because". No response was obtained from one child and two others could not determine health status.

The picture of a smiling girl in a hospital bed elicited varying responses. Seven (35%) children identified her as ill because of the hospital bed. Six (30%) children identified her as healthy because of the smile. Healthy, "just because" was the response of three (15%) children. "Mom told" one child the girl was healthy. Two children were unable to determine health status. One child stated it was a picture of a smiling girl in bed.

All but two children (who did not know) viewed the smiling children building with blocks as healthy. The smiles accounted for 10 answers. Playing was the rationale of three children. "Mom told" three of the children and "just because" was the rationale for two children.

Health Promotion. The children were asked to select health promotion activities from a random picture grouping. The activities were ranked in order of their selection. Only one child ranked sleeping as a top priority for staying

healthy, but 11 (85%) others recognized sleeping as being important for health. Running was ranked as the first priority by three (15%) children. Rationales for this included exercises and fun (see Table II).

Table II

Ranking of Health Promotion Behaviors

Behavior	1	2	3	4	5
Brushing teeth	7	4	2	1	0
Eating	7	2	6	0	1
Running	3	3	2	2	2
Sleeping	1	2	4	5	0
Washing hands	0	4	2	1	1

Note: Totals do not equal number of participants because all subjects did not rank each item.

Washing hands was ranked number two by four (20%) children; however, six (30%) children verbalized true rationales for washing hands. Top priority for seven (35%) children was brushing teeth and they verbalized actual rationales for why brushing teeth was important for staying healthy.

Eating was top priority for seven (35%) children. The children said eating "makes you strong", "keeps you healthy", and "gives you energy". The picture of a child

getting a checkup was correctly identified by 11 children. Seven (35%) of the children reported that getting checkups helped one stay well; the other four children got checkups "just because". Seven (35%0 children did not recognize the picture of a child getting a checkup.

Fruit was selected by six (30%) children as the most popular food to eat to promote health. This was followed by cereal, ice cream, and crackers with two votes each. Milk was the top choice of healthy drinks for nine (45%) children, followed closely by juice with eight votes. Beer was named by one child as a healthy drink. Getting strong muscles was the top reason for eating and drinking healthy items. The list of unhealthy items was topped with cake, drugs, and drinks with two votes each.

Potential Hazardous Behaviors. The picture of a child standing in a chair was correctly identified as a dangerous activity by all but two children. These two reported the child was having her picture made.

All (100%) children correctly identified the picture of children playing on swings as acceptable. Sixteen (80%) children stated that riding a bicycle in the street was acceptable. Twelve (60%) of the children verbalized okay because mother was with the child. "No no" was stated by four (20%) children. Three children stated it was "dangerous because the bicycle was in the street" and one stated "the bicycle might hit the car".

None of the 20 children correctly identified Mr. Yuk, the standardized poison control symbol. The picture of a baby in a car seat was reported as a baby in a chair by two (10%) children. The remaining children correctly identified the picture. Nine (45%) children recognized safety as the rationale for using car seats.

The picture of children smoking was correctly identified by 10 (50%) children. All of the children knew this was a "no no", because smoking was not allowed. Eight (40%) children thought the children were drinking using straws. Four (20%) of these children said drinking was okay if the children were thirsty or not making a mess. The other four (20%) children said drinking was a "no no" because children are not supposed to drink. No further explanation was provided by the children. The remaining two (10%) children identified the picture as eating which is "Okay if it is healthy food".

All (100%) the children correctly identified the picture of children eating ice cream. Fifteen (75%) children stated "okay, if mom knows". Eating ice cream was a "no no" to five children because "you cannot eat ice cream when you are dressed up".

The question "Can you think of anything else we shouldn't do if we want to stay healthy?" only received four

responses. These answers included drinking and driving from two (10%) children, not playing when sick, and not eating vitamins.

Individuals Who Promote Health. All (100%) children correctly selected pictures of a mom and a dad from a random grouping. Mom was ranked top as the person who keeps you healthy by three children. Their reason was because "mommy makes you eat". Other ways mommy keeps you healthy were giving treats and helping the doctor. Dad was ranked top by two (10%) children. Dads were reported to keep you healthy by "helping mommy make you eat, and being nice to you".

Four (20%) children were unable to identify a doctor in the random picture grouping. Of the 16 (80%) children who did identify a doctor, seven (35%) ranked the doctor highest as the person who keeps you healthy. Six (30%) children stated the doctor gives you medicine or shots. Five (25%) others verbalized the doctor's importance in staying healthy but could not verbalize the mechanism for this.

The picture of the nurse was correctly identified by 17 (85%) children. The nurse was ranked highest at keeping you healthy by four (20%) children. Nurses' activities were described by the children as checking you and giving you medicine or a shot.

The picture of the teacher was correctly identified by 17 (85%) children. Only three (15%) children stated teachers teach things to make you healthy (See Table III).

Table III

Rankings of Individuals Who Promote Health

Individuals	1	2	3	4	5
Doctor	7	4	0	0	2
Nurse	4	5	0	1	0
Mother	3	2	3	1	1
Father	2	2	1	1	2
Teacher	0	0	2	2	0

Note: Totals do not equal number of participants because all did not rank each item.

Response Evaluation. The responses to the open-ended questions were mostly behavioral or moral. The inappropriate responses were not evaluated. Not all children responded to all questions. The children, as a whole, seemed reticent to elaborate on their answers. There were no significant differences noted by age or gender in type of response given.

The mean scores were evaluated in regard to age and gender by t-tests. Analysis revealed gender to be nonsignificant (see Table IV). Age was a significant factor with the older group of students displaying higher mean scores (See Table V).

Table IV

Mean Scores by Gender

Gender	N	Mean	SD	t
Female	11	38.73	4.57	
Male	9	40.44	5.08	
				4.8

$p<0.05$

Table V

Comparison of Mean Scores for the Younger and the Older Groups

Group	N	Mean Score	SD	t
Younger				
<4 years 6 months	11	37.73	5.60	
Older				
>4 years 6 months	9	42.00	1.83	4.8

$p<0.05$

Summary

The children who participated in this study were primarily (75%) middle class European-Americans with parental incomes in the $30,000-40,000 range. Most (95%) were also members of two parent families and most had siblings. The majority of the parents were employed as professionals.

The children were generally able to associate happy faces with feeling healthy and sad faces with feeling ill. Overall they were able to determine health status accurately by identifying facial expressions displayed by the children i the pictures. The children generally recognized health promoting behaviors but were not always sure of the mechanism involved in promoting health. Most of the negative health behaviors were accurately identified but here again there were some problems with the mechanisms. The children were unable to identify Mr. Yuk, the standardized poison prevention symbol. There was also some confusion about the picture of the children smoking. The children understood that mommy and daddy helped you stay healthy but ranked the doctor and nurse as the most important persons for keeping them healthy.

CHAPTER V

Data Analysis

The purpose of this study was to determine preschoolers' knowledge of health and healthy behaviors. The sample consisted of 20 preschoolers enrolled in a day care center. This chapter will discuss the findings in relation to these preschoolers.

Discussion

The preschoolers who participated in this study came from families with a mean income of $36,500. The children exhibited no health or developmental problems. Income and gender were not found to be significant in the preschooler's knowledge of health and healthy behaviors; however, age was significant; the older the child the better able he/she was to appropriately identify the pictures.

Health Status. The preschoolers who participated were consistent in associating facial expression with health status. The one 3 year old who stated he would be happy if he hurt his knee was fidgeting and not maintaining eye contact with the investigator during the first part of the interview. The two 3 year old participants seemed to have some difficulty comprehending some of the questions and pictures. Probably, the two children did not have the

cognitive skills necessary to participate. The lack of cognitive skills may be the reason Flaherty (1986) and Logsdon (1991) did not include children less than 4 years old.

The happy and sad faces were associated with health and illness respectively by 17 (85%) children. The three (15%) children who were unable to correctly associate facial expression and health status were all in the younger group.

The picture of the child riding a tricycle was identified as healthy by all but three (15%) of the younger children. "Smile" or "happy" was the rationale for 75% of these children. These preschoolers appear to associate healthy with a smile.

There was some confusion over the picture of a smiling girl in a hospital bed. Six (30%) children (3 older, 3 younger) identified her as healthy because of her smile. Obviously, the preschoolers association between facial expression and health status was very influential. Seven (35%) (4 older, 3 younger) others identified the child as ill because of the hospital setting. These preschoolers apparently have had some knowledge about a hospital bed and were able to relate that knowledge to the potential for illness.

Health Promotion. Brushing teeth was the most important health promotion behavior to the older children. Eating was the most important health promotion behavior to

the younger children. The top choices for healthy food and drink were fruit and milk because these foods "give you muscles" and "make you strong". The responses indicate that these preschoolers have learned that brushing teeth and eating specific foods help keep them healthy.

All but two (10%) of the younger children correctly identified the picture of a girl standing in a chair as a hazardous behavior. It is very likely that the two children who stated the girl was having her picture made, had just had their picture made. It is a common practice for photographers to stand children in a chair for a photograph. Children swinging was correctly described by all the participants. This behavior was viewed as health promotion.

The picture of a child riding a bicycle in the street elicited some interesting responses. There is an adult in the picture also. Sixteen (80%) children (6 older and 10 younger) related that this behavior was acceptable because of the presence of an adult. Four (20%) older children indicated this behavior was unacceptable. The child in the picture is not wearing a helmet which has become a common practice. These preschoolers did not mention the lack of a helmet. It is possible that these children do not yet ride a bicycle and therefore were unable to identify this safety hazard.

The Director of the child care center informed the investigator that the children had all recently participated

in a Poison Prevention Program, featuring Mr. Yuk; however, none of the children correctly identified the picture of Mr. Yuk, the standardized poison control symbol. In Flaherty's (1986) study, Mr. Yuk was correctly identified by all participants. Only 14% of Logsdon's (1991) participants correctly identified Mr. Yuk. Mr Yuk has not been advertised as frequently over the last several years, as when Mr. Yuk originated. This lack of recognition is most likely due to the decreased publicity.

The picture of a baby in a car seat was correctly identified by all but two (10%) older children. The preschoolers viewed car seats as health promoting. State law requires car seats so it was assumed that these preschoolers were probably using their car seat.

The picture of children smoking also elicited some interesting results. Six (40%) older children and four (20%) younger children correctly identified the picture and viewed this behavior as hazardous to health. Eight (40%) children, equally divided by age group, identified the children as drinking from juice boxes. Juice boxes are fairly new on the market, but are heavily advertised and appear to have high appeal to preschoolers. Four (20%) of the eight children stated drinking was not allowed but did not elaborate. The children in the picture are sitting on a sofa. Perhaps drinking is not allowed on the sofa or in a room beside the kitchen in these children's homes.

All of the children correctly identified the picture of children eating ice cream. The children in the picture are dressed as cows. Three younger children and one older child stated eating ice cream was not allowed when dressed up. The remaining children responded that eating ice cream was allowed. The children's responses probably reflect what they have been told by their parents.

Individuals Who Promote Health. The random showing of pictures of a mom, a dad, a doctor, a nurse, and a teacher resulted in the majority of the children correctly identifying the individuals in the pictures. The doctor was selected as the top person who helps to keep you healthy even though four (20%) children (2 older, 2 younger) were unable to identify a doctor during random selection. Interestingly, the preschoolers associated both the doctor and nurse with shots and medications,but associated only nurses with "checking" the children. Teachers were not perceived as active in health promotion activities. Refer to Table II for rankings. This finding could be interpreted as children and possibly their parents, still view the physician as the major health care provider.

Analysis of Data

A two-way t-test was performed for a comparison of the PHPI mean scores with age and gender. The t-test revealed age to be significant. This supported previous findings (Flaherty, 1986; Natapoff, 1987; Logsdon, 1991). The older

children scored higher on the PHPI, thus implying better knowledge of health and healthy behaviors.

This finding supports also the suppositions of Piaget (1959a, 1951b, 1969) and Erikson (1963) in that the younger preschooler does not have the cognitive ability to comprehend the reasoning necessary to respond to these questions. These younger students short attention span was also a factor in their comprehension and responses.

Relation of Study to Literature Review

The preschoolers in this study associated health with being able to play and linked good nutrition and oral hygiene to maintaining health as did other children in previous studies (Flaherty, 1986; Natapoff, 1987; Robinson, 1987; Logsdon, 1991). The children in this study associated facial expression with health status as did the preschoolers studied by Flaherty (1986) and Logsdon (1991), both of whom used the PHPI in their studies. Of interest was the sample's lack of identification of Mr. Yuk. When comparing Flaherty's (1986) study, (100% recognition) with Logsdon's (1991) study, (14% recognition) and to this study (0% recognition), there may be some explanation as stated earlier which involved the decreased visibility of the Mr. Yuk symbol. Overall the study results supported the previous studies reported in the literature.

The preschoolers in this study failed to elaborate about their responses as they did Flaherty's (1986) study.

Perhaps, these children had some stranger anxiety toward the investigator. This sample consisted mostly of younger children (<5 years of age) who do not relate well to nonfamilial adults. According to Erikson (1963) this behavior usually subsides by the time the child is 5 years of age.

Limitations

The limitations of this study are:

1. A small sample size does not permit generalization to a larger group.

2. The use of a convenient sample does not permit generalization to a larger group.

3. The individual preschooler's comprehension of the questions and answers may be limited.

4. The changes made in this study from Flaherty's original study may have created different responses.

Recommendations

The following recommendations are offered for further research.

1. The study should be replicated with a larger sample to provide further development of the tool.

2. A set of pictures reflecting current practices should be included with the tool.

3. The development of a video or computer assisted pictures to supplement the tool should be investigated.

Implications for Nursing

This study provided support for previous studies regarding preschoolers knowledge of health and healthy behaviors. The preschool years are the most important developmental years because of rapid cognitive development and building the foundation for future health behaviors. Nurses should educate preschoolers about health promoting behaviors so these behaviors will continue into adulthood. An awareness of preschoolers' cognitive abilities would enable nurses to develop age appropriate programs.

Conclusion

This study supported the supposition that preschoolers associate facial expression with health and healthy behaviors. The children recognized behaviors that were hazardous to health as well as behaviors that promote health. Possible areas for educational development include bicycle safety and poison prevention with recognition of Mr. Yuk as a goal. These areas are suggested because the children in this study did not identify riding a bicycle in the street as a hazardous behavior and were unable to identify Mr. Yuk.

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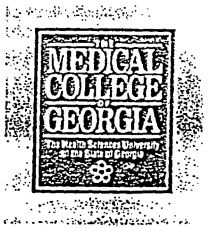
APPENDIX A

Human Assurance Approval



Human Assurance Committee
Institutional Review Board

April 19, 1993

Rena C. Pearre, R.N., B.S.N.
[redacted]

RE: "Preschoolers' Health Care Beliefs"

APPROVAL DATE: April 19, 1993
FILE NUMBER: 92-12-119

Dear Ms. Pearre:

The HUMAN ASSURANCE COMMITTEE has reviewed and approved the above referenced project in accordance with the DHHS policy and the institutional assurance on file with the DHHS.

The Committee would like to call your attention to the following obligations as Principal Investigator of this study. Under the terms of our approved Institutional Assurance to the Department of Health and Human Services, you must provide us with a progress report at the termination of the study, or at the annual anniversary date of this approval, whichever comes first. If the study will be continued beyond the initial year, an annual review by the HUMAN ASSURANCE COMMITTEE is required, with a progress report constituting an important part of the review. The Committee will notify you of the anniversary report by sending you an HAC-107 form for completion.

If VA patients or facilities are involved in this study, you must also have a letter of approval from the VA Research & Development Committee prior to involvement of VA patients or facilities.

Sincerely yours,

[redacted]
George S. Schuster, D.D.S., Ph.D.
Chairman
HUMAN ASSURANCE COMMITTEE

APPENDIX B

Day Care Consent

April 1, 1993

To Whom It May Concern:

This is to confirm that Rena Pearre has permission to use the Medical College of Georgia Day Care Center for her study on Preschoolers' Health Behaviors.

Sincerely,

[redacted]

Jemma Fournier,
Director Medical College
of Georgia Day Care Center

APPENDIX C

Consent Form

Consent Form

Project Title: Preschoolers Health Care Beliefs
Principal Investigator: Rena C. Pearre, RN, BSN

My child has been invited to participate in a research study. The purpose of this study is to find out what preschoolers know about health.

My child is one of 50 preschoolers participating in the study.

My child will be shown some pictures and asked some questions about what is healthy and what is not healthy. For example, the child may be shown a picture of a child brushing their teeth and asked if this is a healthy activity. Or the child may be asked what is healthy. The interview will be audiotaped for accuracy. Parents will be asked to fill out a short form about the family's income. All information will be confidential. I understand that my child and I will not be identified in the study or any publication that results from this study, and that my name will not appear on any of the questionaires. Random numbers will be assigned on the questionaires for identificaton purposes and only the investigator will have the key. The questionaires and audiotapes will be destroyed after the study is completed.

I also understand that my child's and my participation is voluntary, and that I may withdraw from the study at anytime. I understand that my participation in this research study, and research record specifically related to it, will be confidential, unless specifically required to be disclosed by state or federal law. I will not be charged for participating. I may reach Rena Pearre at (706) [redacted] at any time if I have further questions related to this study. If I have questions concerning the rights of research subjects, I can contact Dr. G. Schuster at (706) 721-2991.

I understand the purpose of this study as it has been explained above. I also understand that a summary of the results of the study is available if I request it.

_____ _____
Parent's signature date

_____ _____
Principal Investigator's Signature date

APPENDIX D

Demographic Data

Family Information

Mother's age_____ Mother's race_____

Father's age_____ Father's race_____

Marital Status: Married _____ Never Married _____

Divorced _____ Cohabitating _____

Separated _____ Widowed _____

Highest grade completed (mother)_____(father)_____

Occupation (mother)_____(father)_____

Total Annual Family Income: Less than $10,000_____

$10,000 to 19,999_____

$20,000 to 29,999_____

$30,000 to 39,999_____

$40,000 to 49,999_____

$50,000 and above_____

Number of living children

Mother or Father filled out this information. (Please circle one)

APPENDIX E

Preschool Health Picture Interview (PHPI)

Interview Guide

QUESTIONS

Show pictures	#1 happy	#2 sad	don't know
1. How do you feel when your mother gives you an ice cream cone?			
2. When you fall and hurt your knee			
3. When you are healthy? Well? Feeling good?			
4. When you are not healthy? Well? Feeling good?			

Answer Sheet
ID#
DOB
Age
Date Interviewed
Race
Sex
Site
Time

Child understands: Healthy? Yes No Well: Yes No Feeling good: Yes No

5. If you're not healthy (or well or feeling good) what are you?

Show picture	Yes	No	D.K.	How can you tell?
6. #3 Sad Is this child healthy?				
7. #4 Happy Are these children healthy?				

What is this child doing? Do you think he is healthy?

Show picture	Identifies action Yes	No	Partial	Yes	No	D.K.	How can you tell?
8. #5 riding tricycle							
9. #6 eating							
10. #7 sick							
11. #8 building with blocks							

QUESTIONS

Show pictures 9-13 as an array in random order.

12. a. Touch a picture that shows what you can do to stay healthy.
b. What are they doing? Can you find another? Another?

Order of Presentation	Picture	Identifies action: Yes	No	Partial	Rank	c. How will that help you to stay healthy?
	# 9 sleeping					
	#10 running					
	#11 washing hands					
	#12 brushing teeth					
	#13 eating					
	#14 check-up					

13. Is there anything else that you can think of to help you stay healthy that I don't have a picture of?

14. In addition to above, with picture #13 (eating)
b. What kinds of food do you think he should eat to stay healthy?

c. What should he drink to stay healthy?

d. How will eating and drinking ___ (name the foods that the child did) help you to stay healthy?

e. Is there anything that he shouldn't eat or drink if he wants to stay healthy?

Now I'm going to show you some pictures of little children. Sometimes there are things that they shouldn't do if they want to stay healthy. You be my helper. What is this child doing?

Picture	Identifies action Yes	No	Partial	Is that OK	No-No	D.K.	Why is that a no-no (ok)?
15. #15 on chair							
16. #16 playing on swing							
17. #17 bike on street							
18. #18 Mr. Yuk							
19. #19 car seat							
20. Here are some older children #20 smoking							
21. #21 eating ice cream							

22. Can you think of anything else we shouldn't do if we want to stay healthy (well, feeling good)?

Show pictures 22-26 as an array, in random order.

23. Look at all the pictures. Can you find: the mother? the father? the doctor? the nurse? the teacher? Who helps you to stay healthy (well, feeling good)?

Order of Presentation	Picture	Identifies person Yes	No	Partial	Rank	What does he/she do to help you stay healthy (well, feeling good)?
	#22 mother					
	#23 father					
	#24 doctor					
	#25 nurse					
	#26 teacher					
	Anybody else?					

Who tells you what to do to stay healthy? (If not mentioned yet)