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ASSESSMENT OF KNOWLEDGE OF DAY-CARE CENTER WORKERS
IN BASIC ASPECTS OF CHILD CARE: A PILOT STUDY.

by

Betty Jane Avery, R.N., B.S.



THESIS

Presented to the Faculty of The University of Texas
Health Science Center at Houston
School of Public Health
in Partial Fulfillment
of the Requirements
for the Degree of

MASTER OF PUBLIC HEALTH

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THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON
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To Richard

PREFACE

The investigator wishes to acknowledge the members of her committee for their recommendations in the writing of this thesis.

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June, 1980

ASSESSMENT OF KNOWLEDGE OF DAY-CARE CENTER WORKERS
IN BASIC ASPECTS OF CHILD CARE: A PILOT STUDY

Betty Jane Avery, R.N., B.S.

Supervising Professor: John E. Scanlon

The purpose of the study was to assess the knowledge of day-care center workers in basic aspects of child care. A pilot study was conducted by administering a 39 item questionnaire to 180 day-care center workers in 13 day-care centers. One hundred six questionnaires were analyzed. Knowledge was related to the day-care workers' training experience, the type of center where employed, and personal characteristic of the workers. The number of training areas in which the workers had been trained was statistically significant as related to the knowledge of the workers. The type of center was not significant as it related to overall knowledge determined from total group scores. However, differences in the way subjects from particular types of centers responded to specific questions were statistically significant in certain instances. When personal characteristics of the workers were related to knowledge, education proved to be the only characteristic of significance, $P < .005$.

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CHAPTER I

INTRODUCTION

Defined in its most general sense, day-care of children is the care, guidance and supervision of children unaccompanied by parent or guardian on a regular basis for a period of less than twenty-four hours per day, in a place other than the child's own home. As currently conceived, day-care includes three different types of programs: family day-care in homes, which provides care for not more than six children under fourteen years of age; group day-care homes, which provide care for seven to twelve children under fourteen years of age; and day-care centers, which provide care for more than twelve children under fourteen years of age.

Steinfels, in her book Who's Minding the Children, identifies day-care for children as an important national issue.

It is on the national agenda because it is the common interest of a constellation of forces: government bureaucrats concerned with welfare reform, educators concerned with early child development, women concerned with "liberation" (Steinfels, 1973:13).

Emphasis on day care can be attributed to many factors: the inflationary economy; the greater mobility

of the population, which separates extended family members who would serve as a source of help for young parents; young mothers seeking to finish incomplete education; day-care as a partial solution in various problem-laden situations (child abuse, needy families, handicapped children); day-care as a means of lowering the drain on the welfare budget by allowing mothers to attain and maintain employment (Provence, et al., 1977).

The extent of the expansion of day-care in America is significant. From 1938 to 1945 the number of children in day-care had increased from 300,000 to almost one million. Presently, approximately 640,000 children are using licensed day-care facilities, but it is estimated that as many as 2 to 4.5 million children are in need of day-care (Fein, 1973). An even greater number for children in day care has been reported by the U.S. Department of Labor Women's Bureau. These data showed that in 1974, approximately 4.7 million children aged three to five were in some form of preschool program (Auerbach, 1979). These figures do not account for many more children who receive care through arrangements made with relatives, neighbors or unlicensed day-care facilities.

Based on projections of the U.S. Department of Labor, 5.3 million mothers with preschool children will be in full time employment outside the home by 1980. This means that with a minimum of one child per mother, day-care in some form will be required for 5.3 million children in

1980 (Neubauer, 1974). Increases in the number of working mothers of young children since World War II, changing expectations about women's roles and the rising cost of living are all factors which have made day-care a necessity (Steinfels, 1973).

In the United States, day-care has a history which dates back to the nineteenth century. It is obvious that day care has endured and is being used increasingly for a variety of motivations. Yet young children who are the objects of this care are in no way able to speak for themselves or to determine the quality of the day-care they receive.

The American Academy of Pediatrics has stated, concerning day-care:

All children should have the opportunity to optimally develop their physical, intellectual, and social potential. The care and guidance they are given in their early years are of critical importance for such development (American Academy of Pediatrics, 1973: 42).

Whether or not the care and guidance children in day-care receive is optimal depends largely upon the day-care worker's knowledge of and ability to perform certain important, basic aspects of child care competently.

The Problem

The Federal Interagency Day-Care Requirements (FIDCR) were written in 1968 and establish mandatory policy which is applicable to all programs and facilities funded

in whole or in part through Federal appropriations (Department Health, Education, and Welfare, 1975). In relation to staff competency, the FIDCR, do not require a written plan or schedule of training activities and do not specify minimum training or experience qualifications for any staff member.

Both Federally funded programs and those not federally funded must all be licensed by the state in which they operate. Licensing and other forms of regulation affect the quality of day-care; however, licensing of day-care facilities represents a state-established base line of quality for operation of a program and, wherever this baseline is set, it is a least tolerable standard by definition (Morgan 1979). Cohen and Zigler (1977) have pointed out that licensing laws vary from state to state and crucial criteria for competency of the day-care workers tend to be neglected or are beyond the scope of many state licensing laws.

Peters, et al., (1974) describe the shortcomings in day-care staff training and the difficulties which have been encountered in ascertaining competencies. They have found that, at this time in most of the nation, no unified setting exists for the governance of regulations concerning the certification or licensing of personnel working with young children. They have further determined that current regulations place certification and training in the hands of a variety of state agencies and institutions, and that

little or no effort has been made to determine what skills should be crucial to certification or who should determine whether the skills have been attained.

The American Academy of Pediatrics (1973) has recommended certain content for inclusion in training; however, few subject areas for training are actually mandated by federal, state or military regulations controlling day-care. The state regulations are written for the purpose of licensing day care facilities and address what is minimally acceptable for operation of the facility and for the qualifications and training of personnel. These regulations provide guidelines for what the training may include and for the means of attaining the training.

Just as minimal training requirements of regulations may strongly influence the knowledge level of day care personnel, so may their educational level. The requirements for educational level will differ depending on the agency or facility. The Texas State Minimum Standards for Day-Care Centers require only that a staff member working directly with children shall be eighteen years old or older and be able to read and write.

Although various types of day-care facilities serve different clientele with different characteristics and needs, the requirement for certain basic knowledge and competencies involved in caring for infants and young children must apply to safeguard and benefit all children. Authoritative sources, including the American Academy of Pediatrics

(1973), The U.S. Department of Health, Education, and Welfare (1971a, 1971b, 1974, 1975) and The Texas State Minimum Standards for Day Care (1976) have all identified some of the same aspects of child care as being important for the welfare and development of children who are in day-care. These sources have also stated that these important aspects of child care (child development, communicable disease control, safety, nutrition and management of the ill child) are appropriate and relevant subjects in which day-care workers would possess understanding and competence.

The fact that there is no unified setting for governance of regulations concerning training of day-care personnel, no specific training content mandated for all day-care facilities, no required provision for ascertainment of competencies, and no minimum, uniform educational levels of personnel working with children in day-care generates the question of this study. This question is, do day-care workers know important basic concepts of child care which will protect and benefit children in day-care programs?

The purpose of the study was to assess the knowledge of day-care workers concerning five basic aspects of child care. Sub-objectives of the study were:

1. to develop a questionnaire for assessing knowledge.
2. to conduct a pre-test of the questionnaire.

3. to analyze the data to determine knowledge level of day-care workers.
4. to examine knowledge level in relation to the day-care worker's training in child care.
5. to examine knowledge in relation to personal characteristics of the day-care workers.
6. to examine knowledge level as related to the different types of centers.

Limitations of the Study

1. There was limited time for developing the questionnaire and for conducting the study. A larger sample could have been used and possibly there would have been better return of the questionnaires if there had been more time.

2. The only day-care center directors and individual respondents who participated were those who chose to do so. The fact that other directors or individual workers refused to participate indicated that, for some reason, they were different than the respondents. This self-selection automatically created a source of bias.

3. The day-care workers were too busy and not all were able to complete the questionnaire at work, under the eye of the investigator, under uniform conditions. Because of this it was not known if the participants utilized any outside resources to help them answer the questions.

4. Although a pre-test was conducted, it was not ascertained that respondents would have difficulty to the extent they did with the questions on training content and

time. Because of this, the information obtained on training was not as complete or as specific as originally intended.

5. All day-care workers who received the questionnaires did not return them. This decrease in the sample size affected the representativeness of the sample.

Definitions

Day-care center. Day-care centers were the facilities of interest in this study. These centers serve groups of twelve or more children and utilize subgroupings on the basis of age and special needs. Centers do not usually attempt to stimulate family living. Day-care centers are private or public and may be established in a variety of locations such as churches, social centers, settlement houses, private dwellings and schools.

Day-care worker. For the purposes of this study, the day-care worker is that person who works directly in caring for children in day-care facilities.

Knowledge level. For the purposes of this study, sufficient knowledge is defined as the ability of the day-care worker to make a score of at least 70 percent on the multiple choice portion of the questionnaire used in this study.

CHAPTER II

THE REVIEW OF LITERATURE

History of Day-Care in America

Although day-care is a current national issue and there is an exploding demand for day-care services, its history in the United States can be traced back to the nineteenth century. Halting attempts to use day-care before its popularity in the last decades of the nineteenth century were patterned upon widespread and successful attempts to provide care for children of working mothers in France and England from the early decades of the century (Steinfels, 1973).

Throughout its history, day-care has served as a sensitive indicator of national crisis with the use of day-care increasing during the boom periods of the Civil War, the Depression and World War II. The increase in day-care during these periods was due in part to the need to care for and protect children of working mothers and in part to a welfare response which created jobs for unemployed teachers, nurses and social workers during the Depression. During its history, day-care has developed three major orientations: day-care as a child welfare service, as a public utility, and as an instrument of social change (Fein, 1973).

This close connection between day-care and social welfare services has also been acknowledged by Steinfels (1973). The earliest facilities for child care in America were the day nurseries. The first two were established in Boston in 1828 and New York in 1854 to accomodate children of working mothers and children of the poor. It was during this same time that kindergartens were being introduced into the United States. Kindergartens were chiefly concerned with education of young children, whereas day nurseries were primarily concerned with physical care of young children whose mothers worked.

The growth of nurseries during the 1880's and 1890's was largely a response to children of the poor, immigration that brought over five million families to the United States between 1815 and 1860 and to industrialization which brought many mothers into the labor force. Day nurseries were organized for care and protection of children through philanthropic intervention, wealthy women, service institutions and settlement houses (Kerr, 1973).

The industrialization, urbanization and immigration occurring in the late 1800's and early 1900's created social problems that caused disruption in the American family life. The method of choice of dealing with such social problems as poverty, insanity and deviance was incarceration in some type of institution. Philanthropists and charity workers viewed institutionalization of children as evil. The day nursery was a family-life alternative to

this institutionalization. Large scale development of the nurseries occurred between 1870 and World War I (Steinfelds, 1973).

Kerr (1973) compares the nursery schools, which gained popularity during the 1920's, to the day nurseries. While day nurseries emphasized physical care, manners, and orderliness, the newly popular nursery school emphasized education and development. If operated privately, nursery schools served children of the middle class whose parents were anxious to give them an early education. If the schools were connected with universities, they were part of research programs and not relief for the poor.

The orientation of day-care as a public utility occurred when the first federally funded day-care, applied under the Works Progress Administration, served the dual purpose of caring for children and creating employment for teachers, nurses, clerical workers, nutritionists, cooks and janitors during the depression years of the 1930's. Federally funded day-care, which was a response to the need to care for children of mothers employed in the war industries, continued during World War II. After the war, federal funding was withdrawn (Kerr, 1973).

From 1945 to the early sixties, day-care remained a marginal child welfare service. During the sixties, a more favorable attitude toward day-care emerged, but so did conflicts about the goals and purposes of day-care. In 1960 the National Committee for Day-Care was founded

with its purpose being to press for expansion of day-care services. In 1967 it changed its name to the Day-Care and Child Development Council of America and set about the task of merging the philosophies of education and social work to form a program for change (Steinfels, 1973).

Federal spending for day-care increased significantly during the 1960's; however, most of the federal programs were designed to provide income maintenance to the poor and all of the federal programs were restricted, by virtue of eligibility requirements, to the poor. With already existing social prejudices, this reinforced an already segregated system of services. The current women's movement, pressure for more early childhood services and dissatisfaction with the welfare system have, however, broadened the demand for day care (Kerr, 1973).

Although the use of child care facilities has expanded during the past decade, there has been no consensus about the proper role and future direction of the facilities, how to structure the system to deliver quality care, or who should pay the tab (Levitan and Alderman, 1975).

Need for Day-Care

In 1971 licensed day care facilities could accommodate 912,000 children. This capacity would only accommodate one in every six children whose mothers were working in 1973, assuming that only preschool age children of working mothers were cared for in these centers. In actuality, however, children of other age groups and of people other

than just working mothers were also enrolled in licensed day-care. Day-care programs serve different needs for different people. Programs facilitate work outside the home for those who need extra income, subsidize the costs of mothers who are already in the work force, and may educate and promote the health and welfare of children (Levitan and Alderman, 1975).

Lone parents, married women who must supplement their husband's incomes, women who wish to undergo training or else use the training they have, women who believe that child care facilities offer their child opportunities for development which cannot be equaled in the home, and women who demand greater liberty and equality have all increased the demand for day care (Sjølund, 1975).

Steinfels (1973) identifies three attitudes about the motivations of day-care. The first attitude views day care as fitting social welfare criteria. The day-care services help to compensate for faults in the child's family structure, educational resources or economic system. The second attitude views day-care as a method of promoting entry of women into the industrial society and accepts working mothers as part of the normal pattern of the American way of life. This attitude of day-care also sees the value of offering children an early educational environment. The advocates of the third attitude view day-care as a utopia which would change society by infusing new values into the young.

Need for the Study

A review of the literature did not reveal similar studies which have been done to assess the knowledge level of day-care workers. There is, however, much written about the necessity for training the child care worker, recommendations for training content and procedures for training programs. The literature on training was reviewed based on the premise that knowledge level should be related to the extent and type of training the day-care worker has had.

The Office of Child Development recognizes the vital contribution of trained, competent personnel to the quality of day-care programs (U.S. Department of Health, Education and Welfare, 1971b). Nevertheless, government agencies and standard setting organizations which either recommend or require qualifications and training for personnel make no provision for ascertainment of competency of the worker (Peters, et al., 1974).

Government agencies and standard-setting organizations vary little in their requirements for personality characteristics but greatly with respect to the amount and kind of education and experience required for the various roles of the day-care employee (Provence, et al., 1977).

The magnitude of the problem of staffing in day-care facilities is great. It is projected that, by 1980, more than one million people will be needed to staff child care services. This projection points out the necessity

for recruiting people and setting up appropriate training facilities, which at present is being carried out only minimally (Neubauer, 1974). Wagner and Wagner (1976) have made an intense study of the child care system in Denmark. The training requirements for child care workers in that country point out the inadequacy of training for child care workers in America. In Denmark, training for workers in seven types of child care centers is offered as a three year course combining theory with practice at selected training institutions. The content of the program is stipulated by law. There is a minimal education requirement for entry into the training programs and applicants are selected based on a point system which considers his or her education and experience.

It is a fact that in the United States, weighty responsibilities of child care are relegated to relatively untrained personnel. The child care worker has multiple functions and heavy responsibilities requiring specialized knowledge, skills, objectivity and self-awareness. The worker's responsibilities for the child include personal hygiene, education, work and leisure time activities and the assurance of protection from physical and emotional abuse. If the child care worker is to be competent as a therapeutic agent and not just a custodial person, there are specialized areas of knowledge and skills and techniques which the worker must master (Adler, 1978).

Child care workers are considered to be unskilled paraprofessionals. Professionals in the mental-health field

are encouraging professionalization of the role of child care worker in order for children to receive better care than currently provided. Child care workers themselves are pushing for professionalism because of poor working conditions, low salaries and general lack of recognition for their work. The worker's professionalism depends upon their competence with children and their desire to improve their skills and increase their knowledge about children (Helmer and Griff, 1977).

Peters, et al., (1974) advocate that the training of child care workers should be accomplished with the purpose of certification and that certification should be based on demonstrated competencies. However, there is no uniform setting for training which is currently being done in work settings, community colleges, colleges and universities. Also there is a wide range of child care facilities and the personnel in these facilities have a wide range of levels of education and may be either para-professional or professional.

A competency-based program such as Peters advocates does exist today; however, accomplishment of credentials through this program is voluntary. The Child Development Associates Consortium is a private, non-profit corporation composed of 39 national associations which have a direct concern for childhood education and development. The consortium was established in 1972 to assess the competence of child care personnel and to award credentials

based on competence. The Credentials Award System went into operation in 1975. The consortium provides a system by which the candidate must demonstrate on-site competencies in six general competency areas generated and agreed upon by child development experts. As of 1976 five states included the CDA credential in their day-care licensing as an option for meeting staff qualifications (Ward, 1976).

Programs with a different orientation than the on-site assessment required for Child Development Associate credentialing are offered by institutions of higher education. When training for the child care worker is offered by institutions of higher education, the rigid college and university degree requirements have created problems, since they are out of step with the life styles, backgrounds and needs of the average day-care worker. In response to this rigidity, varied alternative training programs are offered by the Child Development Act, the National Consortium for Child Development Training and the Schurer Amendment of the Economic Opportunity Act (Lehane and Goldman, 1976).

In a paper distributed to the participants in the 1974 conference "Child Care Training for a Changing World", results from an analysis of various aspects of academic training programs in child care from institutions of higher education were presented. The analysis of these training offerings revealed that there are deficiencies in field training and that there is little administrative congruence

in the organization of such offerings (Obbarad and Pavia, 1975).

Today, there is no basic model of curricular organization agreed upon in the child care field. Models presently in existence are the child mental-health specialist program, the Re-Ed model, the development child care model, the educateur model, and others (VanderVen, 1975).

CHAPTER III

METHODS OF PROCEDURES

Study Design

The study design was a descriptive survey conducted as a pilot study. The knowledge level concerning five basic aspects of child care and the current training status of day-care workers caring for infants and preschool children in day-care centers were assessed by the use of a questionnaire.

Population

The study population consisted of 180 day-care workers from 12 day-care centers located in Bexar County. The study population was defined from a list of 212 Bexar County day-care centers, which is printed and updated every six months by the Texas Department of Human Resources, and from six military centers, serving two different branches of the armed services, located in Bexar County.

Sampling Design

A current list of all Bexar County day-care centers was obtained from the Texas Day-Care Licensing Division. It was decided that the centers could be stratified into four broad categories according to source of

funding: operated for profit centers, both private and franchise; combination government/parent fee-funded centers; federally funded centers; and non-profit, church-affiliated centers.

There were 135 operated for-profit centers, 57 church-affiliated centers, 20 federally funded centers and six government/parent-fee funded centers. It was determined that stratification into these four categories may be significant since these centers have different sources of funding, different regulations, different training requirements, different inspections and probably different philosophies, all of which may influence staff knowledge of child care.

It was determined that a desirable sample size for a pilot study should approximate a 10 percent sample. Using the Bexar County list of day-care centers and through contact with the six military centers located in Bexar County, the size of the centers, defined by child capacity was learned. With this information and previous knowledge of child/staff ratio requirements, it was estimated that there are approximately 2000 day-care workers in Bexar County and an average of 10 day-care workers per center. Two hundred workers would constitute a 10 percent sample. It was further determined that 12 centers should yield approximately 200 day-care workers.

After stratification of the centers into four categories, a unique identification number was assigned to each

center within each category. A random number table was then used to select three centers from each category. If any center refused to participate, another center was randomly selected from that stratum. Although the day-care worker was the unit of inquiry, the day-care center had to be the unit of sampling contact. Each of the 12 selected center directors were contacted by telephone to explain the purpose of the study and to enlist their cooperation in the study. It was realized by the investigator that the initial contact, the center director, would be deciding for the center staff whether or not they had the opportunity to participate in the study. It was further realized that any refusal of a director to agree to participate or the refusal of a day-care worker to participate would mean that those centers or employees might be different from the participating centers and employees. These factors would automatically introduce a source of bias into the study.

Of the centers contacted, one for-profit center, a franchise center, refused to participate in the study. The investigator was not successful in contacting the executive director of the federally funded centers in order to obtain consent. These centers were subsequently excluded from the study leaving only three strata: operated for-profit centers (from here on referred to as Type A), non-profit, church-affiliated centers (from here on referred

to as Type B), and government/parent-fee funded centers (from here on referred to as Type C).

Development of the Questionnaire

The purpose of the questionnaire was to assess the knowledge level of day-care workers in five aspects of child care.

The questionnaire (See Appendix) was comprised of three sections. The first section consisted of eight questions which asked for information about the workers training in five specific areas of child care, orientation training, in-service training and continuing training in child care from sources other than the worker's own center. The second section consisted of 25 multiple choice (closed-ended) questions for which the respondent was requested to choose the best of four answers. The third section asked for the personal characteristics of age, sex, educational level, race, number of children and length of experience as a day-care worker.

The multiple choice items section contained questions dealing with five subject areas: child nutrition, child development, safety, first-aid and emergency care, and communicable disease prevention and control. There were five questions concerning each of the five subject areas of child care. These subject areas were selected because they were emphasized as being important for the benefit and protection of all children by authoritative sources

such as the American Academy of Pediatrics, the Federal Interagency Day-Care Requirements, the U.S. Department of Health, Education, and Welfare and the Texas State Minimum Standards for Day-Care.

The knowledge level exhibited in answering the multiple choice questions dealing with five subject areas of child care was compared to the respondent's training experience in the first section and to the personal characteristics in the third section.

It was realized that multiple choice items do not allow the respondent the freedom of response that open-ended questions would allow; therefore, valuable knowledge content from the respondent may be lost. However, multiple choice items do have a number of advantages which made their use preferable. Advantages of multiple choice items include: they are easy to administer and score; they can be key punched directly from the questionnaire; they are typically more reliable and valid than a subjective test (Nunnally, 1970); the alternatives offered in multiple choice items provide greater structure to the situation, thus avoiding some of the ambiguity and vagueness frequently present in subjective items (Gronland, 1971).

The following measures were taken to ensure content validity of the multiple choice questions and adequacy of the construction of the questionnaire: 1. three consultants were utilized: a physician knowledgeable about child care aspects pertinent to knowledge of day-care workers, a

doctoral graduate in health education, and a sociologist, familiar with questionnaire construction. 2. current references for the special content subject areas were used to structure the questions (Brunner, et al., 1974, Griffin, et al., 1972, Renisch and Minear, 1978, American National Red Cross, 1973, and McWilliams, 1975).

After the questionnaire was developed, it was pre-tested with a group of 13 day-care workers who were not included in the pilot study. As a result of the pre-test, it was determined that the instructions must be capitalized for emphasis and must be more specific. To avoid a regular pattern of response to the questions, attention was given to placing the correct answer in each position approximately an equal number of times.

Administration of the Questionnaire

A total of 180 questionnaires was distributed to 13 centers. Six Type A centers received 66 questionnaires, four Type B centers received 34 questionnaires, and three Type C centers received 80 questionnaires.

After the center directors agreed by phone to allow participation of their employees in the study, each director signed an informed consent. The questionnaires were taken by the investigator to each participating center. It was thought that this might get better response than mailed questionnaires. In those centers where it was possible, each individual day-care worker was asked by the investigator to participate in the study. This had two

disadvantages. It had to be done on the employee's duty time on an individual basis with each employee, because the employees could not leave their charge of children unattended to assemble in a group.

After individual workers were requested to sign informed consents, each worker was then given a questionnaire and an envelope and asked to seal the completed questionnaire in the envelope and leave it with their director. At centers where it was impossible to talk with each worker because of their work schedule, the informed consent, the questionnaire and the instructions for returning the informed consent separate from the questionnaire and for sealing the questionnaire in an envelope were left with the director who assumed responsibility for distribution and collection. Informed consents were returned separately from the questionnaires and the questionnaires sealed in an envelope to ensure anonymity and confidentiality.

Directors and individual respondents were urged to complete the questionnaires within two days if possible. The investigator returned to each center to collect the questionnaires. Some centers had to be revisited more than once for collection. After one week, 61 percent of the 180 distributed questionnaires had been collected. Fifty questionnaires were collected from Type A centers, 24 from Type B centers and 35 from Type C centers. Three questionnaires had to be excluded because they were not completed.

There was poor response from one Type C center with only one of 20 questionnaires returned. For the final analysis, 106 questionnaires were processed. The total response of 61 percent was considered by the investigator as only fair. It was not possible to determine how the non-respondents might be different, but the fact that they did not respond could potentially create bias.

Processing and Analysis of Data

After editing the 106 questionnaires for completeness, it was determined that many respondents had difficulty in stating the amount of training time, or when they had had training in the five child care subject areas listed in question one of section one. It was obvious from the answers that the question was not well understood by everyone. Because of this, only the information of whether respondents had or had not received training in any of the areas was used. The amount of training time and when training was accomplished were not analyzed. Question six, concerning training, was also deleted because of similar difficulty in trying to interpret the answers meaningfully.

The multiple choice questions were checked for accuracy of the selected answers. Questions that were not answered and questions which had more than one answer selected were scored as incorrect. Scores of 70 percent and above were considered to show adequate knowledge in child care.

The answers on the completed questionnaires were transferred to 230 punch cards by the key punch operators at Brooks Air Force, Texas. Centers were only identified as Types A, B, or C so that there was no breach of confidentiality. Data were then computer analyzed by the Executor (TM) High Speed Job Processor at the same facility. The types of analysis obtained were:

1. Contingency tables
2. Chi-square test for independence
3. Item analysis for frequency of selection of correct and incorrect answers for each multiple choice question by type of center
4. Percentages for the frequency of selection

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of the study was to assess the knowledge of day care workers in five basic aspects of child care. Subjects were given a 39 item questionnaire which had three sections. Section one consisted of eight questions about the subjects' training. Section two consisted of 25 multiple choice questions concerning five basic aspects of child care. There were five questions on each of the five subject areas. Section three consisted of six questions on personal characteristics of the day care workers.

Satisfactory knowledge was determined by the subject's ability to answer correctly 70 percent of the multiple choice questions about child care in section two of the questionnaire. The five areas of child care included in the multiple choice section were nutrition, child development, first-aid and emergency care, safety, and communicable disease prevention and control.

The knowledge level was then examined in relation to the subject's status in training for child care. The status of training of the subjects was determined by seven questions in the first section of the questionnaire.

Questions on training addressed the same five areas of child care which were included in the multiple choice questions, plus orientation training, in-service training, documented annual training hours and cardio-pulmonary resuscitation training.

Next, the number of correct answers for each subject area of the multiple choice questions was correlated with training in each of those same areas.

The knowledge level of workers was then compared among the three types of centers.

An item analysis for frequency of selection of correct answers to the multiple choice questions was made according to type of center.

Finally, the knowledge level of workers was examined in relation to their personal characteristics as identified in section three of the questionnaire. Personal characteristics included sex, age, race/ethnic group, education level, number of children, and years of employment in day care.

The chi-square test was used to examine relationships among knowledge level and training, type of center, and personal characteristics of the workers. The chi-square test was also used to determine if there was a difference in the way that workers from three types of centers responded to the multiple choice questions. The significance level was set at .05. Some relationships which had borderline significance ($.05 < P < .10$) were examined also.

Personal Characteristics of Workers

The tabulation of personal characteristics of the workers is shown in Table 1. The 106 day-care workers represented five percent of the approximate 2000 day-care workers in Bexar County.

The day-care workers' ages were divided into 10 year groupings. Three workers (3%) were 16 years old or less. There were 38 workers (36%) in the most highly represented age group, from 16 to 25 years of age. The next most highly represented group was the 26 to 35 year old group, which had 23 workers (22%). There were 16 workers (15%) in the 36 to 45 year old group, 15 workers (14%) in the 46 to 55 year old group and 11 workers (10%) in the 55 and above age group.

Only 2 (2%) males were identified. Review of literature has revealed that day-care work is still predominantly the female's job field.

Race/ethnic group was very unevenly represented in the sample. The sample contained one oriental (1%), nine blacks (8%), 13 Spanish (12%), and a heavy representation of whites, 79 or (75%).

Educational level was broken down as follows: there were 16 workers (15%) with less than a high school diploma, 41 workers (39%) with a high school diploma or GED equivalent, 33 workers (31%) with some college, and seven workers (7%) who were college graduates. Nine subjects had

to be dropped from the analysis because they had either not answered or did not specify what "other" meant.

The subjects were asked if they had children. Sixty-two (58%) said "yes", 41 (39%) said "no" and three did not answer.

The workers were also asked for their total length of employment as a day-care worker. There were 20 workers (19%) who had been employed one year or less, 30 workers (28%) who had been employed for one to three years and 53 workers (51%) who had been employed three years or more.

Table 1

Personal Characteristics of Day Care Workers
(Statements 1-6 of section 3 of questionnaire)

Characteristic	Frequency	%	Characteristic	Frequency	%
<u>Age</u>			<u>Educational Level</u>		
<16	3	3%	Some high school	16	15%
16-25	38	36%	High School diploma or GED equivalent	41	39%
26-35	23	22%	Some College	33	31%
36-45	16	15%	College Degree	7	7%
46-55	15	14%	Other (did not Specify)	9	8%
>55	11	10%			
<u>Sex</u>			<u>Children</u>		
Male	2	2%	Yes	62	58%
Female	104	98%	No	41	39%
			Did Not Answer	3	3%
<u>Race</u>			<u>Length of employment as Day Care Worker</u>		
Asian	1	1%	<1 year	20	19%
Black	9	8%	1 to 3 years	30	28%
Spanish	13	12%	3 or more years	54	51%
White	79	75%	Did Not Answer	2	2%
Did Not Answer	4	4%			

KNOWLEDGE RELATED TO TRAINING

The first section of the questionnaire contained eight questions about the worker's training. The knowledge scores obtained from the multiple choice questions in section two of the questionnaire were related to the responses to the questions on training. The assumption was that a day-care worker having more frequent training in a greater number of child care subjects would make higher scores than workers who had less training experience.

Number of Training Areas

Question one of section one of the questionnaire asked the workers if they had had training in five specific areas of child care: child development, nutrition, first-aid and emergency care and safety, and communicable disease prevention and control. The results of the knowledge scores, correlated with the number of training areas in which the workers claimed to have had training, are shown in Table 2. Whether the subjects had training in zero to one areas, two to three areas, or four to five areas was examined in relation to the ability to make scores above 70 on the 25 multiple choice questions.

Of the total 106 subjects, 44 subjects had had training in either none or only one area, 37 subjects in two to three areas, and 25 subjects in four to five areas.

The usual chi-square test for a two by three table ($df=2$) did not show a statistically significant difference between knowledge of workers who had more training and

knowledge of workers who had less training. However, a more sensitive statistical test, a one-tailed test for detecting a trend for increasing scores as training areas increased was employed. The one-tailed test for trend in proportions (Brown and Hollander, 1977) yielded an S* statistic of 1.86, which is significant at the .03 level. Based on the results of this test, there is an increasing trend for better scores to be related to an increase in the number of areas in which trained.

Table 2

Total Group Scores Related to Number of Training Areas in Which Workers Have Been Trained

Number of Training Areas	# and % Subjects Scoring below 70	# and % Subjects Scoring above 70	Total Subjects	Chi-square (df=2)	P value
0-1	29 (66%)	15 (34%)	44	3.53	NS
2-3	19 (51%)	18 (49%)	37		
4-5	11 (44%)	14 (56%)	25		
Total	59	47	106		
NS = Not Significant					

Orientation training

The Texas State Minimum Standards for Day Care Centers requires orientation training for the day-care worker. Orientation training should be relevant to the knowledge of the day-care workers, particularly if they had been employed for a short time and had not the opportunity to acquire any additional training. The subjects were asked specifically,

did you have orientation training for this job? Their knowledge on the multiple choice questions was then compared to their response concerning orientation. The results of this comparison are shown in Table 3.

Forty-six of the 106 subjects answered "no" to the question about orientation. Twenty-four (52%) of the 46 who so answered made scores below 70. Sixty subjects claimed to have had orientation training. Thirty-five (58%) of these made scores below 70. These results were exactly the opposite of what one would expect if orientation training, as presently conducted, is indeed relevant to basic aspects of child care.

Table 3
Total Group Scores Related to Orientation Training

Orientation status	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=2)	P Value
No	24 (52%)	22 (48%)	46	.4	NS
Yes	35 (58%)	25 (42%)	60		
Total	59	47	106		

NS = Not Significant

In-service training

The status of in-service training was explored in question three of section one of the questionnaire. Many articles on training for child care employees, as well as recommendations by the American Academy of Pediatrics and

the U.S. Department of Health, Education, and Welfare have stressed the important role of follow through in-service training in promoting quality control and upgrading skills. Question three asked the subjects, do you have on-going in-service training at your center? The results of the knowledge scores compared to the status of the workers in in-service training are shown in Table 4.

Of the 106 subjects, 45 said they did not have in-service training. Of that 45, 26 (58%) made scores below 70. Sixty-one subjects stated they had in-service training. Thirty-three (54%) of these subjects had scores below 70. There was a slight increase in the percentage of scores demonstrating knowledge for the subjects who had in-service training, but it was not statistically significant.

In reviewing the completed questionnaires, it was interesting to note that subjects from the same centers did not always agree about whether or not they had in-service or how often it was presented. The same subjects who said they did not have in-service training answered the next question (if you have in-service training at your center, about how often is this given?) with such responses as once a week or monthly. It was obvious, if subjects answered "no" to the question (do you have in-service?) it was inappropriate for them to respond that they had it once a week. These conflicting responses led to the conclusion that subjects did not have in-service training or else did not know what in-service training means.

Table 4
Total Group Scores Related to In-Service Training

Inservice Training	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=2)	P value
No	26 (58%)	19 (42%)	45	.14	NS
Yes	33 (54%)	28 (46%)	61		
Total	59	47	106		

NS = Not Significant

Frequency of in-service training

Frequency of in-service training should be significant as related to knowledge level. In question number four of section one of the questionnaire, subjects were asked to choose one of seven responses indicating how often they had in-service training. For the purpose of condensing the data for Table 5, three categories for frequency of in-service training were examined: daily to monthly, every three months to once a year, and none.

Thirty-eight subjects stated that they had in-service training as frequently as from daily to monthly. Of these subjects, 16 (42%) made scores below 70. In the group of 17 subjects who had in-service training on a basis of from every three months to annually, 12 (71%) of the subjects made scores below 70. Fifty-one subjects did not indicate the frequency of in-service training. This was interpreted to mean that they either did not have in-service training or that they could not determine how often.

It was believed that some subjects could not determine how often, since there were subjects who had stated in the previous question that they did, in fact, have in-service training, yet did not respond to how often.

Subjects who had in-service training daily to monthly exhibited more knowledge on the multiple choice items, but the usual chi-square analysis for a two by three table ($df=2$) showed only a borderline significance ($.05 < P < .10$). A one-tailed test for trend in proportions, as used for the data in Table 2, was done. The obtained S^* statistic was -1.60 and the P value was $.055$, indicating only a borderline significance for an increasing trend of more correct responses associated with more frequent in-service training. However, the fact that some subjects had problems answering the two questions about in-service training, conflicting answers from subjects employed at the same center, and conflicting answers to the questions given the same subject do not make the results very reliable.

Table 5
Total Group Scores Related to Frequency
of In-service Training

Frequency of Inservice Training	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=2)	P value
Daily to Monthly	16 (42%)	22 (58%)	38	4.91	.05<P<.10
Every 3 months to Yearly	12 (71%)	5 (29%)	17		
None	31 (61%)	20 (39%)	51		
Total	59	47	106		

Hours of documented annual training

The Texas State Minimum Standards for Day-Care requires that day-care workers shall participate in at least 12 clock hours of documented training in child care subjects each year. In question seven of section one of the questionnaire, subjects were asked to state how many hours of recorded training they had in the past year. Table 6 shows the data grouped by 12 or fewer hours, 12 to 23 hours and more than 23 hours.

Sixty-one subjects had completed less than the State required 12 hours. Thirty-one (61%) of these subjects made scores below 70. Thirty-six subjects had from 12 to 23 hours of documented training. Twenty (56%) of this group made scores below 70. In the group which had more than 23 hours of documented training, well over the Texas State requirements, two (22%) made scores below 70.

Usual chi-square analysis for a two by three table ($df=2$) showed a border-line significance ($.05 < P < .10$). The one-tailed test for trend in proportions, as previously applied for Tables 2 and 5, was done. The result of the trend test was S^* statistic = 1.56, $P = .059$ indicating borderline significance.

Table 6
Total Group Scores Related to Hours of
Recorded Annual Training

Hours of Documented Training	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square ($df=2$)	P value
<12	37 (61%)	24 (39%)	61	4.69	$.05 < P < .10$
12-23	20 (56%)	16 (44%)	36		
>23	2 (22%)	7 (78%)	9		
Total	59	47	106		

Five areas of child care training

There were 25 multiple choice questions concerning five areas of child care divided into five questions for each area. These areas corresponded to the five training areas in question one of section one of the questionnaire. The total group scores of each child care subject area of the multiple choice questions, ie. child development, were compared to the training the subjects had in the same areas. These data are shown in Table 7.

Child development training was compared to the number of correct responses in child development questions. Forty-one of 106 subjects had not had training. It can be seen that those who had training had a greater percentage (72%, compared to 61%) of more correct responses (three to five correct answers) than those who did not have training. However, the number of correct answers was not shown to be dependent on having training in child development.

Training in nutrition was next compared to the number of correct responses in that same area. Seventy-one subjects had no nutrition training. Again a slight increase can be observed in the percentage (from 80% to 89%) of more correct responses (three to five correct answers) from those who had training. Again, the number of correct responses did not relate to prior nutrition training.

A third training area, first-aid and emergency care, was compared to the number of correct answers chosen by the subjects. Thirty-seven of the 106 subjects had not had training. There was a seven percent increase (86% to 93%) in the number of three to five correct responses between people who had training and those who did not. Again there was no statistical significance in the relationship between training and knowledge.

Seventy-three subjects said they had no safety training compared to 33 subjects who had. When the results of training and knowledge were examined concerning safety

in day-care centers, the trained subjects who provided three to five correct answers was only one percentage point higher.

The final training area in which the status of training was compared to the number of correct responses was communicable disease prevention and control. Eighty-three subjects had no training. The percentage of trained and untrained subjects who chose three to five correct answers was the same (65%).

Both those who had training as well as those without training did average to well (three to five correct responses) on the multiple choice questions concerning nutrition, first-aid and emergency care, and safety. Regardless of the worker's status in training, they did not do well in selecting correct responses in the areas of child development and communicable disease.

KNOWLEDGE RELATED TO TYPE OF CENTER

Centers were grouped into three categories based on sources of funding: Type A centers were operated for-profit centers; Type B centers were non-profit church-affiliated centers; Type C centers were a combination of government/parent fee funded. There were six Type A, four Type B, and three Type C centers. It was assumed that these centers might be different because of their different funding, different governing regulations concerning training and inspection requirements, and possibly different

Table 7

Total Group Scores in Five Areas of Child Care Related to Training in the Same Areas

Status of Training by Training Area	Number and Percent of Subjects 0-2 and 3-5 Questions Correct				Total	x ²	df	Probability
	0-2 questions correct		3-5 questions correct					
	Number of subjects	Percent of subjects	Number of subjects	Percent of subjects				
Child Development								
No	16	39%	25	61%	41	1.48	1	NS
Yes	18	28%	47	72%	65			
Nutrition								
No	14	20%	57	80%	71	1.14	1	NS
Yes	4	11%	31	89%	35			
First Aid/ Emergency Care								
No	5	14%	32	86%	37	1.11	1	NS
Yes	5	7%	64	93%	69			
Safety								
No	8	11%	65	89%	73	.03	1	NS
Yes	4	12%	29	88%	33			
Communicable Disease								
No	29	35%	54	65%	83	0	1	NS
Yes	8	35%	15	65%	23			

NS = Not Significant

philosophies of child care. Overall knowledge scores were examined as they related to the type of center (See Table 8).

Fifty subjects were employed by Type A centers. Twenty-six (52%) of these made scores below 70. Twenty four subjects were employed at Type B centers and 14 (58%) made scores below 70. Type C centers employed 32 subjects; 19 (59%) made scores below 70.

The subjects of Type A centers made slightly higher overall scores than subjects of B and C centers, but there was no significant difference in overall knowledge level based on center type.

Table 8

Total Group Scores Related to Type of Center

Center Type	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=2)	P value
A	26 (52%)	24 (48%)	50	.52	NS
B	14 (58%)	10 (42%)	24		
C	19 (59%)	13 (41%)	32		
Total	59	47	106		

NS = Not Significant

ITEM ANALYSIS OF MULTIPLE CHOICE QUESTIONS

An item analysis of questions was done in order to determine how many subjects from each type of center selected correct responses to each question. The usual chi-square

test was done to determine if there was a difference in the way workers from the three different types of centers responded. These data are shown in Table 9.

Questions which generally had a low percentage of correct responses from workers from the three types of centers were questions one and two concerning nutrition, questions eight and nine concerning child development, question 18 concerning emergency care and questions 21 and 24 concerning communicable disease. Workers from all centers had very high percentages of correct answers to question seven concerning child development, and question 15 concerning safety.

The workers from the three types of centers responded differently enough to questions, 2,3,10,12,15 and 21 to cause a borderline significance ($.05 < P < .10$) for these responses.

The results of question 13, which concerned safety, were significant at the .05 level. The greatest contributor to this significance were the fewer correct responses (59%) from workers of Type C centers.

The results of question 14, which concerned safety, were highly significant ($P < .01$). This was due to the fact that workers from Type B centers gave only 50 percent correct responses.

Question 16 concerns emergency care and the results are significant ($P < .05$) for a difference in the way the workers from different centers responded. The significance

is attributed to the fact that Type C centers had only 78 percent correct responses, while Types A and B centers had 96 percent and 92 percent respectively.

Although workers from the three types of centers did poorly in selecting the correct response to Question 18, there is a very significant difference ($P < .005$) in the way in which they responded. Only 19 percent correct responses came from Type C centers compared to 31% from Type B and 54% from Type A centers.

The difference in responses to question 25, which was about communicable disease, was highly statistically significant ($P < .001$). The significance can be attributed to the fact that Type C center workers had a much higher percentage of correct responses.

It is worth noting that very high percentages of workers from all centers selected incorrect responses to Question 24. Answer "B" was more frequently selected by workers from all centers (79% from Type A centers, 58% from Type B centers, and 45% from Type C centers).

Table 9

Status of Knowledge for Each Multiple Choice Question by Type of Center

Question	Center Type	% select- ing wrong answers	% select- ing correct answers	# subjects select- ing correct answers	%	Total subjects	χ^2 (df=2) for difference among centers	P value
1	A	24	48%	26	52%	50	2.32	NS*
	B	16	67%	8	33%	24		
	C	18	56%	14	44%	32		
2	A	31	62%	19	38%	50	5.55	.05<P<.10
	B	10	42%	14	58%	24		
	C	12	38%	20	62%	32		
3	A	3	6%	47	94%	50	5.62	.05<P<.10
	B	6	25%	18	75%	24		
	C	6	19%	26	81%	32		
4	A	15	30%	35	70%	50	3.11	NS
	B	3	13%	21	87%	24		
	C	10	31%	22	69%	32		
5	A	4	8%	46	92%	50	1.36	NS
	B	4	17%	20	93%	24		
	C	3	9%	29	91%	32		
6	A	10	20%	40	80%	50	1.88	NS
	B	3	13%	21	87%	24		
	C	3	9%	29	91%	32		

NS = Not Significant

Table 9 Cont'd

Question	Center Type	# subjects selecting wrong answers	% selecting wrong answers	# subjects selecting correct answers	% selecting correct answers	Total subjects	χ^2 (df=2) for difference among centers	P value
7	A B C	5 0 3	10% 0% 9%	45 24 29	90% 100% 91%	50 24 32	2.54	NS
8	A B C	40 19 23	80% 79% 72%	10 5 9	20% 21% 28%	50 24 32	.79	NS
9	A B C	33 13 23	66% 54% 72%	17 11 9	34% 46% 28%	50 24 32	1.93	NS
10	A B C	16 13 17	32% 54% 53%	34 11 15	68% 46% 47%	50 24 32	5.01	.05 < P < .10
11	A B C	13 7 8	26% 29% 25%	37 17 24	77% 71% 75%	50 24 32	.13	NS
12	A B C	15 8 17	30% 33% 53%	35 16 15	70% 67% 47%	50 24 32	4.70	.05 < P < .10

Table 9 Cont'd

Question	Center Type	# subjects selecting wrong answers	%	# subjects selecting correct answers	%	Total subjects	$\chi^2(df=2)$ for difference among centers	P value
13	A	8	16%	42	84%	50		
	B	5	21%	19	79%	24	6.62	P<.05
	C	13	41%	19	59%	32		
14	A	9	18%	41	82%	50		
	B	12	50%	12	50%	24	9.84	P<.01
	C	6	19%	26	81%	32		
15	A	0	0%	50	100%	50		
	B	1	4%	23	96%	24	4.74	.05<P<.10
	C	3	9%	29	91%	32		
16	A	2	4%	48	96%	50		
	B	2	8%	22	92%	24	6.84	P<.05
	C	7	22%	25	78%	32		
17	A	5	10%	45	90%	50		
	B	2	8%	22	92%	24	.05	NS
	C	3	9%	29	91%	32		
18	A	23	46%	27	54%	50		
	B	19	79%	5	31%	24	13.58	P<.005
	C	26	81%	6	19%	32		
19	A	10	20%	40	80%	50		
	B	5	21%	10	79%	24	3.27	NS
	C	2	6%	30	94%	32		

Table 9 Cont'd

Question	Center Type	# subject selecting wrong answers	% selecting correct answers	# selecting correct answers	% selecting correct answers	Total subjects	$\chi^2(df=2)$ for difference among centers	P Value
20	A	13	26%	37	74%	50	1.07	NS
	B	4	17%	20	83%	24		
	C	6	19%	26	81%	32		
21	A	20	40%	30	60%	50	4.92	.05 < P < .10
	B	9	38%	15	62%	24		
	C	20	63%	12	37%	32		
22	A	10	20%	40	80%	50	3.84	NS
	B	10	42%	14	58%	24		
	C	9	28%	23	72%	32		
23	A	8	16%	42	84%	50	.95	NS
	B	6	25%	18	75%	24		
	C	7	22%	25	78%	32		
24	A	49	98%	1	2%	50	.29	NS
	B	23	96%	1	4%	24		
	C	31	97%	1	3%	32		
25	A	19	38%	31	62%	50	14.23	P < .001
	B	12	50%	12	50%	24		
	C	2	6%	30	94%	32		

AVERAGE SCORES FOR EACH SUBJECT AREA

The average scores for each subject area by type of center and the weighted average total group scores for each subject area are shown in Table 10. As defined for the purpose of this study, knowledge was exhibited in the areas of safety, and first-aid and emergency care. Of the five subject areas, the lowest scores from the three types of centers were made in communicable disease prevention and control.

Table 10

Average Scores for Each Subject Area by Center Type and by Total Group

Subject Area	Center Type	Average Score for Each Type of Center	Weighted Average Score for Total Group
Nutrition	A	69	68.5
	B	67	
	C	69	
Child Development	A	58	64.7
	B	89	
	C	57	
Safety	A	82	76.6
	B	73	
	C	71	
First Aid-and Emergency Care	A	79	75.8
	B	73	
	C	73	
Communicable Disease	A	58	55.8 68.2
	B	50	
	C	57	

KNOWLEDGE RELATED TO PERSONAL CHARACTERISTICS OF WORKERS

The third section of the questionnaire asked for the personal characteristics of the workers: age, sex, race/ethnic group, education level, children, and years employed in day-care. These personal characteristics were then examined in relation to knowledge.

Age

The relation of age to knowledge is shown in Table 11. There were 41 subjects who were 26 years of age or less. Of these, 24 (59%) made scores below 70. Of the 39 subjects aged 26 to 45 years, a slightly greater percentage had higher scores; 20 subjects (51%) had scores below 70, and 19 subjects (49%) had scores above 70. The 45 and above age group had 26 subjects. The personal scores in this group were very comparable to the 26 years of age and less group. Fifteen (58%) of the 26 subjects had scores below 70 and 11 subjects (42%) had scores above 70. Age was not a statistically significant factor when considering knowledge scores.

Sex

There were only two male day care workers, therefore, sex was not studied as a variable.

Table 11
Total Group Scores Related to Age of Workers

Age (Years)	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=2)	P value
<26	24 (59%)	17 (41%)	41	.48	NS
26-45	20 (51%)	19 (49%)	39		
>45	15 (58%)	11 (42%)	26		
Total	59	47	106		

NS = Not Significant

Racial-ethnic group

Another personal characteristic examined as it related to scores was racial/ethnic group (see Table 12). Four subjects did not respond. With only one person of Asian origin in the sample, an insufficient representation, this category was deleted. The three groups which were included in the analysis are Blacks, Spanish and White. There was a total of nine blacks; six (67%) made scores below 70. There were 13 Spanish origin subjects, eight of whom (62%) made scores below 70. Whites, with 70 subjects, were most highly represented in the total sample. Forty-two (53%) of these made scores below 70. Racial/ethnic group was not indicated as a significant factor for knowledge.

Table 12

Total Group Scores Related to Racial/Ethnic Group of Workers

Race	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=2)	P value
Black	6 (67%)	3 (33%)	9	.82	NS
Spanish	8 (62%)	5 (38%)	13		
White	42 (53%)	37 (47%)	79		
Total	56	45	101		

NS = Not Significant

Educational level

Education was the next personal characteristic examined in relation to knowledge of the workers (see Table 13). Nine different educational groupings were listed on the questionnaire. For the purpose of analysis these were condensed to four groups: some high school, high school graduate, some college and college degree. Nine subjects did not specify their education and were deleted from the analysis.

Sixteen subjects had not completed high school; 12 of these (75%) made scores below 70. Forty-one subjects stated that they were high school graduates; 26 (63%) made scores below 70. Of the 33 subjects who said they had some college, only 14 (42%) made scores below 70, while 19 (58%) scored above 70. There were only seven subjects who had college degrees. No one in this group made scores below 70.

The usual chi-square test for a two by four table ($df=3$) was highly significant, $P<.005$. The trend test was applied again and the obtained results were S^* statistic=3.38, and $.003<P<.004$. Although there was small representation of workers with college degrees in the sample, a definite trend was seen for better scores associated with more education.

Table 13

Total Group Scores Related to Education of Workers

Education	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square ($df=3$)	P value
Some high school	12 (75%)	4 (25%)	16	14.28	$p<.005$
High school diploma	26 (63%)	15 (37%)	41		
Some college	14 (42%)	19 (58%)	33		
College degree	0 (0%)	7 (100%)	7		
Total	52	45	97		

Children

It was thought that whether or not a day-care worker had children might make some difference in their knowledge about formal child care. The assumption was that workers with children may have more knowledge. These data are shown in Table 14.

Of the 103 subjects who responded, 41 said they did not have children. Twenty-six of those with no children made scores below 70. There were 62 subjects who had children; 32 (52%) made scores below 70. The fact that day-care workers had children was not a statistically significant factor in their knowledge of child care.

Table 14

Total Group Scores Related to Whether Workers Had Children

Children	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square (df=1)	P value
No	26 (63%)	15 (37%)	41	1.40	NS
Yes	32 (52%)	30 (48%)	62		
Total	58	45	103		

NS = Not Significant

Length of day-care employment

The last personal characteristic examined in relation to knowledge was total years employed as a day-care worker (see Table 15).

There were a total of 104 responses, since two did not answer the question. Years employed was examined in groupings of one year or less, one to three years, and three or more years. Twenty subjects had been employed for one year or less and 14 (70%) of these made scores below 70. Thirty persons had been employed from one to three years. Sixteen of these (53%) made scores below 70. The final

group, employed three or more years, had 54 subjects. Twenty-eight (52%) made scores below 70. The usual chi-square for a two by three table ($df=2$) showed that there was no statistically significant difference in knowledge level based on years employed in child care ($.06 < P < .07$). The trend test, S^* statistic = 1.15 and P values .125 was also not statistically significant.

Table 15

Total Group Scores Related to Number of Years
Workers Employed in Day-Care

Years Employed	# and % subjects scoring below 70	# and % subjects scoring above 70	Total subjects	Chi-square ($df=2$)	P value
<1 year	14 (70%)	6 (30%)	20	2.05	NS
1 to 3 years	16 (53%)	14 (47%)	30		
3 or more years	28 (52%)	26 (48%)	54		
Total	58	46	104		

NS = Not Significant

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

The purpose of the study was to assess the knowledge of day-care workers in five basic aspects of child care. Knowledge was then compared to the workers' training in child care, orientation training, in-service training and number of hours of annual training. The scores of subjects from three types of day-care centers with different sources of funding were compared to determine if center type was a significant factor in knowledge of the day-care worker. An analysis was also done to see if there was a difference in the way subjects from the three types of centers responded to each of 25 multiple choice questions. Finally, total group knowledge scores were compared to the personal characteristics of the workers.

A review of the literature revealed that the history of day-care in the United States could be traced back to the nineteenth century. During this history day-care has developed three major orientations: day-care as a child welfare service, as a public utility and as an instrument of social change. Day-care is currently a national issue. The use of day-care facilities has expanded, but

there is still disagreement about its proper role, how quality care for children can be insured and who should pay the bill.

No single federal agency is responsible for the coordination of day-care and different facilities apply different standards for operation and for training personnel depending on their location and source of funding.

It is recognized that the person working in child care has heavy responsibilities, but no agreement on content of training, method of training program and ascertainment of competencies has yet been established.

While we are waiting for bureaucratic decisions to be made about standards, regulations, program content, training requirements, and funding, and for child development experts to decide what model is the best for training, there is a need to know if people presently working in day-care even know basics about child care in order to protect children or at least not to do them harm. For this reason the study was undertaken.

A 39 item questionnaire was used in this pilot study. The questionnaire had been pre-tested with a group of 13 day-care center workers. Revisions were made on the questionnaire based on the results of the pre-test.

One hundred eighty of the revised questionnaires were distributed to 13 day-care centers. Centers were stratified into operated for-profit, non-profit, church-affiliated, and government/parent-fee funded. After one

week, 109 (61%) of the questionnaires were returned. Three questionnaires were eliminated because they were not completed.

An alpha level of .05 was selected by the investigator for significance testing. When the usual chi-square test was used, a statistically significant relationship was not shown when knowledge scores in child care were correlated with training in child care. A more sensitive one-tail statistical test for trend in proportions was statistically significant at the .03 level, indicating an increasing trend for better scores to be related to an increase in the number of training areas in which trained. A statistically significant relationship was not shown when knowledge in child care was correlated with age, sex, race, children or years employed as a day-care worker. A significance of $P < .005$ was obtained when education level was related to knowledge. Workers with more education made better scores.

Item analysis of the 25 multiple choice questions was done for two reasons: to determine the number of subjects who answered each question correctly, and to see if there was a difference in the ability of subjects from the different types of centers to select the correct answers.

In addition to showing how subjects from different types of centers responded differently to the 25 questions in section two of the questionnaire, the item analysis provided information for computation of average scores for each

type of center in the five child care subject areas. Computation of weighted average scores for the three types of centers was also done for each child care subjects. Knowledge, as defined for the purpose of this study, was shown in the areas of safety, as well as first-aid and emergency care. All three types of centers made very low scores in communicable disease prevention and control. Four questions had very low percentages of correct answers. These were questions eight and nine on child development, question 18 on cardio-pulmonary resuscitation (CPR) and question 24 on communicable disease.

Conclusions

Based on the results of this study, the following conclusions were made:

1. A statistically significant relationship between training and knowledge of day-care workers did exist. Better scores were related to the number of training areas in which workers had been trained.
2. Except for educational level, personal characteristics of the worker did not relate to knowledge level.
3. Of the five knowledge areas tested, workers from all three types of centers displayed the least knowledge for the subject areas of child development and communicable disease.
4. For some multiple choice questions there was a significant difference, among center types, in the number of subjects who selected correct answers.

5. Questions on training in section one of the questionnaire and multiple choice questions seven, eight and 24 may need to be revised.

6. A specific lack of knowledge for CPR was evidenced by the number of incorrect responses to question 18 from workers from all centers.

Recommendations

1. Standard-setting and regulating bodies for day-care should establish written goals and policies concerning what knowledge and skills day-care workers must have. Based upon these goals, criteria can be developed for selecting new employees.

2. Certain basic core courses for safety and health of children should be mandated to be completed during the first six months of employment. Each center should have its own instructor/trainer for this purpose. This way other trainers could be recruited and trained from the ranks of the center workers, so that on-going training can be insured.

3. There should be knowledge assessments and competency ascertainment of skills for new employees after the first six months and at designated times periodically for all employees. This should be required by the State Standards and enforced by the Day-Care Licensing Bureau.

4. Emphasis should be placed on training areas based on the results of the assessments.

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APPENDIX

IN ORDER TO ASSESS TRAINING NEEDS OF CARE-GIVERS, IT IS IMPORTANT FOR ME TO LEARN THE GENERAL PATTERN OF TRAINING IN DAY CARE CENTERS. THE 8 QUESTIONS WILL ASK FOR INFORMATION ABOUT YOUR TRAINING.

1. If you have had training in any of the following areas, circle the letter identifying that area. You may circle as many as apply. Then please state the amount of training in hours, days, weeks, etc. and when you had the training.

TRAINING AREA	AMOUNT OF TRAINING TIME	YEAR(S)
a. Child Development	_____	_____
b. Child Nutrition	_____	_____
c. First Aid and Emergency Care	_____	_____
d. Safety in day care centers	_____	_____
e. Prevention and control of communicable disease	_____	_____

FOR QUESTIONS 2 THROUGH 5 ONLY ONE ANSWER WILL APPLY. CIRCLE THE LETTER OF THAT ONE ANSWER.

2. Did you have orientation training for this job?
 - a. Yes
 - b. No
3. Do you have on-going in-service training at your own center?
 - a. Yes
 - b. No
4. If you have in-service training at your center, about how often is this given?

a. Daily	e. Once every 3 months
b. Weekly	f. Once every 6 months
c. Once every 2 weeks	g. Once a year
d. Once every month	

5. Within the past year, have you attended training programs about child care at places other than your own center?
- Yes
 - No
6. If within the past year, you have attended programs at places other than your own center, describe in the spaces below the topic(s) and where you attended. If you need more space, use the back of this form.

TOPIC(S)	WHERE ATTENDED
_____	_____
_____	_____
_____	_____

7. Approximately how many hours of recorded training dealing with any child care subjects have you had during the past year?
8. Which of the answers below best describes your current status in CPR? Circle the letter of the one appropriate answer.
- Do not know what CPR means
 - Know what it means, but have no CPR training
 - Basic training within the past year, but am not certified
 - Currently certified in CPR

FOR ALL OF THE FOLLOWING QUESTIONS, YOU ARE EXPECTED TO CHOOSE ONLY ONE ANSWER. CIRCLE THE LETTER OF THE ONE ANSWER WHICH BEST ANSWERS EACH QUESTION.

1. The most appropriate mid-morning or mid-afternoon snack for a toddler or pre-school child is:
- Kool-aid and crackers
 - Milk and graham crackers
 - Milk and fruit
 - Juice and cookies
2. Being with the children during mealtime gives the care-giver the opportunity to:
- Make sure the children eat all of the food which is served
 - Insist that children with a narrow range of food likes try new foods
 - Gain information about the children's food likes and dislikes
 - Make frequent remarks about the improper use of utensils

3. A well-balanced lunch for a day care center to serve is:
 - a. Mashed potatoes, bread, lima beans, milk and chocolate cake with icing
 - b. Corned beef, bread, egg, dill pickles, cucumber slices, milk and egg custard
 - c. Macaroni salad, potato chips, tomato, juice and vanilla ice cream
 - d. Frankfurters stuffed with cheese, buttered rice, spinach, bananas, and milk
4. In a normal, healthy preschool child who is eating a well-balanced diet, an adequate milk intake would be:
 - a. 1 cup a day
 - b. 3 cups a day
 - c. 6 cups a day
 - d. 8 cups a day
5. Between 18 and 24 months of age, a child should be eating:
 - a. Whole milk and table foods three times a day
 - b. Whole milk and strained baby food three times a day
 - c. Milk, mashed potatoes and vegetables three times a day
 - d. Whole milk and junior baby food three times a day
6. The most appropriate toy for an 18 month old care would be:
 - a. Colored picture book
 - b. Crayons and finger paints
 - c. Pull or push toys
 - d. Transportation toys
7. Language and Speech development is best promoted by speaking to an 18 month old child:
 - a. In simple sentences
 - b. In "baby talk"
 - c. In long sentences
 - d. As if he were an adult
8. Many children are learning to tie their own shoes by the age:
 - a. 2 years
 - b. 3 years
 - c. 4 years
 - d. 5 years
9. A care-giver should deal with a child's occasional temper tantrum by:
 - a. Standing by until it is over
 - b. Physically restraining him
 - c. Letting him have his own way
 - d. Letting him know of your disapproval

10. You can usually expect a child to be ready for toilet training by age:
 - a. 1 year
 - b. 1½ year
 - c. 2 years
 - d. 3 years
11. A pillow is not used for an infant because:
 - a. There is a danger of the infant smothering in the pillow
 - b. The infant may be allergic to foam rubber or feathers
 - c. It interferes with the infant's space for moving around
 - d. It can cause the infant's spine to develop crooked
12. The age group most likely in danger of accidents from falls is:
 - a. 3 to 6 years old
 - b. 0 to 1 year old
 - c. 6 to 10 years old
 - d. 1 to 3 years old
13. The most effective way to prevent accidents of children is:
 - a. Make the children's environment totally safe
 - b. Maintain constant observation of children
 - c. Change the children's behavior by restricting physical activities
 - d. Supervise children and educate them about possible hazards
14. Because a toddler frequently puts things into his mouth, you should:
 - a. Give him a toy or pacifier to chew on as he walks around
 - b. Make sure medicines and poisonous substances are out of his reach
 - c. Keep the child within a certain confined environment
 - d. Tell him "no, no" when he puts objects into his mouth
15. In case of danger from fire, your first responsibility should be:
 - a. Call the fire department
 - b. Locate and use the fire extinguisher
 - c. Move all children to safety
 - d. Close all windows and doors
16. A child has choked on his food, is conscious, but cannot speak or cough. You should:
 - a. Tilt the child's head forward in case he vomits
 - b. Bend him forward and deliver 4 sharp blows between the shoulders
 - c. Raise his arms above his head for several minutes
 - d. Proceed with mouth to mouth respiration

17. A child falls from the top bar of the swing. He seems dazed and doesn't answer to his name. You would:
 - a. Shake him by the shoulders and call his name
 - b. Leave him on the ground and go get help
 - c. Pick him up and carry him inside
 - d. Stay with him and send someone for help
18. When doing CPR on an infant or small child, you would:
 - a. Give three breathes between every five chest compressions
 - b. Give one breath between every five chest compressions
 - c. Give two breathes between every fifteen chest compressions
 - d. Give one breath between every fifteen chest compressions
19. A child at the center wanders into the kitchen and touches his hand against the hot oven door. The burn is minor. You would:
 - a. Apply lard or butter
 - b. Apply unguentine or other ointment
 - c. Soak his hand in salt water
 - d. Immerse his hand in cold water
20. If a child has a nose bleed you would:
 - a. Gently but firmly press the nostrils with your fingers
 - b. Apply a warm cloth over the bridge of the nose
 - c. Tell the child to gently blow his nose
 - d. Lower the child's head to below his knees
21. A measure to help reduce spread of the common cold in the center is:
 - a. Have good ventilation in all rooms
 - b. Spray the rooms with disinfectant
 - c. Don't admit any children with runny noses
 - d. Don't allow outdoor play periods during the winter
22. Contagious diseases are diseases which:
 - a. Are common in children, but not in adults
 - b. Can be spread by feces, blood, cough or skin
 - c. Require direct person-to-person contact
 - d. Are of no concern now that we have immunizations
23. The single most important hygiene practice you can use to prevent spreading contagious disease is:
 - a. Gargle with an antiseptic mouthwash
 - b. Bath daily with deodorant soap
 - c. Wash your hands frequently
 - d. Spray the nursery often

24. The most important reason to separate children by age groups is:

- a. To have smaller activity groups
- b. To allow children to play with their peers
- c. To make teaching chores and methods simpler
- d. To help prevent spread of contagious disease

25. Four year old Susie came to the center at 8 am. By noon she is irritable, feels feverish and refuses to eat. You would:

- a. Allow her to remain at the table and encourage her to drink liquids
- b. Separate her in a special area away from the other children
- c. Put her down early for her nap where she usually sleeps
- d. Comfort and hold her while you supervise the other children's meal

NOW TO HELP ME CLASSIFY YOUR ANSWERS MORE MEANINGFULLY, WOULD YOU PLEASE ANSWER A FEW QUESTIONS ABOUT YOURSELF?

1. Age

2. Sex

- a. Male
- b. Female

3. Racial/Ethnic Group

- a. American Indian
- b. Asian Origin
- c. Black
- d. Spanish speaking
- e. White
- f. Other

4. Education Level

- a. Some high school (did not graduate)
- b. High school graduate (no college)
- c. GED
- d. Some college (less than 1 year)
- e. College (1 year but less than 2)
- f. College (2 years but less than 3)
- g. College graduate
- h. Other (please specify)

5. Do you have children?

If you have children, how old is the oldest?

How old is the youngest?

6. Total length of time of employment as a day care giver?

VITA

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