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Abstract

THE EFFECT OF A TEEN MOTHER PROGRAM ON THE GROWTH AND DEVELOPMENT OF THE CHILD

by Barbara McCarthy

Teen-aged childbearing is a serious social, economic and health problem which has now reached epidemic proportions in the United States. Teen pregnancies have been shown to produce infants of low birth weight, of higher risk to disease and of slower growth and development.

Many programs have been developed by the state and federal government to help the young mother better cope with the problems of pregnancy. These Teen Mother programs combine the opportunity to complete a high school education with instruction in the special skills needed for parenting. This study was designed to investigate the growth and development of the first children, ages birth to five years, of mothers, ages 14 to 18 years, who completed a Teen Mother program. The purpose of the study was to determine what effect the education in nutrition and parenting which the young mother received, had on the growth and development of her child. This was stated in the form of a null hypothesis, that there would be no significant ($p=.05$) difference in the growth and development of the children in the study and those of the general population of the same age and sex.

A sample of fifty children was measured for height and weight and also for language, social and motor development, by the use of the Denver Developmental Screening test. The sample was a purposive, non-random

sample of the children of the first fifty mothers who consented to participate and who met the criteria. The design was pre-experimental with no control group. The results were compared with standard growth measurements for the general population matched for age and sex. The covariates of mother's age at delivery, length of gestation period, smoking history, complications of pregnancy, length of time in the program, and gestational time when first seeking prenatal care, were analyzed to determine their correlation with the birth weight of the infant. These findings were also compared with the findings of similar studies.

The findings revealed that of the fifty subjects in the study, 17 or 34 per cent, were at or below the 50th percentile curve on the standard weight charts for all boys and girls by age and sex. This difference was significant at the $p=.05$ level, showing a higher mean weight for the children in the study as compared to the population in general. Similar findings were revealed with measurements of height, where 16, or 32 per cent of the children in the study were at or below the 50th percentile curve on the standard charts for all boys and girls. This difference was also significant at the $p=.05$ level. The null hypothesis could not be supported as stated and was rejected.

The findings also showed that 98 per cent of the subjects had scores on the Denver Developmental Screening Test which were within normal limits for age. Only 2 per cent of the subjects, or one child, showed an abnormal score. The only covariate to show a significant relationship to the birthweight of the infant, using a multivariate analysis, was the length of gestation period. When this finding was compared to a similar

study, the weeks of gestation of this study group showed a significant ($p=.01$) increase in the number of mothers delivering in the 38-42-week period. There was also a significant ($p=.01$) decrease in the gestational age when first seeking prenatal care of the mothers in this study group as compared to a similar study.

Since the Teen Mother Program emphasizes the importance of early prenatal care and requires a medical certificate for entrance, it can be inferred that the program has a positive effect on mothers seeking early prenatal care. This in turn would increase the probability of a longer gestational period and the resulting increase in birth weight and decrease in complications.

The composition of the study group was Caucasian, 36 per cent; Black, 2 per cent; Chicano, 60 per cent; and Native American, 2 per cent. The high proportion of Chicano subjects may have been an influencing factor, since the variable of culture and socio-economic class were not controlled. The absence of a control group was also a limiting factor; however, since the fifty subjects represented approximately one-third of the target population of 170 mothers who had completed this Teen Mother program, generalizations to this group probably would be valid.

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Graduate School

THE EFFECT OF A TEEN MOTHER PROGRAM ON THE GROWTH
AND DEVELOPMENT OF THE CHILD

by

Barbara McCarthy

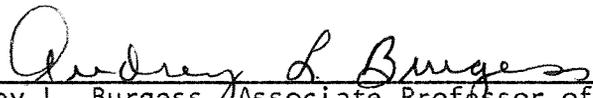
A Thesis in Partial Fulfillment
of the Requirements for the Degree
Master of Science in Nursing

December 1979

The persons whose signatures appear below certify that this thesis in their opinion is adequate, in scope and quality, as a thesis for the degree Master of Science.


Darlene B. Johnson, Associate Professor of Nursing


Evelyn L. Elwell, Associate Professor of Nursing


Audrey L. Burgess, Associate Professor of Nursing

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Chapter 1

THE PROBLEM

Introduction

Teen-aged childbearing is a serious and growing social, economic, and health problem in the United States. The pregnancy rate in America is among the world's highest, higher than in 18 other countries (Alan Guttmacher Institute, 1976, p. 7). Nearly one million teenagers become pregnant each year and nearly one birth in five in the United States is to a teen-aged mother (Zero Population, 1976, p. 1).

Teen-aged pregnancies are known to produce infants of low birth weight (Stickle, 1975, p. 86), of higher risk to disease (Nye, 1977, p. 2), and of slower growth and development (Braen and Forbush, 1975, p. 257). The teen-age girl herself is still growing and developing both physically and psychologically (National Research Council, 1971, p. 375) and is frequently emotionally immature, uneducated, and unready for the responsibilities of motherhood.

Background for the Study

Pregnancy can present a considerable obstacle to the girl's progression through the developmental tasks of adolescence. Adolescents frequently are extremely unrealistic, not only about changes which pregnancy will produce in their lives but also about appropriate maternal

behavior and good child care. They are not prepared for the social and emotional isolation of motherhood at this early age (Perkins, 1978, p. 184).

Nutritional Status of Teen-ager

Frequently the nutritional status of the teen-aged girl is basically unsatisfactory without the added burden of reproduction. Many adolescents are uninformed about health care, including nutritional needs and how to choose an adequate diet. The typical teen-aged diet, high in salt and carbohydrate and low in protein, is thought to be responsible for the complications of toxemia and anemia (Ballard, 1971, p. 343). The nutritional status of the pregnant woman before and during pregnancy greatly affects her health (National Research Council, 1971, p. 379). Complications such as toxemia (Ballard, 1971, p. 343), threatened and actual miscarriage, premature birth, and stillbirth are much more frequent in expectant mothers who are poorly nourished. In addition, infections and difficult labors tend to be more prevalent in expectant mothers who are poorly nourished (Ballard, 1971, p. 345). Because the growing fetus' food supply comes, ultimately, from the mother's bloodstream via the semipermeable membranes of the placenta and the umbilical cord, the expectant mother's nutrition directly affects the nutrition of her unborn baby (Scheuer, 1978, p. 396). Results of an initial nutritional assessment of obstetrical patients in the St. Paul Mechanic Arts High School Clinic Program revealed that 95 per cent were deficient in one or more nutrients. In addition it was discovered that 10 per cent of these pregnant women were obese and 29 per cent had laboratory-confirmed

anemia (Edwards, 1977, p. 96). Although diet during pregnancy is an important consideration, the life-long nutritional status of the adolescent girl when she enters pregnancy is a critical determinant of her reproductive performance (National Research Council, 1971, p. 387). It is therefore important that the young mother be taught about nutrition in order to also safeguard her children's health throughout childhood and adolescence.

Risk Factors

Teen-agers often lack also an awareness of other risk factors, such as cigarette smoking (Garn, and Others, 1979, p. 152) and drug and alcohol abuse (Pawlak-Frazier, 1978, p. 3) which play a detrimental role in the health of the baby. The lack of prenatal care in early pregnancy is another major reason for subsequent health problems for both mother and child. About half of the adolescents in this country receive no prenatal care during the first trimester and more than 10 per cent have not had care in the second trimester (Scheuer, 1978, p. 499).

Often these young mothers show little interest in school and have no specific goals. The pregnancy provides a focus and meaning to their lives. However, many do not live in a nurturing family or do not interact with young children and understand their needs or patterns of development. It is difficult for adolescents to make responsible decisions about their ability to parent when they lack information and experience in this role (Scheuer, 1978, p. 404). This population of teen-aged mothers clearly has special needs in the areas of health and

emotional support. They also need opportunities to learn parenting skills as well as to have an opportunity to continue their high-school education.

Special Programs

An attempt to meet these needs has resulted in both state and federal legislation providing for special programs for teen mothers (Braen, 1975, p. 257). The first of these programs was funded in 1962 by the Children's Bureau of the Department of Health, Education, and Welfare (HEW). The project was called the Webster School and was located in Washington, D.C. The focus was on providing for continuing education on a classroom basis and early and consistent prenatal care and counseling for girls living at home during pregnancy. The success of the program resulted in the development of over 300 such community-based programs in the United States by 1975. In 1971 HEW created the Inter-Agency Task Force on Comprehensive Programs for School Age Parents (Braen, 1975, p. 258). The responsibility of this organization was to develop state conferences, publications and research projects to aid in the education of the pregnant teen-ager. By the early seventies two major educational approaches had emerged for pregnant students. One alternate was to remain in regular school and the other was to provide special classes either in regular school or in a separate facility (Braen, 1975, p. 258). In 1973 the Department of HEW launched a program entitled Education for Parenthood (EFP) in 500 school districts across the country seeking to improve parenting competence by increasing awareness of child growth

and development, the social, emotional, and health needs of children, and the role of parents in fostering child development. New regulations concerning the enforcement of Title IX were proposed in 1974 stating that no school receiving federal aid can discriminate against or exclude any student from an educational program on the basis of such student's pregnancy, childbirth, false pregnancy, miscarriage, abortion, or recovery therefrom (Braen, 1975, p. 259).

School-age parent services were the focus of legislation signed by former Governor Ronald Reagen of California in September 1974. The law (SB 1860) authorizes the Superintendent of Public Instruction to enter into agreements with school districts to provide infant care and child development classes and facilities to teach parenting skills. This law is called the School-Age Parenting and Infant Development Program. It is the intent of this program

to permit and encourage these school-age parents to remain in regular high school programs in order to receive the vital parenting education instruction, develop an employable skill, and complete their high school education.

With these opportunities, it is hoped that school-age parents will develop and/or strengthen positive attitudes of self worth and feelings that they and their infants are important. As parents, they will be capable of providing proper guidance for their children. As trained individuals, they will also have confidence in seeking and maintaining employment in order to support themselves and their children. (Regulations Implementing Chapter 1504, 1978, p. 1)

The subjects selected for this study were participants in the Redland Unified School District's Teen Mother Program funded under Law SB-1860, which has been in existence since 1973, a period of six years. The Day Care Program was started as a pilot program in April 1977 and

was funded by state law SB 1960 and federal funds in October 1977. The program curriculum calls for, in addition to the regular high school classes, 10-12 hours weekly in homemaking and parenting classes, one hour weekly of child development theory and one hour daily of child care practice in the Day Care Center. The program is opened to any pregnant teen-ager but admission requirements include the need for a medical certificate. The content of the program consists of homemaking and parent education courses including knowledge and skills in the following:

1. Importance of good nutrition for all ages and during pregnancy.
2. Role of nutrition in preventive health measures.
3. Instructions in preparing baby food at home.
4. Infant/Child Care
 - a. Individual differences among children of same age group.
 - b. Appropriate safe toys for different ages to motivate:
 - 1) Eye-hand coordination
 - 2) Motor development of large and small muscles
 - 3) Social development
 - c. Relatively predictable sequence of baby's control over different parts of his body.
5. Communication skills
 - a. Active listening
 - b. Problem solving
6. Basic Living Skills
 - a. Following directions on prescriptions
 - b. Determining best buy for money
 - c. Developing a budget

- d. Understanding the electric, telephone and gas bills
 - e. Understanding a pay check stub
7. Community Resources
- a. Where they are located
 - b. How they can be utilized (Redlands School, 1977)

Need for the Study

The fact that legislation of this type has been passed suggests that considerable progress has been made in the development of comprehensive service networks for school-age parents and their infants during the past ten years. However, it is difficult to assess the overall effectiveness of the programs since little research has been done and the publication of findings, particularly as they relate to the development of the child, are very limited. Teen mother programs have been in operation in California for six years now but very little in the way of program evaluation has been done. This study will attempt to evaluate the growth and development of the infants and children of the mothers who have attended the Orangewood High Program by the use of standard growth measurements and testing for social and developmental maturation. The results will be compared with similar statistics for the general population with consideration for the age of the child, sex of the child, birth weight, length of gestation period and age of the mother at delivery.

Program evaluation is of particular importance at this time since the new Adolescent Health Services and Pregnancy Act passed in 1978 has new funding available for already existing Teen Mother Programs which meet stipulated requirements by providing a complete program of

comprehensive services (Scheuer, 1978, p. 417). Information as to the effectiveness of a program which has been in operation for six years should be of interest and value in establishing or changing guidelines for these programs.

Research Question

This study was designed to lend emphasis to the assumption that the education that the teen-aged mother receives in special Teen Mother Programs has an effect on the growth and development of her child.

Conceptual Schema

The nutrition of pregnant teen-agers is vitally important because the diet of the mother must supply sufficient nutrients not only for the fetus, but also to meet the accelerated growth needs of the mothers. Meeting these requirements is further complicated by the psychological stresses of the pregnant adolescent that easily crowd out nutritional concerns (Perkins, 1978, p. 183).

Nutrition

The eating habits of the adolescent girl are notoriously poor. The diet frequently is not under her control, since family, school and peer pressure determines what and where she eats. The concept of being fashionably slim may also influence the teen-ager to decrease sharply or otherwise radically alter her daily caloric intake. Cultural, social, and economic circumstances make giving dietary counseling to the pregnant teen-ager difficult. In a sample studied by Perkins, vitamin A and

ascorbic acid were shown to be particularly lacking in the diet of the teen-ager. It was also discovered that they had borderline intakes of protein, calcium, and iron. Even those girls who drastically increased their caloric intake believing that they would lose all the weight when the baby was born still did not receive the extra nutrients required (Perkins, 1978, p. 184).

It is often difficult for a pregnant teen-ager to follow the recommendation for an adequate diet which is given to her. Patient, supportive counseling is needed to adjust the diet to the patient's lifestyle. Since toxemia, a high-risk factor in teen pregnancy leading to premature delivery, has been related to typical adolescent diets high in sodium and low in protein content (Ballard, 1971, p. 343), a program teaching the benefits and importance of good nutrition during pregnancy should have an effect on the outcome of the pregnancy as well as on the development of the child.

Developmental Tasks

Adolescence is a time of great turmoil where the main developmental task is that of developing a personal identity. This is in itself a huge task without the complicating matter of having to recognize and nurture a new individual as well (Steinman, 1979, p. 35). Psychologically the adolescent is in a stage of identity crisis. Failure to develop a sense of identity will lead to role confusion and prevent the individual from completing the next step in development, attaining a sense of intimacy with others. In the pregnant adolescent this may lead to difficulties in parenting her infant (Steinman, 1979, p. 36).

Need for Special Programs

In working toward the establishment of personal identity, the young girl has hardly become an adolescent before she becomes a mother. There has been little time to learn of her intellectual and emotional capabilities or what special abilities, skills and talents she possesses. If the girl elects to keep her baby, returning to school and acquiring further education will require enormous determination (Perkins, 1978, p. 184).

The adolescent girl may find herself with no social outlets and no satisfactory personal relationships, since her own peer group is absorbed in school activities and dating. When a young woman is lonely and depressed she may take her frustrations out on her child; consequently the incidence of child abuse in this age group is often high.

The pregnant teen-ager has need for not only information as to healthful nutrition and proper child care but, more important, the need for understanding and supportive counseling by a respected adult who can provide the necessary psychological help to work through the normal adolescent developmental tasks, thus paving the way for the ability to nurture and parent. The young mother needs help and support in learning decision-making skills, in examining her values, and in increasing her self esteem as a person of worth and value. Programs which are prepared to provide this type of sustained support and interest must surely benefit the mother and the child in gaining the necessary foundation for a loving parent-child relationship. The end result should become evident in improved outcomes of the pregnancies and in improved growth and

development of the children. This development of the child, when there are no other complicating health factors, should then be evident in the normal growth curves of the height and weight as well as in normal screening test scores in the areas of fine motor, gross motor, social, and language development when the Denver Developmental Screening Test is administered.

In a study done at Johns Hopkins Center for School-Aged Mothers, it was noted that over 50 percent of the pregnant adolescents were children of adolescents (Scheuer, 1978, p. 204). It appears that there may be a pattern which crosses the generation. Many of these pregnant girls had little correct information and believed many myths about reproduction and contraception. Among the conclusions of this study were the fact that many girls become pregnant because they do not realize that they have alternatives. They are often left to their own devices, without ethical guidance or a sense of values. By developing a values clarification program they were helped to consider what it means to be pregnant, what their plans, responsibilities, and long-term goals are, and how to avoid subsequent pregnancies (Scheuer, 1978, p. 205). It would seem that this type of counseling not only would be of benefit to the young mother but may also be instrumental in preventing similar behavior patterns in following generations.

A program which can keep young mothers in school even after they have delivered their babies, by supplying the necessary child care facilities, not only helps the mother acquire her education and occupational skills but also provides her with an opportunity to participate

in the socialization process which is very important to her growth (Scheuer, 1978, p. 207). When a program in which most of the services the pregnant girl needs are under one roof, the tendency of the girls to use the facilities is increased. Adolescents have a low tolerance level and are easily frustrated. They find it very difficult to go from agency to agency seeking help and, in fact, often simply give up if this is necessary. A comprehensive program providing educational and occupational counseling and teaching the necessary family living skills may be our society's best way of dealing with the growing and complex problem of teen-aged pregnancy.

Objectives of the Study

In this study the researcher will investigate whether or not the program content which is presented to the teen mothers at Orangewood Teen Mother Program has an effect on the growth and development of her child. The information which is gained from this study could be helpful in evaluating the curriculum and teaching methods which are used by pointing out areas which may have deficiencies and correcting these when possible. The findings of the study could be helpful in increasing the funding for this program. Under the new Adolescent Health Services and Pregnancy Act, existing programs which meet the criteria for providing comprehensive services to the nation's teen-agers are being given additional funding for expansion.

The findings of this study will also provide some information on the growth and development of the children of adolescent mothers, an area in which very little research has been done or at least very little has

been published. Many programs have been in existence in California for over five years but most of the data available deals mainly with the educational and economic status of the mother and not with the effect on the child.

Null Hypotheses

1. There will be no significant ($\alpha=.05$) difference in the growth and development of the first children (ages 0-5) of teen-aged mothers attending a Teen Mother Program and the general population of children of the same age.

2. There will be no significant ($\alpha=.05$) difference in the height and weight of first children (ages 0-5) of teen-aged mothers attending a Teen Mother Program and the general population of children of the same age.

3. There will be no significant ($\alpha=.05$) difference in the results of the Denver Developmental Screening Tests given to first children (ages 0-5) of teen-aged mothers attending a Teen Mother Program and the general population of children of the same age.

Definition of Terms

For the purpose of this study the following terms will be defined.

Teen Mother Program

A program provided for by funding under the provisions of Chapter 1504 of the Statutes of California of 1974 (SB 1860), which consists of

an agreement between the Superintendent of Public Instruction and the Redlands School District to conduct a program as part of the School-Age Parenting and Infant Development Program. This program is subject to the specified regulations provided by the State of California for the operation of these programs, and contained in Chapter 6 of Division 12.5 of the Education Code commencing with Section 16790. The purpose of this program is to help teen-aged mothers complete high school and also receive education in nutrition and parenting skills in preparation for caring for her child. It also provides for care and development services for the infants of these teen-aged parents, including educational stimulation, health screening, and other provisions to meet the physical and emotional needs of the infants.

Teen-Aged Mother

A young woman between ages 14 and 19 who is pregnant with her first baby and plans to continue the pregnancy, keep the baby and complete her high school education in the Teen Mother Program.

Growth and Development

Growth and development consists of (1) measurement of height and weight compared to standard percentile charts for normal measurements by age and sex, and (2) development as measured by the Denver Developmental Screening Test for fine motor, gross motor, social and language development.

Complications of Pregnancy

This will refer to any deviation from the normal parental course

such as prematurity, anemia, toxemia, hypertension, abnormal bleeding, hyperemesis gravidarum or severe emotional illness.

Organization of the Remainder of the Study

Information and background concerning the problem of teen-aged pregnancy and its effects on the young mother and child has been presented in Chapter 1. In Chapter 2 the researcher will present a review of selected literature dealing with adolescent pregnancy and its effect on the child. Chapter 3 will describe the research method and design, explain how the sample was selected, how the data collection took place, and will give the results of the pilot study. An analysis of data is presented in Chapter 4 including comparisons with other study data and including tables and figures. The summary, conclusions, and recommendations for further studies as well as implications for nursing are given in Chapter 5.

Chapter 2

REVIEW OF SELECTED LITERATURE

Physical and Psychological Development of Child

A study of the physical, social and psychological characteristics of children of mothers under 18 years compared with those of mothers over 18 years was done by Oppel and Royston (1971, pp. 751-755). The mothers were twin matched as to socioeconomic status, birth weight of the child, parity of the mother, and race of the mother. The findings showed no significant differences by any factor except the age of the mother at birth of the child. The children ages 6-8 years, of the younger mothers showed a significantly lower mean height and a trend approaching significance in lower weight. They also had a lower reading grade level and lower I.Q. scores measured by Stanford-Binet, Wechsler, and Wide Range Reading Achievement Tests. Differences were considered significant at 0.05 level. Means and standard deviations of the two groups of children on height, weight, and I.Q. scores were derived from a test of mean difference of pairs rather than the difference of group means. The study findings support the contention that the youth of mothers is a contributing factor to less adequate nurturing of children and this contributes to deficits in their physical, social, and psychological development.

Weiner (1965, pp. 434-444) reports on an ongoing longitudinal study of low birth weight infants evaluated by a pediatric neurological

examination. This study of 500 low birth weight (-2500 Gm.) children compared with 492 full-term (+2500 Gm) children matched according to race, season of birth and socioeconomic class. These children were examined at 40 weeks of age and reexamined at 3-5 years. The premature children were found to be impaired when race, maternal attitudes and practices, and social class factors were controlled. Such impairment was not secondary to personality disturbances. The degree of impairment was increased with decreasing birth weight. The impairment included perceptual-motor disturbances, flaws in comprehension and abstract reasoning, poor gross motor development, immature speech, and impaired I.Q. The instruments used in this study were Stanford-Binet Intelligence Test, the Lincoln-Oseretsky Test for motor development and the Bender-Gestalt Test for visual coordination. Data were analyzed by use of mean scores on measures of psychological development and associated variables by birth weight, race, and sex. Analysis of variance and covariance of mean scores was also done correlating to birth weight. The findings of the study tend to support the relationship of birth weight to developmental impairment rather than to socio-economic or cultural factors, or age of the mother. The age of the mother at delivery was not considered which would appear to be an important weakness of the study.

Menken (1972, pp. 45-54) in a report on the health and social consequences of teen-aged pregnancy, cites the study done by Benjamin Pasa-manick and Abraham Lilienfeld in which they found the risk of mental retardation was high for children of mothers younger than 20, and the study of Raymond Illsley and others who found that I.Q. of the child

increased with maternal age. It was thus concluded by the author that whether because of biologic or environmental factors that affect the infant directly or indirectly through prematurity, the infant born to a teen-aged mother has a much higher risk than an infant of a somewhat older mother of suffering specific severe handicaps.

Studies of Teen Mother Programs

Jekel (1975, pp. 370-374) studied 180 index infants and a comparison group of 103 subsequent infants in the Young Mothers' Clinic in New Haven, Connecticut. He found that the infants of subsequent pregnancies of teen-aged mothers are at greater risk for both survival and prematurity, with other factors such as prenatal care being controlled, although it was not obtained at the same clinic. One suggested reason for this was the fact that the young mother might not have had enough time to prepare physiologically and nutritionally between the initial and the subsequent pregnancies. There was also a strong relationship demonstrated between the number of prenatal visits and the outcome of the pregnancy. The mothers who had subsequent pregnancies sought care less frequently than those with initial pregnancies. This study clearly showed that there is justification for delay of subsequent pregnancies for teen-aged mothers. It also pointed up the importance of good prenatal care as well as good postpartum follow-up which should include contraception services.

Perkins (1978, pp. 179-188) studied a group of young gravidas under age 17 who were given intensive and individual treatment in a

special prenatal clinic geared to work with adolescents who were pregnant. These mothers were compared to a control group of 100 mothers of similar age treated routinely and also with 100 women of more ideal child-bearing age (over 20 years). Few medical differences between the two adolescent groups and the older group were noted but social and emotional factors were found to be the most important in predicting future difficulties. One of the conclusions of this study was that a continuing relationship with a stable staff in the clinic was very important. Once a trusting relationship was built, the adolescent girl was much more likely to keep her appointments and to comply with the suggestions for medical care and treatment. Adolescents were found to be extremely unrealistic about appropriate maternal behavior and good child care and in need of special support and counseling during their pregnancies. Dietary counseling, it was found, in order to be successful, had to be fitted into the girl's lifestyle and habits. This counseling was made more difficult due to peer pressures, the concept of being fashionably slim as well as cultural and economic restrictions. This study was well documented and pointed up many of the real and special aspects of dealing with the adolescent pregnancy.

Braen (1975, pp. 256-262) stated, in an article giving a national overview of the problem of teen-aged pregnancy, that the pregnant girl under 17 is biologically at risk for childbearing, much more likely to have complications such as toxemia and anemia as well as a higher rate of infant mortality and premature births. Infants born to these mothers are much more likely to have less than satisfactory psychological,

neurological, and intellectual development. In response to the needs of the adolescent mother, H.E.W.'s Office of Education and Office of Child Development implemented a program in 1973 establishing Education for Parenthood programs in 500 school districts. This major undertaking reflects H.E.W.'s interest in strengthening the family as the primary institution affecting the child's life. The programs offer varied educational experiences concerning family life and parenting responsibilities rather than emphasizing only sex education or reproductive biology. The conclusion of a recently-published evaluation of two such programs in Connecticut showed that programs in these social and educational services had a positive impact on the students for more than one year after delivery with respect to the infant's health, the mother's education and child spacing.

Foltz (1972, pp. 1612-1619) reported on the experience of girls in the New Haven Mother's Clinic in staying in school during pregnancy and returning to school postpartum. The sample consisted of all unmarried girls under age 18 residing in New Haven and registering for prenatal care at Yale New Haven Hospital from September 1967 until June 1969 and were assigned to a comprehensive hospital-based service. The sample of 180 persons includes only those who did not terminate their pregnancy. The dependent variables of appropriate age and grade, whether enrolled in school during pregnancy, attendance, and enrollment two months postpartum, were tested against a large number of independent variables including socioeconomic factors, birth order, parity, and educational goals. Conclusions from this study included the fact that if given a chance, most

(83%) pregnant girls prefer to continue their education. But those women over 15 years and with high educational goals are best at attendance and most likely to finish school. Seventy-seven percent of the girls were graduated or were back in school by two months postpartum. This study, while not too clearly written, pointed up some basic questions that society must answer about the educational programs for pregnant teen-agers. The method used for sample selection and data collection was clearly explained and the statistical analysis was appropriate. In this study the findings were compared with those of the Webster School 1968 study which did not seem appropriate since the two studies were not really similar in nature. The assumptions affecting the study were well stated as were the limitations.

Dr. Janet Hardy, author of the Johns Hopkins Child Development Study (Scheuer, 1978, pp. 203-217), has reported data on the development of 525 children born to girls who were 16 years or less at time of delivery. At age four, 11 percent of the children scored 70 or below on I.Q. tests compared with 26 percent of the general population of four-year-olds. While in the general population approximately a quarter of four-year-olds will demonstrate an I.Q. of 110 and above, only 5 percent of the children born to very young mothers received this high a rating. Dr. Hardy noted that school failure and behavioral problems are also more prevalent among the study population.

Other serious problems such as child abuse, delinquent behavior and early pregnancies among the children themselves have been encountered. Yet, some of the young mothers and their children have been successful. These mothers have completed their schooling, hold good jobs, have established satisfactory family life patterns and their children are doing well and should be successful also. (Scheuer, 1977, p. 217)

James (1978, pp. 1-19) conducted a study in Thomas Riley High School in Los Angeles in which she correlated the attendance at a Pregnant Minor Program with the birth weight of the infants born to the mothers attending. The sample population of 1965 girls, ages 13-18 years, was attending the program during September 1977 through February 1979. Of the 165 infants, 13 percent were of low birth weight (<2500 Gm), and 50 percent of the low birth weight infants were born to girls with less than 30 days of actual attendance at the program. The content of this program which may contribute to fewer low birth weight infants includes: instruction in prenatal care, federal school nutrition programs, availability of Women's, Infants' and Children's (WIC) food coupons, and staff watchfulness for early detection of problems arising from pregnancy.

A Connecticut study of school-age mothers (Klerman and Jekel, 1973) reported that of the single mothers continuing in school, 52 percent left their babies with their mothers, 10 percent with other members of the household, and 4 percent with someone who came into the home. Only 21 percent of the mothers hired someone to care for their children. Two years later, using the same population sample and looking at the records of those still in school, two-thirds of the mothers were leaving their babies with their mothers. This study also reported that three months after the birth of the baby, 81 percent of the grandparents were giving their daughters financial help. Two years later, 51 percent of the grandparents were still helping their daughters financially. The study population involved all black families so that the proportion of help might be the same or somewhat different for white or Chicano families.

The Effect of Nutrition on Child Development

The National Research Council (1970, pp. 367-392) conducted a study in which the conclusions included the statement that "the nutritional status at the time of conception is a culmination of a girl's lifetime nutritional experience and is an important determinant of reproductive efficiency." (National Research Council, 1970, p. 379) A well-balanced diet during pregnancy is also important to the well-being of the mother and fetus, and deviations from normal diet during pregnancy must be carefully evaluated. The study also reported that early-maturing girls increase their caloric intake during their most accelerated growth phase, which occurs at an earlier age than late-maturing girls. Caloric requirements during adolescence closely parallel the growth curve, and since each individual has a unique pattern of development, caloric allowances must meet individual needs at different stages of growth. The adolescent girl needs an adequate caloric intake to support this growth. However, this is the time when girls decide to adopt bizarre dietary patterns in order to maintain fashionably thin figures, leading to seriously limited consumption of the nutrients needed for growth.

Often the adolescent pregnant girl is placed on a restricted diet by the physician to control weight gain causing deficiencies in vitamin A, calcium and iron. "Such observations indicate that nutrition education is neglected in both high schools and medical schools." (National Research Council, 1970, p. 381) The conclusions of this study include the statement that efforts should be made to provide instruction in

personal and family living, nutrition, and child care to all pregnant adolescents.

Ballard (1971, pp. 338-363), in writing of the medical and health aspects of adolescent reproduction, refers to nutritional status "as an often overlooked and elusive detail in the study of pregnant adolescents but one which many authors have recognized as having possible association with obstetrical pathology." (p. 360) In many areas of the world undernutrition has been shown to have an effect on increasing prematurity rates (p. 360).

The Effect of Parental Age on Child Development

Nortman (1974, pp. 3-49) has compiled considerable information from all over the world relating parental age as a factor in pregnancy outcome and child development. She has found that there is documentary evidence on the relationship between maternal age and mortality and morbidity of mother and child. The risks are minimal when the mother is neither too young nor too old and when the child is of moderate birth order, not exceeding four. This study also suggested that the father's age may play role in some congenital conditions. The point is well made that since aging and reproduction are related biological processes, one is not surprised that there is a relationship. This report has presented tables citing the results of 13 studies dealing with physical handicaps, mental functioning, usually measured by reading, verbal and I.Q. scores, and abnormal behavior or psychological patterns and their relationship

to maternal age. A study of mortality rated at ages 1-4 in Hawaii shows a rate of 41 percent above average for children of teen-aged mothers, with a rapid decline as the age of the mother increases. Since accidents are an important cause of childhood deaths, one implication is that teen-aged mothers are too immature to make responsible mothers.

A New York study (Nortman, 1974, p. 43) compared the distribution by maternal age at delivery of 533 children registered as blind among live births of 1948-1959. The ratio of observed to expected number of mothers in the under 20 and over 35 year age groups was 1:38. The conclusion was made that mothers under 20 and over 35 years are at higher risk to bear children who may become blind.

A study of birth weight among children born in Baltimore, Maryland, diagnosed as having strabismus found that "case infants were lighter than controls even when gravity was controlled, suggesting a direct association of strabismus with birth weight." (Nortman, 1974, p. 43)

Newcome's analysis of 213,353 live births in British Columbia, Canada, during 1953 to 1958 is the most comprehensive study found in the relationship between maternal age at birth and child handicaps (Nortman, 1974, p. 43). The study is unique for the research design, which added the registered handicapped children to all of the children live-born during 1953 to 1958, who died by the end of 1961. British Columbia maintained a register of all handicapped who had died as well as the record of maternal age. Newcombe's study found a J-shaped curve relation between parental age and handicapped children, with or without the addition of those who had died. By disease category, handicaps that

proved to be statistically significant in relation to maternal age were mental, psychoneurotic, and personality disorders.

Two studies done in Birmingham, England, (Nortman, 1974, p. 46) looked at I.Q. of presumably normal children in relation to maternal age. One was based on verbal score achieved in the standard school examinations for children age 11. The data concludes that there is a positive relationship between lower scores and lower maternal age. However, the research design, by omitting children incapable of going to school, can conceivably report findings contrary to expectation.

Drillien (1969, pp. 562-570) studied the school performance of children of different birth weights in England in 1953, and concluded that the incidence of severe and moderate mental, neurological, and physical handicap increases steadily with the decreasing birth weight from 1 percent of normal birthweight controls to 64 percent of those who weighed less than 1250 g. at birth. Mean I.Q. scores fell with decreasing birthweight in all social groups. A difference in score by birthweight was still evident when all with moderate to severe handicaps were excluded. Low birthweight boys had a higher incidence of handicap and of impairment in normal school function than did low birthweight girls. Differences in disturbed behavior by birthweight were less marked at 11-12 years than at 6-7 years.

Stickle (1975, pp. 85-90), who was vice president for the Program National Foundation-March of Dimes, has reported on many of the trends and problems of teen-aged childbearing. He reports that there are few reliable measures of the development of the child in which maternal age

has been a factor. He cites a study by Roberts and Engel, reporting on the examination of a national sample of children aged 6-11, in which was found a striking relationship between the children's intelligence scores and the age of the parents. The mean deviation I.Q. (from combined Wechsler Intelligence Scale in Children) was the lowest for children whose mothers and fathers were at either extreme of reproductive age and highest for mothers and fathers who were in the middle of the reproductive age at the time of birth. The relationship is worth noting even though associative mechanisms are obscured by a variety of biological, familial, and social factors that may be involved.

Hassan (1964, pp. 256-269) reported on a study of 159 primiparas, 72.3 percent white, aged 12-15 years. The results of this study showed an increased risk of toxemia and prematurity for the group and increased cephalopelvic disproportion for the 12-13-year-old mothers. In this white group, age seemed to be a greater risk factor for toxemia than it is for black women.

Erkan (1971, pp. 50-52) reported from a study of 261 teen-aged mothers showing that prematurity was related more closely to the interval between menarche and conception than simple chronological age.

Fielding (1978, pp. 893-895) reported from statistics in Massachusetts in 1976, that 6.9 percent of all babies born were under 2500 g., whereas the rates for women 15-17 and under were 11.3 and 13.5 percent respectively. Further collaboration was presented by citing a perinatal study done at Johns Hopkins Hospital which showed that babies born to mothers younger than 15 years are two to four times more likely to be

neurologically abnormal than those born to mothers in the 20-24 age bracket.

Teen-Aged Parenting and Child Development

DeLissovoy (1973, pp. 22-25) reported that school-age parents are apt to expect too much of their babies. For example, mothers expect babies to sit alone by 12 weeks, while records show that the average baby is not able to do this until 28 weeks. Young fathers expect even faster development. Very young parents showed a low tolerance for crying and this combined with unrealistic expectations of development, contributed to impatience with their children and often cruel treatment. In his report he cites instances of babies as young as six or seven months old being spanked in his presence. The author concludes the most dangerous age for children to be from one to three years old when abusive treatment by parents is the most prevalent.

Connolly (1975, pp. 106-110) reported findings which showed that babies born to school-aged parents are more likely to live with only one parent or even with neither parent. Because of poverty, the homes are more likely to be deteriorated, in dangerous neighborhood, and the children less likely to have adequate diets, clothing and medical care.

Kaduchin (1974, pp. 500-505) reported his findings in a New York study of unmarried mothers who kept their babies. A follow-up was done on the adjustment of the mother and child at one-and-one-half years and again at six years after birth. Some 90 percent of the 205 women still in the study when the children were six, were of black and Puerto Rican

ancestry. A comparison between these children and legitimate children in the community studied by the Manhattan Survey of Psychiatric Impairment of Urban Children showed that the children were essentially similar in emotional functioning. One conclusion of this report was that the majority of these mothers and children had coped very well and that more recognition should be given to these young unmarried mothers.

Most researchers have considered grandparents as sources of help for the pregnant school girl, but few have asked what the pregnancy of a young daughter means to her parents. Smith reports

. . . that despite a persistent misconception among professionals, minority families do not usually accept the pregnancy of an unmarried girl and unqualifiedly welcome her baby; in reality the family is often angry and unaccepting. They are concerned with the social disgrace, financial burden, and all the additional problems another child means to an already-burdened family. The mothers often express concern for themselves. Typically, becoming a grandparent, especially when this may mean having to assume at least part of the responsibility for a daughter and her child, is unexpected and unwelcome. (Smith, 1975, p. 87)

Prenatal Care for the Teen-Aged Mother

Berg (1979, pp. 32-35) reports on a study of two groups of pregnant adolescents enrolled in the Saint Paul, Minnesota, Maternal and Infant Care Project. A retrospective analysis of obstetrical summary sheets of delivered pregnant adolescents was conducted to demonstrate the relationship of the availability of a comprehensive program of prenatal care in a regular school setting to the minimizing of obstetrical complications of pregnant adolescents who were students in the school. A total of 36 students who received prenatal care in the school clinic (study group) from 1973 to 1976 were compared with a random sample of 36

adolescent patients, matched for race, who received care at a nonschool clinic. The data showed that the study group initiated earlier prenatal care and had more frequent visits. The study group demonstrated fewer obstetrical complications and had fewer low-birth-weight infants.

The Effect of Smoking on Development

Steinfeld (1976, p. 6) reported to the Third World Conference on Smoking and Health, held in New York in June, 1975, that significant relationships of injurious fetal effects and maternal smoking have been reported by the British Perinatal Mortality Survey. This extensive survey showed a 170-gram difference in mean birth weight between children born to mothers who smoked after four months of pregnancy and children born to nonsmoking mothers. The lower birth weight babies were also one-half inch shorter than those of nonsmoking mothers. Findings published in the United States and France are similar to the British Isles (Steinfeld, 1976, p. 6).

One probable cause for the decrease in fetal weight among smoking mothers is the excess carbon monoxide in the mother's blood. Carbon monoxide crosses into the fetus from maternal circulation. It has been repeatedly shown that fetal carboxyhemoglobin is up to ten times as high in infants of smoking mothers as infants born to nonsmoking mothers. Hypoxia, similarly, has been shown to exert an adverse effect on fetal birth weight of infants born to mothers living in high altitudes. It is thought that there may be a complex interplay of other factors in cigarette smoke which affects fetal development.

Summary

From the majority of the evidence which has been presented it can be expected that teen-aged childbearing is associated with higher morbidity and mortality for the mother, the fetus, and the child. The complications of pregnancy such as anemia, toxemia and prematurity are reported to be higher. Low birth weight resulting from prematurity, is often associated with mental retardation and other birth defects. It is difficult to distinguish between biological and socioeconomic factors when explaining the reasons for complications of pregnancy. Teen-aged mothers are generally of lower socioeconomic status. Their limited finances affect their nutrition and general health care which in turn affects the pregnancy outcome. The young mother also waits longer before seeking prenatal care. Although much research has been done in the areas of premature labor, toxemia and low birth weight, the exact causes are still unknown. It is thought that they are the result of not one factor but of the synergistic influence of age, race, and the adequacy of prenatal care (Stewart, 1977, p. 27). Medical research has not been able to isolate the effect of age alone in determining much of the risk associated with adolescent pregnancy.

Biologically the young mother is physiologically immature. She also needs much guidance and support to work through her own developmental tasks as well as to learn how to parent her child. She needs the sustained interest of an adult figure who can provide for these complex needs. Pregnant adolescents typically lack the wide range of skills and

information which must be learned in a short period of time in order to deal successfully with pregnancy and motherhood. Consequently, in addition to the regular high school curriculum, good comprehensive care programs, providing preparation for childbirth, education in child development, and parenting skills, family planning and human sexuality, and preparation for the personal assumption of many adult responsibilities, are needed.

Although much research has been done relating to pregnancy outcomes, mortality of the infant, and the economic status of the mother, little has been done to assess the effect that special education programs have had on the development of the child.

Chapter 3

RESEARCH METHOD AND DESIGN

The research design of this study is pre-experimental and the one-shot case study method was used.

Methodological Assumptions

1. The content of the educational program was standardized and equally available to all mothers attending the Orangewood Teen Mother Program.
2. The attendance of the mothers at the program was controlled to the extent of providing limitations necessary for graduation.
3. The information given to the researcher at the time of the testing was accurate and honest.
4. The Denver Developmental Screening Test (DDST) is a valid and accurate screening tool for discovery of developmental delays in the areas of social, language, fine motor and gross motor development of children.
5. The subjects selected for the study are representative of the target population.

Description of Population and Sample

The total population included all children of teen-aged mothers who kept their babies and completed an educational program at special Teen Mother Programs. The target population consisted of 170 children

of mothers who delivered when between the ages of 14 and 19 and attended the Orangewood Teen Mother Program in Redlands, California. The sample consisted of 50 children, between the ages of 0 and 5, of mothers who attended the Orangewood Teen Mother Program.

Sample Selection

The sample was a purposive, nonrandom sample of the first 50 subjects who consented to participate in the study and who met the criteria. The subjects were initially contacted through the program coordinator who had the records of their attendance at the program. To insure their privacy, the coordinator, after explaining the nature of the study, first obtained their consent verbally to participate. The mothers of the subjects were then contacted by telephone by the researcher and arrangements for a testing appointment at their home and at their convenience was made. At the time of the appointment verbal explanation of the study was given and the consent form was signed by the mother.

Sample Criteria

The criteria for sample selection included: (1) first children of mothers who have completed the Teen Mother Program; (2) ages 0-5 years; (3) speak and understand English; (4) the child will not be ill at the time of testing.

Rationale for Sample Selection

First children were chosen because it was felt that this would eliminate any effect on development that may come from sibling contact. The range of ages of the sample will give a variety of subjects whose

mothers had attended the program over the five years of its existence, giving a broader view. It was felt that since the mothers of these children used in the sample had been exposed to nutritional and parenting education and skill development, as opposed to those pregnant minors attending regular school programs, that this educational advantage should be evident in the growth and development of their children. The exposure that these mothers had also to the understanding and supportive staff of the school was felt to also be a factor in the development of the mother as well as consequently the child.

Variables Influencing the Study

Controlled Variables

Mother's age at delivery, birth weight of baby, parity of mother, length of gestation period, type of educational program, age of child at testing, sex of the child.

Recorded Variables

Smoking history of mother during pregnancy, smoking history of other family members, type of infant feeding used, and complications of pregnancy and delivery.

Variables to be Measured

Height of child, weight of child, social, language, fine motor and gross motor development of the child as tested by the Denver Developmental Screening Test.

Uncontrolled Variables

Hereditary factors, cultural factors, socioeconomic factors, family support systems, major source of child care, mother's ability to learn.

Limitations

1. One major limitation of the study is the fact that there is not a control population. The data which are collected are being compared to measurements of height, weight and Denver scores of children of the population in general of the same age and sex. Consideration as to the mother's age will be used when comparing birth weights. There is very little research data available on the growth and development of the children of teen-aged mothers.

2. Another limitation of the study is that the sample is not randomized. In order to insure the privacy and confidentiality of the mothers and children the sample had to be selected in the manner described not allowing for random selection.

3. The Denver Developmental Screening Test is just that--a screening test. It was not designed to show minor changes in developmental patterns or to test I.Q. or other psychological changes. It was used in this study because it was easy to administer in the home, took less time than the more technical tests, and is considered to be a good, valid and reliable screening test to assess developmental deficits.

4. Because the study will be pre-experimental with no control

group and a non-randomized sample, the internal and external validity will be limited.

5. Since the Denver Developmental Screening tests have been given in the subjects' homes there is a variation of environmental factors such as noise, heat, and the cooperation of the parent and other family members.

6. The differences in cultural and socioeconomic factors have not been controlled which is also a limitation of this study.

Data Collection

Instruments

Reliability. The same person, the researcher, was doing all the measuring and testing. The same scale was used in weighing all the subjects.

The DDST has been measured against more definitive tests such as the Revised Bayley Infant Mental and Motor Scales and the Stanford-Binet Form LM. It has yielded 97 percent agreement in test findings after a one-week interval. This reliability is within acceptable limits (Frankenburg, 1971, p. 994).

Validity. Concurrent validity of the tool (DDST) is established as it will measure development as related to the current age of the subject (Frankenburg, 1971, p. 994).

Content validity is measured by the DDST to distinguish between

normal and abnormal in areas of personal and social, language, fine motor, and gross motor development (Frankenburg, 1971, p. 994).

Procedures

Data were collected during a visit to the subject's home at an appointed time which was convenient to the mother and child. The child was weighed and measured and given a Denver Developmental Screening Test in the presence of the mother. The mother was asked the following questions and the data recorded on the Data Collection Sheet: her age at delivery, child's birth weight, length of gestation period, length of time she attended the Teen Mother Program, any complications of pregnancy or delivery, her smoking habits during pregnancy and the smoking habits of others in the household, the type of infant feeding used, and the time when she first sought prenatal care. This information was later recorded on a Data Collection Table.

Pilot Study

A pilot study of one subject was done one week before the beginning of the study. It was found that the forms were satisfactory and easy to use. The verbal explanation of the study which was given was satisfactory and no additional questions were asked by the mother. The consent form was well understood and was acceptable to the mother. A better idea of the length of time needed for the interview of the mother and testing of the child was determined to be about 40 minutes. This pilot study did point up the importance of having all the materials, forms and equipment organized and also the need to have a regular plan of

procedure with the interview and the testing, to the extent that this was possible, under the great variety of circumstances encountered in the homes.

Data Analysis

A non-random sample of 50 subjects was tested separately over a period of seven weeks. The subjects were designated by code number (1-50). These numbers corresponded to the numbers on the consent forms, the data collection sheets and the DDST forms.

The level of measurement includes the criterion or dependent variables of height, weight and DDST scores which are interval data; the variate or independent variable which is attendance at the Teen Mother Program; the covariates which are age of the mother at delivery, birth weight of the infant, length of gestation period, smoking history, complications of pregnancy, feeding method for infant, the gestational time when first seeking prenatal care. The variate and covariates are nominal data.

The measurements of height and weight of the child by age and sex were compared to standard growth charts for the general population. The percentage of the study population below the fiftieth percentile was compared to the mean of the population of children in general for the same age and sex.

1. H_0 There will be no significant ($\alpha=.05$) difference in the height and weight of the study population of children and the population in general matched for age and sex.

H_1 There will be a significant ($\alpha=.05$) difference in the height and weight of the study population children and the population in general matched for age and sex.

The resulting scores on the Denver Developmental Tests will be compared to the scores for the population in general matched by age.

2. H_0 There will be no significant difference in the scores on the DDST of the study children and those of the general population.

The data were analyzed using the computer linear multi-variant model, producing an analysis of variance table. Descriptive statistics were also used to deal with the demographic data. Chi square tables were used to compare the data with that of other similar studies in relation to length of gestation and initiation of prenatal care. The results of the Denver Developmental Tests will be discussed with attention to specific patterns occurring in the various age groups.

Summary

Because of the nature of the sample population of the study and the degree of confidentiality which was required to protect the subjects, the methodology was adjusted causing limitations in the validity. There is very limited research data available on the growth and development of the children of teen-aged mothers making it difficult to use a comparative population. Due to the privacy of the records of pregnant minors it is also difficult to obtain data on children of teen mothers who have not attended special programs. There are also many variables which are not able to be controlled which interfere with the validity of the study.

On the positive side, the size of the sample--50--represents almost one-third of the target population, which should increase the ability to generalize to that population. Having the opportunity to do the testing and data collection in the subject's home may have provided a positive atmosphere with less threat than a clinic-type setting, especially for the children.

Since little research has been done in this area, the information should prove of value in carrying out additional studies dealing with the growth and development of children of teen-aged mothers.

Chapter 4

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Demographic Profile of the Study Population

The study population was composed of the first 50 children, ages birth to five years, of mothers who were ages 14 to 19 years at the time of delivery. These mothers had all attended the Teen Mother Program at Orangewood High School, Redlands, California, during the past six years of its operation. The mothers had attended for varying lengths of time but the mean length of time in the program was 30 weeks (7.5 months) as shown on Table 1.

The racial composition of the study population was: Caucasian, 36 percent; Black, 2 percent; Chicano, 60 percent; and Native American, 2 percent. The composition of the ages of the children was: birth to one year, 24 percent; one to two years, 20 percent; two to three years, 26 percent; three to four years, 10 percent; and four to five years, 20 percent. There were 66 percent male children and 34 percent females.

When the data were analyzed for the age of the mother at delivery, the two largest groups were 16 and 17-year-olds, both with 30 percent; 15-year-olds, 22 percent, 18-year-olds, 12 percent; 14-year-olds, 2 percent; and 19-year-olds, 4 percent.

Birthweight

The mean birthweight for the infants in the study was 6.97 pounds and only 6 percent of the infants were under 2500 grams at birth. The

Table 1
Demographic Data by Age of Mother at Delivery
(N=50)

| Age of Mother at Delivery | % Sample | Mean Length of Time in Program (Weeks) | % Smokers | % Birthweight < 2500 g. | Infant Feeding Method | | % Complications of Pregnancy | Mean Gestational Age at First Prenatal Care (Weeks) | Mean Gestational Age at Delivery |
|------------------------------------|-------------|--|--------------|-------------------------------|-----------------------------|-------------|---------------------------------------|--|---|
| | | | | | % Breast | % Bottle | | | |
| 14 | 2 | 24 | 0 | 0 | 0 | 100 | 0 | 6.0 | 40 |
| 15 | 22 | 36 | 27 | 9 | 9 | 91 | 27 | 18.1 | 40 |
| 16 | 30 | 32 | 46 | 0 | 53 | 47 | 26 | 12.5 | 39.8 |
| 17 | 30 | 28 | 20 | 0 | 33 | 66 | 20 | 12.8 | 40 |
| 18 | 12 | 30 | 0 | 33 | 16 | | 33 | 9.3 | 36 |
| 19 | 4 | 18 | 0 | 0 | 0 | 100 | 0 | 12.0 | 38 |
| Mean | | 30 | 26 | 6 | 30 | 70 | Toxemia 4 | 13.31 | 39.3 |
| | | | Family 44 | | | | Complications 28 | 3.3 mo. | |

18-year-old mothers had the largest number of infants under 2500 grams, 33 percent; the 14-year-old mothers had 9 percent and the other age groups had none.

Gestational Age at Delivery

The mean gestational age at delivery for the mothers in the study group was 39.3 weeks. When analyzed by the age of the mother at delivery, the 14-, 15- and 17-year-old mothers all averaged 40 weeks, the 16-year-olds 39.8 weeks, 18-year-olds 36 weeks, and 19-year-olds 38 weeks, as shown in Table 1.

Complications of Pregnancy

The number of mothers having complications with their pregnancies was 14 or 28 percent. Among the complications were bleeding, two mothers; hypertension, one mother; hyperemesis, one; Cesarean Section delivery, four; prolonged labor (over 26 hours), three; toxemia, two; and one mother was a diabetic who also had a Cesarean Section delivery. When the complications were examined by the age of the mother at delivery, the 18-year-olds were the highest with 33 percent, 15-year-olds with 27 percent, 16-year-olds with 26 percent, 17-year-olds with 20 percent, and no complications in either the 14- or 19-year-olds group, as shown in Table 1.

Smoking History

When questioned about smoking, it was found that only 26 percent of the mothers in the study had smoked either during or after pregnancy. When this was broken down by the age of the mother, the 16-year-olds had

the highest rate, 46 percent, as compared to 27 percent of the 15-year-olds, 20 percent of the 17-year-olds, and no smokers in the 14-, 18- or 19-year-old group.

When questioned about other family members who lived in the same household during pregnancy or at present and who smoked, it was found that 44 percent of the mothers reported positively on this. Twice as many family members smoked as did the mothers (26 percent).

Method of Infant Feeding

Among the 50 mothers, 30 percent breastfed their infants for a period of one month to one year. The average length of time was six months. When this was examined by the age of the mother, the highest percentage (53 percent) were 16-year-olds; the 17-year-olds followed at 33 percent, the 18-year-olds at 16 percent, 15-year-olds at 9 percent, and none of the 14- or 19-year-olds breastfed their infants. Bottle feeding was used by 70 percent of the mothers in the sample, as shown in Table 1.

Prenatal Care

The mean time when the study group first sought prenatal care was 13.31 weeks (3.3 months). When this is broken down by age of the mother, mean time for 14-year-olds was six weeks; for 18-year-olds, 9.3 weeks; for 19-year-olds, 12 weeks; for 16-year-olds, 12.5 weeks; for 17-year-olds, 12.8 weeks; and for 15-year-olds, 18.1 weeks, or the highest length of time without prenatal care.

Measurement of Growth and Development

The main question addressed in the study is whether attendance by the young mother at the Teen Mother Program will have an effect on the growth and development of her child as measured by height, weight and scores on the Denver Developmental Screening Test. Since it was not possible to find a control population to use for comparison, the measurements of height, weight and test scores will be compared to the population in general with matching for age and sex of the child.

Three null hypotheses have been posed, as follows:

1. There will be no significant ($\alpha=.05$) difference in the growth and development of first children (ages 0-5) of teen-aged mothers (ages 14-19) attending a Teen Mother Program and the general population of children of the same age.

2. There will be no significant ($\alpha=.05$) difference in the height and weight of first children as compared to the general population of children of the same age.

3. There will be no significant ($\alpha=.05$) difference in the results of DDST scores of first children of teen-aged mothers and the general population of children of the same age.

The first hypothesis will be dependent upon the second and third as to what will be considered as measures of growth and development in this study.

Measurements of Height and Weight

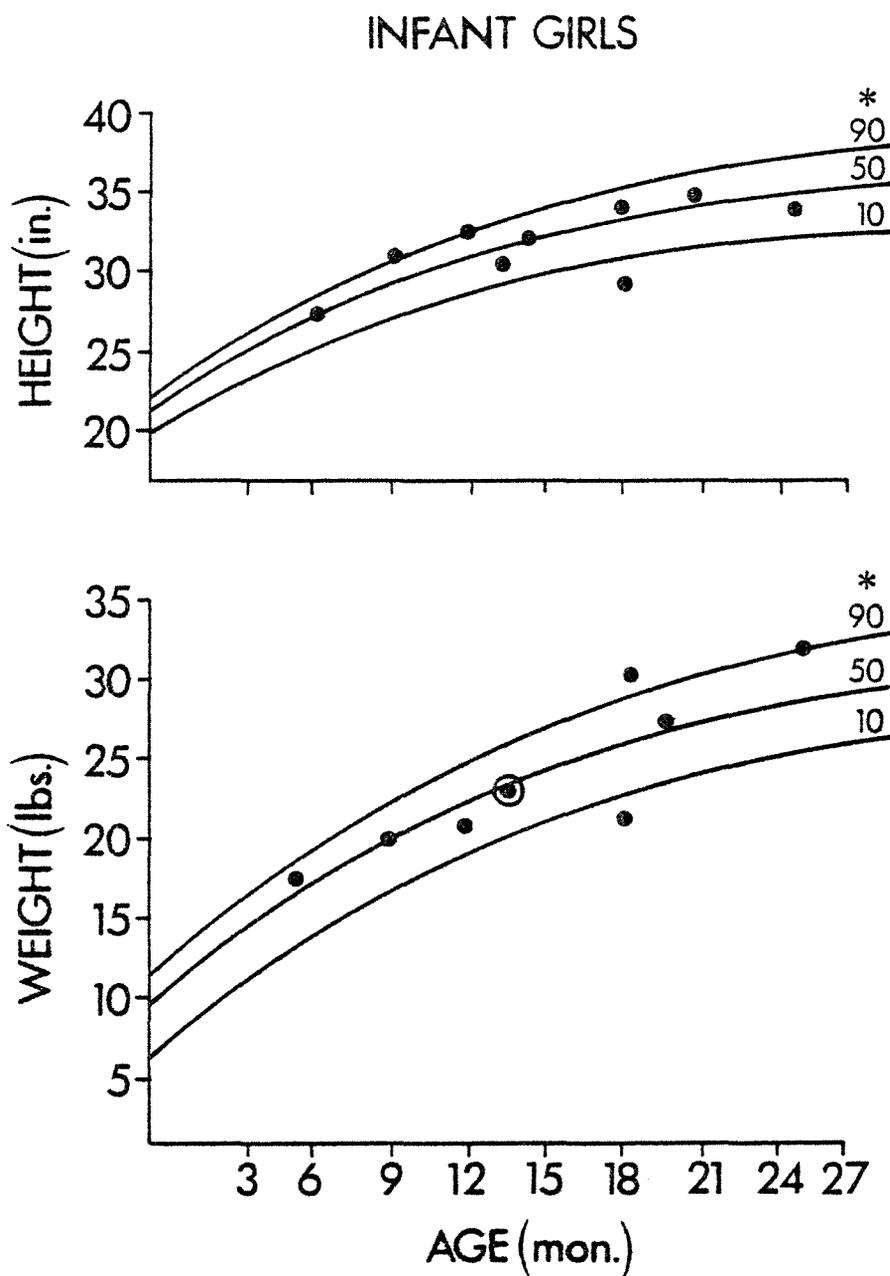
Each subject in the study was weighed and measured separately during a visit to their home. The researcher did all the measurements and the same scale and measure were used on all. The heights and weights were then recorded on a standard growth chart according to the age in months and the sex of the child. The charts which were used were anthropometric charts developed by The Children's Medical Center, Boston, Massachusetts. Charts were used for infant (birth-24 months) boys and girls and for boys and girls aged two to five years (see Figures 1 through 4).

Measurements of Weight

Of the 50 subjects in the study, 17 (34 percent) were found to be at the 50 percent curve or below on the weight charts for all boys and girls. A two-tailed test was run to determine whether this result ($p=.34$) is significantly different than $p=.50$.

$$z = \frac{(.34) - (.50)}{\sqrt{\frac{(.5)(.5)}{50}}} = \frac{-.16}{.07} = -2.29 \quad (p=.022)$$

The result was found to be significant at the 5 percent level ($p=.022$). The result is not consistent with the null hypothesis and would indicate that there is a significant increase in the weights of the study population when compared to the population in general of the same age and sex.



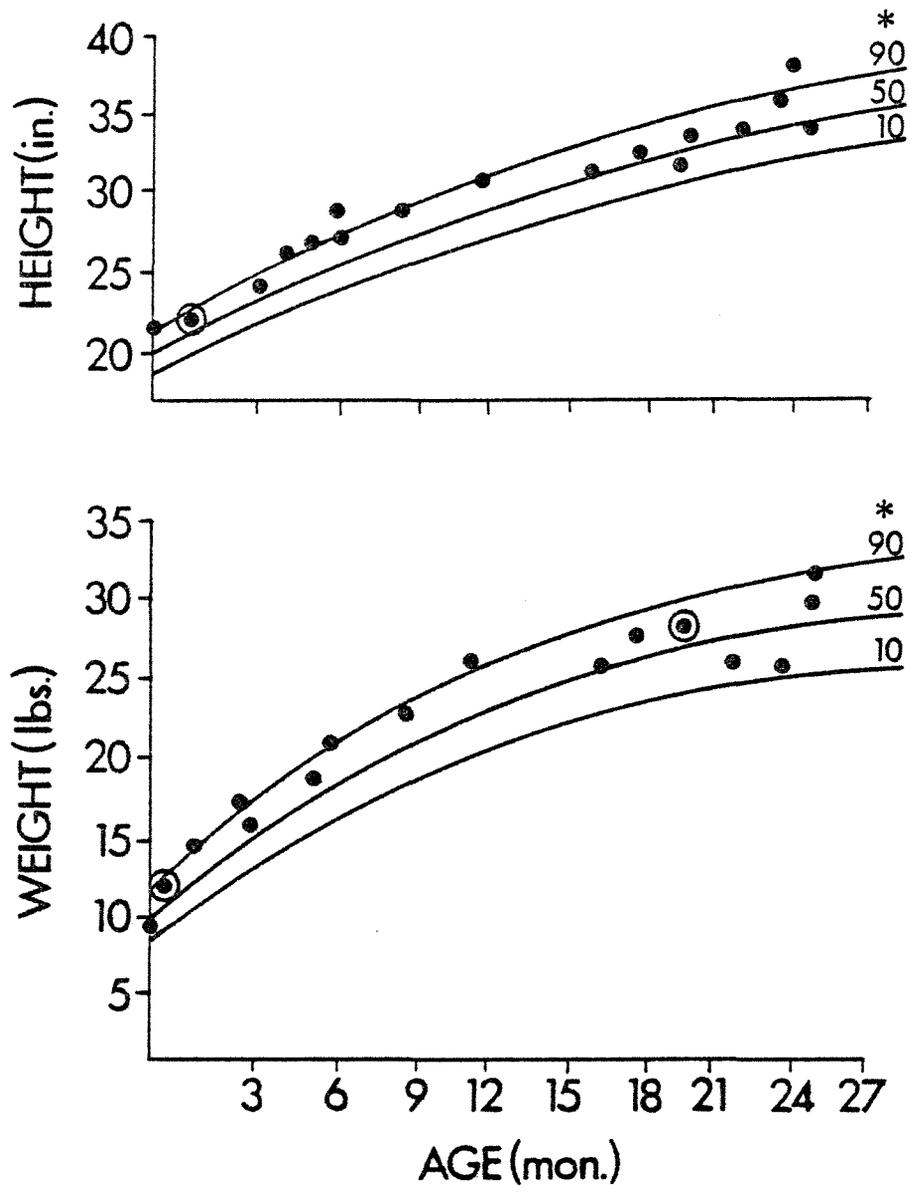
* Percentiles based on Anthropometric Chart, Children's Medical Center, Boston, Mass.

⊙=Two identical measurements.

Figure 1

Chart of Height and Weight of Infant Girls

INFANT BOYS

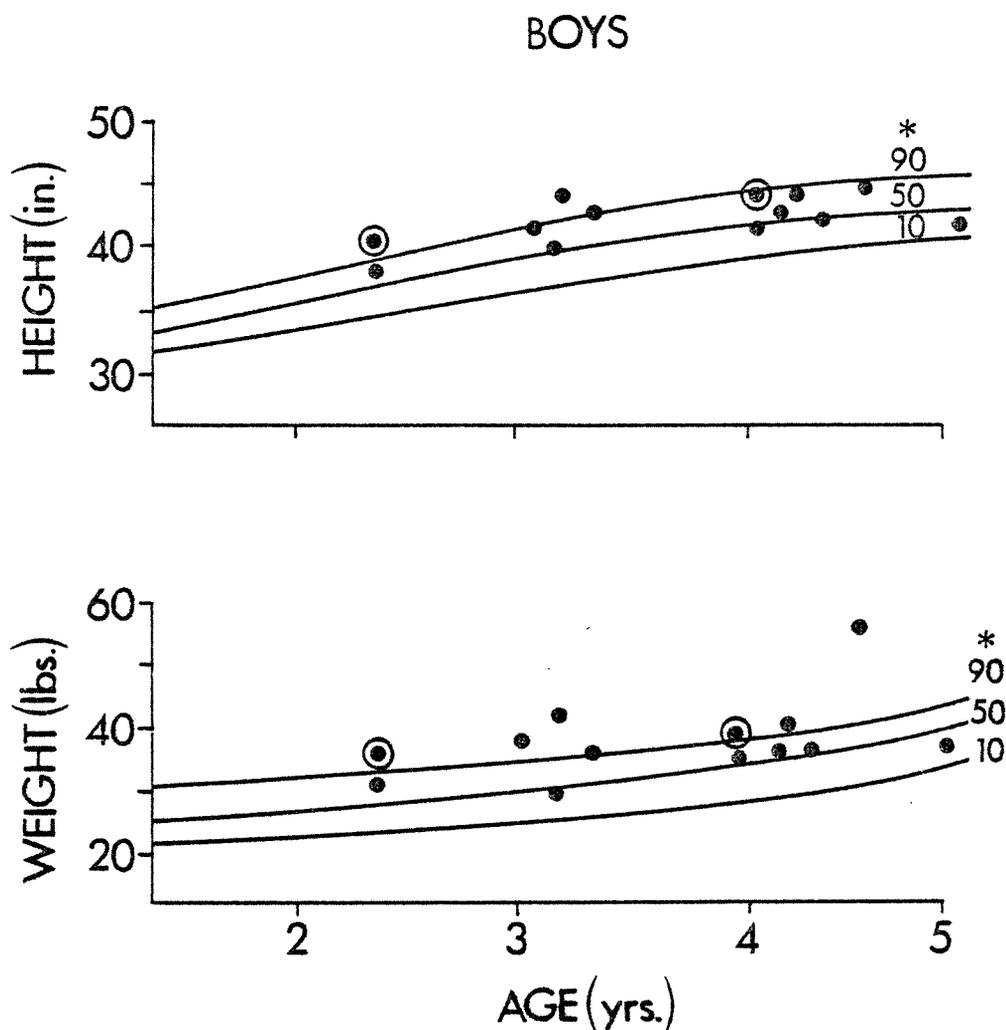


* Percentiles based on Anthropometric Chart, Children's Medical Center, Boston, Mass.

⊙=Two identical measurements.

Figure 2

Chart of Height and Weight of Infant Boys

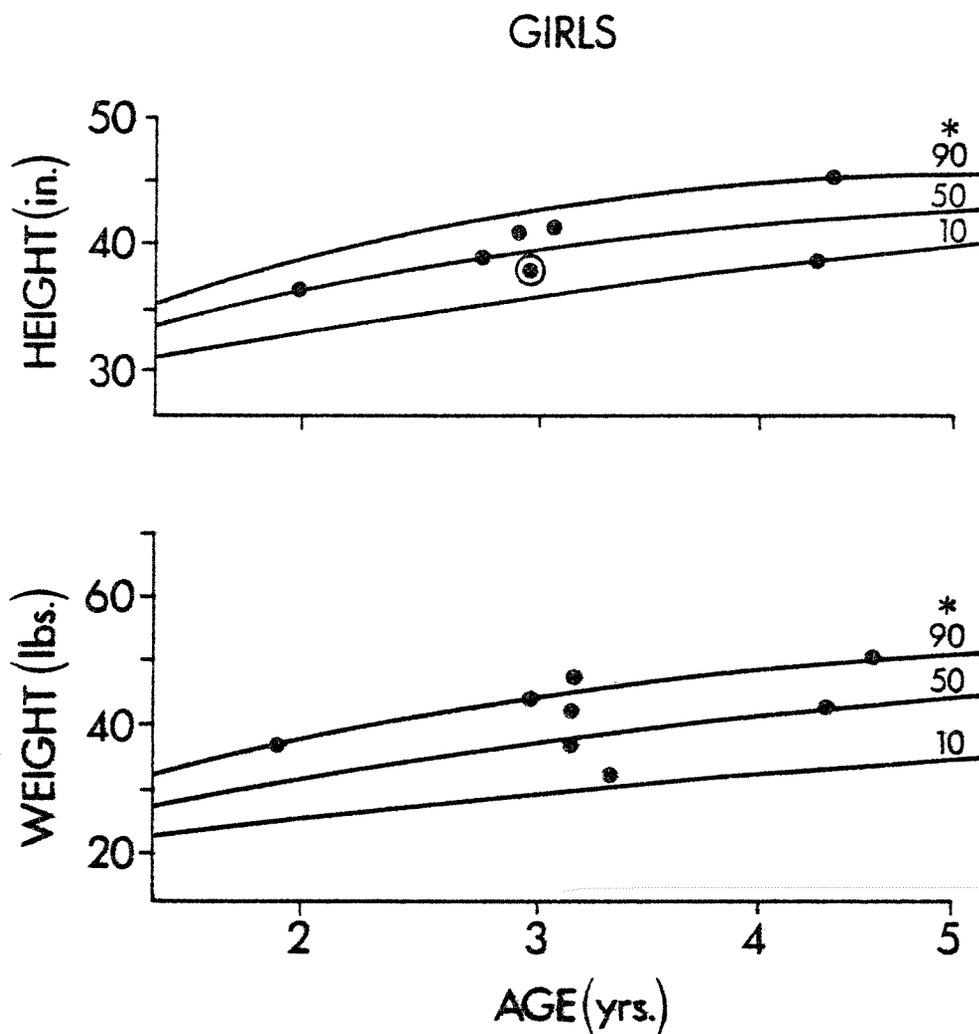


* Percentiles based on Anthropometric Chart, Children's Medical Center, Boston, Mass.

⊙=Two identical measurements.

Figure 2

Chart of Height and Weight of Girls Ages 2-5 Years



*: Percentiles based on Anthropometric Chart, Children's Medical Center, Boston, Mass.

⊙=Two identical measurements.

Figure 4

Chart of Height and Weight of
Boys Ages 2-5 Years

Measurements of Height

Of the 50 subjects in the study, 16 (32%) were at or below the 50 percent curve on the standard height charts for boys and girls. A two-tailed test was run to determine whether this result ($p=.32$) is significantly different than $p=.50$.

$$z = \frac{(.32) - (.50)}{\sqrt{\frac{(.5)(.5)}{50}}} = \frac{.18}{.07} = -2.57 \quad (p=.01)$$

The result was found to be significant at the 5 percent level ($p=.01$). The result is not consistent with the null hypothesis and would indicate that there is a significant increase in the heights of the children in the study population when compared to the population in general of the same age and sex.

Denver Developmental Screening Test Scores

Since it was not possible to find a control population for comparison of DDST score results as to numbers of abnormal, questionable, and normal results, the results of the study population will be discussed as to some of the trends which were noted within specific age groups. Some comparisons to other studies of low socioeconomic groups will be discussed also.

Of the 50 infants and children tested in the study group, only one child was found to have an abnormal score, having two delays in both the language and gross motor areas. Although no statistics are available

as to the rates of normal tests to the general population, 98 percent of the sample must constitute a rate at least equal to the general population. Because of the nature of this finding there is no way to measure statistical significance. However, on the basis of only 2 percent abnormal test scores, it would seem that the null hypothesis could be supported. Frankenberg (1971, p. 992) states results from testing done as a part of the revision of the DDST in which 148 (79%) of the scores were normal of the 186 subjects, ages one month to six years, who were tested. Comparing the study group of 98 percent normal to 79 percent would reflect favorably on the study group.

The majority of the children tested were cooperative and friendly with the researcher right away but several were shy on first contact and took longer to begin testing. Three of the children were somewhat overactive with short attention spans and required more time for testing. No test was unsatisfactory because of refusals by the child. Since the testing was done in the child's home and in the presence of the mother, the children may have been more at ease and consequently have somewhat better performance.

The majority of the study group was of Mexican-American background and many of the children were bilingual, using both English and Spanish freely. Also, many of the grandparents and other relatives who cared for the children were Spanish-speaking, exposing the child to another language for a majority of the time. This was evident in the language section responses for some of the children, particularly in the two to three year age group. These differences will be discussed later and compared with findings of other studies.

Analysis of Variance

A multivariate analysis was run on a linear computer model to determine the correlation between birth weight and the following covariates: smoking history of the mother, weeks attendance in the program, weeks gestation at delivery, complications of pregnancy, mother's age at delivery, and the first time the mother sought prenatal care (in weeks), as shown in Table 2. The multivariate analysis was overwhelmed by the weeks of gestation at delivery covariate. This was the only covariate to show a significant ($p=.005$) relationship to the birth weight of the infant.

Comparisons With Other Studies

The findings of this study were compared with statistics from the National Health Center as well as with other state statistics. The study findings were also compared to findings from similar studies.

Birthweight

The mean birthweight for the infants in the study group was 6.97 pounds. Only 6 percent of the infants in the study were under 2500 grams. This rate is lower than the average in the United States for infants of mothers ages 15-19 which was 9 percent (January-March 1950) and 10.5 percent (1967) according to figures from the Vital and Health Statistics (National Center Health Statistics, Series 21, No. 23, p. 23). These figures also compare favorably with those of a study done in Los Angeles (James, 1978, p. 19) in which 13 percent of the infants of the 165 mothers,

Table 2
Analysis of Variance Table

| Source | Sum of Squares | D.F | Mean Square | F |
|-------------------------------------|----------------|-----|-------------|----------|
| Mean | 9.77551 | 1 | 9.77551 | 10.98040 |
| Smoking | 0.29879 | 1 | 0.29879 | 0.33561 |
| Complications of Pregnancy | 3.09062 | 1 | 3.09062 | 3.47155 |
| Cov. 1 Mother's Age | 1.92442 | 1 | 1.92442 | 2.16161 |
| Cov. 2 Weeks Gestation | 42.73134 | 1 | 42.73134 | 47.99825 |
| Cov. 3 Prenatal Care | 0.15161 | 1 | 0.15161 | 0.17029 |
| Cov. 4 Length of Time in Program | 0.18367 | 1 | 0.18367 | 0.20631 |

ages 13-18, were of low birthweight (under 2500 grams). These mothers also attended a Pregnant Minor Program. The study showed a correlation between attendance in the program and the incidence of low birthweight.

Prenatal Care

When the time in the number of weeks, when first seeking prenatal care of the mothers in the study was compared to that of a similar study done with pregnant adolescents who had attended a special program and a comparison group (Perkins, 1978, p. 181), a significant ($p=.01$) difference was found. Perkins stated the study figures in percentiles of his population of 135 study and 100 comparison groups. His percentiles were converted to a population of 50 used in this study. By the use of Chi Square a significant ($p=.01$) difference was shown between the study group and Perkins' study group in time when prenatal care was first sought. A significant ($p=.01$) difference was also shown between the study group and Perkins' comparison group. The study group sought prenatal care significantly earlier than either group in Perkins' study as shown in Table 3.

Since the Teen Mother Program emphasizes the importance of prenatal care and requires a medical certificate for entrance, it can be inferred that the program has a positive effect in the mothers seeking early prenatal care. This in turn would increase the probability of a longer gestational period and the resulting increase in birthweight and decrease in complications. The child with a normal birthweight is at lower risk of disease and has a better chance for normal growth and development.

Table 3
Chi Square Table Showing Gestational Time (Weeks) in
Which Prenatal Care was Initiated

| N=50 | <12 weeks | 12-19 weeks | 20-28 weeks | >29 weeks |
|-----------------------------|----------------|-----------------|------------------|---------------|
| Study Group (A) | 18* (8.36) | 22 (15.87) | 10 (18.16) | 0 (7.08) |
| Other Study Group (B) | 1.85 (8.36) | 11.1 (15.87) | 24.05 (18.16) | 13 (7.08) |
| Comparison Group (C) | 5.5 (8.36) | 15 (15.87) | 21 (18.16) | 8.5 (7.08) |

*Observed (expected)

Group A differs from Group B ($p < .01$).

Group A differs from Group C ($p < .01$).

Groups B and C taken from Perkins (1978. p. 181). Observed values were calculated by given percentiles applied to study population of 50.

Gestational Age at Delivery

Comparison of the statistics for gestational age at delivery of the mothers in the study and Perkins' (1978, p. 181) subjects in the study and comparison groups shows a significant ($p=.01$) shift from the 34-37-week category to the 38-42-week category for this study as compared to the two groups of Perkins. The samples are too small (one person) to show significant shifts in early pregnancy but only in the last trimester. Since the most significant finding in the multivariate analysis was the correlation of the gestational age with the birthweight, it would infer that the program that the study subjects attended, by encouraging early prenatal care, also increases gestational age at delivery resulting in improved development of the child.

When the gestational age of 38 weeks and over was compared for the study group with the two groups of Perkins' study, no significant difference could be shown between the groups. The only significant ($p=.01$) finding was the shift in the gestational age between 34-37 weeks and 38-42 weeks of the study as compared to Perkins' two groups, as shown in Table 4.

Denver Developmental Screening Test Scores

While only 2 percent of the children examined in this study had abnormal DDST scores, there were some notable differences in the performance of this group of children and the expected results by the age set up for the DDST. The major area of difference was noted in the language sector. While the failures in the categories "uses plurals"

Table 4

Table Showing Gestational Age at Delivery--
A Comparison of Study Groups

| Gestational Age at Delivery | (N = 50) Group A Study Group | (N=135) Group B Other Study Group | (N = 100) Comparison Group |
|-----------------------------------|------------------------------------|--|----------------------------------|
| 20-28 weeks | 2% (1 person) | 1.5% (2 people) | 3% |
| 29-33 weeks | 2% | 1.5% | 2% |
| 34-37 weeks | 6% | 8.1% | 14% |
| 38-42 weeks* | 90% | 80.0% | 73% |
| Over 42 weeks | 0 | 8.9% | 8% |

* Significant ($p=.01$) shift, 34-37 weeks to 38.42 weeks for study Group A as compared to Group B and Group C.

Groups B and C taken from Perkins (1978, p. 181).

and "gives first and last name" did not constitute delays in this area, these two responses were passed less often by the study group than was expected by the Denver norms. It is interesting that Sandler (1970, p. 778), in a study of urban preschool children of mainly Spanish-speaking families, noted similar findings. Other categories such as "recognizes 3 colors" and "opposite analogies" were found to be passed at ages higher than the Denver norms; these findings were also present in Sandler's (1970, p. 778) study group. During the testing it was sometimes necessary to ask the mother to question the child in Spanish in order to have the child understand the question. This was especially noted in identifying parts of the body. This points out the problems in assessing children of different backgrounds by the use of a standard test. It would be difficult to call these children "abnormal" or "slow" in the language area when, in fact, they speak not only one but two languages. Another confounding issue involved with the question of "giving last name" is the often-confusing parental relationships in these families where there is not always a father present, or the parents are not married. These factors should all be considered when the tests are evaluated.

In the area of gross motor development the children of the study were somewhat ahead of the Denver norms. In this area their general response and interest to participate were much greater. These findings were also mentioned by Sandler in his study (1970, p. 777). In the area of fine motor development, the children in the study were slightly ahead of the Denver norms in "copies a square," but in "picks longer line" they were slower than the norms. The word "longer" was not understood and

when the word "bigger" was substituted the child often understood. These findings are significant to mention in this study population where 60 percent are of Spanish-speaking backgrounds.

Complications of Pregnancy

The risk among pregnant teen-agers nationally of toxemia is 9 percent (Scheuer, 1978, p. 391), the reason being that adolescents typically do not seek medical care early in pregnancy. The absence of prenatal care also results in prolonged labor, premature births, prenatal and postnatal infections and surgical deliveries (Scheuer, 1978, p. 391). The rate of toxemia in this study group was 4 percent as compared with 9 percent for the national average. The incidence of low birthweight for this group was 6 percent as compared to the national average of 10.5 percent (National Center Research Statistics Series 21, No. 23, 1967, p. 23). It has also been demonstrated that this study group also sought prenatal care earlier than other groups and had consequent longer gestational periods and fewer premature deliveries. Since one of the goals of this program is to educate the young mother as to the importance of good prenatal and postpartum care, it would appear that that goal is being met with the resulting improved health of the mother and improved growth and development of the child.

Summary

The findings of this study support the hypothesis that the growth and development of the children of these teen-aged mothers is not only equal to that of the general population of children of the same age but

is somewhat higher when measured by standard height and weight measures and scores of the DDST. This group also had fewer complications of pregnancy, fewer low birthweight infants and had longer gestational periods than the population of teen-agers in general referred to in the literature and by national averages.

Because the study did not control for cultural factors, the impact of the majority of the population being Chicano has not been considered. It does seem that this is important, however, in several ways. The diet of this cultural group may be different in the amount of protein content which may have an effect on the health. The closeness of the family ties, with the strong family support systems, the extended family living in close proximity to offer help and emotional support, may well be an important contributing factor to the results of this group.

The continued support of the coordinator of the Teen Mother Program to all of the young mothers was also a strong factor in their compliance with good care of themselves and their children. This sustained contact with such a caring adult provides the increased self esteem needed by the adolescent to complete her search for self identity and provide for her and her baby's future. These factors together with the opportunity to complete her education and learn skills enabling her to be self supporting must all be considered as contributing factors in the improved pregnancy outcomes.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Teen-aged childbearing is a serious social, economic and health problem which has now reached epidemic proportions in the United States. Teen pregnancies have been shown to produce infants of low birthweight, of higher risk to disease, and of slower growth and development.

Many programs have been developed by the state and federal governments to help the young mother better cope with the problems of pregnancy. These Teen Mother Programs combine the opportunity to complete a high school education with instruction in the special skills needed for parenting. This study was designed to investigate the growth and development of the first children, ages birth to five years, of mothers, ages 14 to 18 years, who completed a Teen Mother Program in Redlands, California. The purpose of the study was to determine what effect the education in nutrition and parenting which the young mothers received, had on the growth and development of her child. This was stated in the form of a null hypothesis, that there would be no significant ($p=.05$) difference in the growth and development of the children in the study and those in the general population of the same age and sex.

A sample of 50 children was measured for height and weight and also for language, social, and motor development, by the use of the Denver Developmental Screening Test. The sample was a purposive,

nonrandom sample of the children of the first 50 mothers who consented to participate and who met the criteria. The design was pre-experimental with no control group. The results were compared with standard growth measurements for the general population matched for age and sex. The covariates of mother's age at delivery, length of gestation period, smoking history of the mother, complications of pregnancy, length of time in the program, and gestational time when first seeking prenatal care, were analyzed to determine their correlation with the birthweight of the infant. These findings were also compared with findings of similar studies.

Conclusions

The findings revealed that of the 50 children in the study, 17, or 34 percent, were at or below the 50 percentile curve on the standard weight charts for all boys and girls by age and sex. The difference was significant at the 5 percent ($p=.022$) level, showing an increase in weight for the children in the study as compared to the population in general. Similar findings were revealed with the measurements of height, where 16, or 32 percent, of the children in the study were at or below the standard measurements for all boys and girls. This difference was also significant at the 5 percent ($p=.01$) level. The null hypothesis could not be supported as stated and was rejected.

The findings also showed that 98 percent of the subjects had scores on the Denver Developmental Screening Test which were within normal limits for age. Only 2 percent of the subjects, or one child,

showed an abnormal score. The only covariate to show a significant relationship to the birthweight of the infant, using a multivariate analysis, was the length of gestation period. There was also a significant ($p=.01$) decrease in the gestational age when seeking prenatal care of the mothers in this study as compared to Perkins' study (Perkins, 1978, p. 181).

Since the Teen Mother Program emphasizes the importance of early prenatal care and requires a medical certificate for entrance, it can be inferred that the program has a positive effect on mothers seeking early prenatal care. This in turn would increase the probability of a longer gestational period and the resulting increase in birthweight and decrease in complications.

Limitations

The composition of the study group was: Caucasian, 36 percent; Black, 2 percent; Chicano, 60 percent; and Native American, 2 percent. The high proportion of Chicano subjects may have been an influencing factor, since the variables of culture and socioeconomic class were not controlled. The absence of a control group was also a limiting factor; however, since 50 subjects represented approximately one-third of the target population of 170 mothers who had completed this Teen Mother Program in the past five years since its beginning, generalizations to this population would probably be valid.

Recommendations

The problem of teen-aged pregnancies and the associated health and social problems is a growing concern for our society. First in importance, ways must be found to prevent pregnancies. Contraceptive information and services must be made more available for the teen-ager and presented in a way which is non-threatening and comfortable for the young woman. Programs in the high schools and grade schools which teach values clarification to adolescents, both young men and women, need to be developed. More Teen Mother Programs with a specially-designed curriculum to fit the young mother's needs will have to be made available, including all the medical and social services housed under one roof. Educational programs which will be available for the parents of the teen-agers to help them understand the changes their children are going through and how to cope with the problems, will have to be started. The newly-developed Adolescent Health Services and Pregnancy Act should be instrumental in helping to initiate many of these kinds of programs. Emphasis in these programs on the psychological problems attached to adolescent pregnancy, and the need for educating the young mother about child development will help in dealing with the secondary problems of child abuse. Probably one of the most important services for the young mother is that of having a responsible, supporting adult advocate in whom she can confide.

Suggestions for Additional Research

Because of the somewhat unique racial composition of this study group, being 60 percent Chicano, and because the findings were somewhat

different than many others found in the literature, the recommendation that a similar study be done using a population of mainly Caucasians or Blacks can be made. It would also be useful to have an investigation of the dietary habits of the young mothers, since little recent information seems to be available in that area. A study comparing the diets of different cultural groups of pregnant teen-agers would also be useful. A comparison of mothers and children in two different Teen Mother Programs would be interesting to see what differences occurred. A study which could demonstrate what effect the main source of child care had on the child's development would be of interest. So little has been done in the area of the studying development of children of teen-aged mothers, that there are unlimited possibilities for research. Follow-up studies, periodically over several years, might show changes which are not evident in early childhood.

Implications for Nursing

There are many implications for nursing in the study of adolescent pregnancy and child development. Whether the nurse is working in the community or hospital setting she can make herself aware of the special needs and risks of these mothers and children. The need for health education in the areas of nutrition, need for prenatal care, child development, developmental tasks of adolescence and awareness of child abuse problems, should all be of interest and concern to the nurse. Probably in few other situations is the patient faced with more demands on her mind and body than is the young adolescent mother.

There are other important implications for nursing other than those involved in actual clinical practice and these are in the areas of social involvement. The nurse also has a responsibility, because of her education, to be involved in the support of legislation which affects young mothers and children by development of programs for their care and education. The welfare of the children of our society is one of the most important interests we can have to contribute to the future of our country. How these children grow and develop and how they are educated is directly related to the direction which our whole nation will follow. There is probably no greater priority for the nurse.

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APPENDIX A

Letters Requesting and Granting Permission
to Conduct the Study at Orangewood
High School

25329 Hardt Street
Loma Linda, CA 92354
March 28, 1979

Dr. George Barrich
Principal, Orangewood High School
Redlands, CA 92373

Dear Dr. Barrich:

As a graduate student in nursing, I am investigating the relationship between the attendance of pregnant minors in the Teen Mother Program and the growth and development of their children. This study is to meet part of the requirements for a master's degree in nursing at Loma Linda University. I am hereby requesting your permission to involve the students who have completed the program at Orangewood High School and their children in the study. My research advisor, Darlene Johnson, has approved this research thesis.

The proposed research will be pre-experimental and the subjects will be chosen from the first fifty who meet the criteria and consent to participate in the study. It will involve a short questionnaire to be given to the mother asking her age at delivery, the birth weight of her baby, the length of gestation, her smoking history during pregnancy and the type of infant feeding used. The children aged one to five will be measured for height and weight and given a Denver Developmental Screening Test in the presence of the mother and in their own home at a time convenient for them. This should take about one and one-half hours. The confidentiality of the subject will be maintained as the data will be coded and no names will be used. The type of testing will be explained to the mother and she will be told if there is a reason shown by the testing to have the child further evaluated by a physician. The subjects will have the right to withdraw without any prejudice at any time during the study. It will be explained to the mother that this is not an I.Q. test and that the child is not expected to be able to perform all the tasks.

With your permission, I would like to do a pilot study of two children in April and begin the study data collection in May. I expect to complete the testing on fifty children by the end of July.

-2-

Space has been provided on the attached letter from the Graduate Program for your reply. Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "Barbara McCarthy".

Barbara McCarthy, R.N., B.S.
Graduate Division in Nursing
Loma Linda University School of Nursing

BMM:pc

xc: Darlene Johnson, Research Advisor
Clarice Woodward, Clinical Agency Coordinator

Date: 3-30-79

Dear: Edward W. [unclear]

Your request for permission to collect data for your research project at Glenwood HS has been received and reviewed. The following action has been taken:

You have my permission to conduct your study in our facility.

Your request has been temporarily denied pending provision of additional information.

Your request cannot be granted at this time.

Also, it will be necessary for you to:

Obtain permission from the attending physician since your study involves patients and/or their records.

Obtain additional permission from Robert Campbell, Sup. of Instruction, Red Bank Unif. Sch. Dist.

Notify and/or advise the following persons of your study.

Make an appointment with _____ for additional discussion and information provision.

Other

If I can be of further help, please let me know.

Sincerely,

George W. Beaulieu

APPENDIX B

Letters Requesting and Granting Permission
to Conduct Study at the Teen
Mother Center

25329 Hardt Street
Loma Linda, CA 92354
March 28, 1979

Ms. Theresa Philler
Director, Teen Mother Program
Orangewood High School
Redlands, CA 92373

Dear Ms. Philler:

As a graduate student in nursing, I am investigating the relationship between the attendance of pregnant minors in the Teen Mother Program and the growth and development of their children. This study is to meet part of the requirements for a master's degree in nursing at Loma Linda University. I am hereby requesting your permission to involve the students who have completed the program at Orangewood High School and their children in the study. My research advisor, Darlene Johnson, has approved this research thesis.

The proposed research will be pre-experimental and the subjects will be chosen from the first fifty who meet the criteria and consent to participate in the study. It will involve a short questionnaire to be given to the mother asking her age at delivery, the birth weight of her baby, the length of gestation, her smoking history during pregnancy and the type of infant feeding used. The children aged one to five will be measured for height and weight and given a Denver Developmental Screening Test in the presence of the mother and in their own home at a time convenient for them. This should take about one and one-half hours. The confidentiality of the subject will be maintained as the data will be coded and no names will be used. The type of testing will be explained to the mother and she will be told if there is reason shown by the testing to have the child further evaluated by a physician. The subjects will have the right to withdraw without prejudice at any time during the study. It will be explained to the mother that this is not an I.Q. test and that the child is not expected to be able to perform all the tasks.

With your permission, I would like to do a pilot study of two children in April and begin the study data collection in May. I expect to complete the testing on fifty children by the end of July.

-2-

Space has been provided on the attached letter from the Graduate Program for your reply. Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "Barbara McCarthy".

Barbara McCarthy, R.N., B.S.
Graduate Division in Nursing
Loma Linda University School of Nursing

BMM:pc

xc: Darlene Johnson, Research Advisor
Clarice Woodward, Clinical Agency Coordinator

ORANGEWOOD HIGH SCHOOL

315 TEXAS STREET
REDLANDS, CALIFORNIA 92373792-1178
792-9519

March 29, 1979

OFFICE OF THE PRINCIPAL

Ms. Darlene Johnson
Graduate Division of Nursing
Loma Linda University
Loma Linda, California 92354

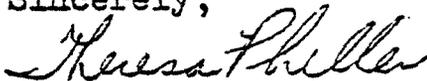
Dear Ms. Johnson:

I have read Barbara McCarthy's proposal on "The Effect of Teen-Mother Program on the Growth and Development of the Child" and am very excited about working with Barbara on this research study.

As Barbara found in her literature search, not many detailed studies have been done on the population that she will study. I feel that the results of Barbara's study will be of value to our District in evaluating both our Teen Mother and School-Age Parenting and Infant Development Programs. I also feel that there is a possibility of publishing the results in some of the pertinent journals.

I am sending the proposal to our Assistant Superintendent, Mr. Campbell, with the recommendation that he give his approval. Barbara has been working with my students since January, and my students anxiously await her weekly teaching sessions--she is a very sensitive, kind young woman.

Sincerely,



Theresa Philler, Coordinator
School-Age Parenting and
Infant Development Program

cc: Dr. Barich
Mr. Campbell

April 2, 1979

Date: ~~Barbara McCarthy~~

Dear: Barbara McCarthy

Your request for permission to collect data for your research project at Orangewood High School has been received and reviewed. The following action has been taken:

You have my permission to conduct your study in our facility.

Your request has been temporarily denied pending provision of additional information.

Your request cannot be granted at this time.

Also, it will be necessary for you to:

Obtain permission from the attending physician since your study involves patients and/or their records.

Obtain additional permission from Dr. Barich and Mr. Campbell.

Notify and/or advise the following persons of your study.

Make an appointment with _____
for additional discussion and information provision.

Other

If I can be of further help, please let me know.

Sincerely,

Theresa Philler

APPENDIX C

Letters Requesting and Granting Permission
to Conduct Study from Redlands
School Board

25329 Hardt Street
Loma Linda, CA 92354
March 28, 1979

Mr. Robert Campbell
Assistant Superintendent of Schools
Redlands Unified School District
20 W. Lugonia Avenue
Redlands, CA 92373

Dear Mr. Campbell:

As a graduate student in nursing, I am investigating the relationship between the attendance of pregnant minors in the Teen Mother Program and the growth and development of their children. This study is to meet part of the requirements for a master's degree in nursing at Loma Linda University. I am hereby requesting your permission to involve the students who have completed the program at Orangewood High School and their children in the study. My research advisor, Darlene Johnson, has approved this research thesis.

The proposed research will be pre-experimental and the subjects will be chosen from the first fifty who meet the criteria and consent to participate in the study. It will involve a short questionnaire to be given to the mother asking her age at delivery, the birth weight of her baby, the length of gestation, her smoking history during pregnancy and the type of infant feeding used. The children aged one to five will be measured for height and weight and given a Denver Developmental Screening Test in the presence of the mother and in their own home at a time convenient for them. This should take about one and one-half hours. The confidentiality of the subject will be maintained as the data will be coded and no names will be used. The type of testing will be explained to the mother and she will be told if there is reason shown by the testing to have the child further evaluated by a physician. The subjects will have the right to withdraw without prejudice at any time during the study. It will be explained to the mother that this is not an I.Q. test and that the child is not expected to be able to perform all the tasks.

With your permission, I would like to do a pilot study of two children in April and begin the study data collection in May. I expect to complete the testing on fifty children by the end of July.

I will be happy to make an appointment with you to discuss this research further if you desire and to share the findings with you after its completion. I have spoken with Ms. Theresa Philler and Mr. George Barrich at Orangewood High School about this study and they both felt that it would be advantageous to the school system to have the Teen Mother Program evaluated in this manner.

Space has been provided on the attached letter from the Graduate Program for your reply. Thank you for your assistance.

Sincerely,

Barbara McCarthy

Barbara McCarthy, R.N., B.S.
Graduate Division in Nursing
Loma Linda University School of Nursing

BMM:pc

xc: Darlene Johnson, Research Advisor
Clarice Woodward, Clinical Agency Coordinator

APPENDIX D

Statement of Referral of Proposal Submitted
to Ethics in Nursing Committee

LOMA LINDA UNIVERSITY



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Loma Linda Campus
LOMA LINDA, CALIFORNIA 92350
La Sierra Campus
RIVERSIDE, CALIFORNIA 92515

SCHOOL OF NURSING

Approval Date April 17, 1979

Barbara McCarthy
25329 Hardt Street
Loma Linda, CA 92354

Dear Graduate Student:

The Ethics in Student Research Committee has reviewed the proposal you submitted for a research study to partially fulfill the School of Nursing requirements for a Master of Science degree from Loma Linda University.

The Committee has voted that your study is:

Approved as submitted in the specified setting for one year.

Approved in the specified setting for one year after the recommended changes have been made and a memo from your research chairman to this effect has been received by the committee chairman.

Not approved as submitted to the committee. See the attached comments for recommended changes. Must be resubmitted prior to any data collection.

Deferred to: UCOHS Research Chairman Other

Please see attached recommendations and/or comments regarding this action.

Please remember to give all signed consent forms to the Research Coordinator. Please contact the Chairman of the Ethics in Student Research Committee if you have questions related to the decision of the Committee. If any changes are made in the hypothesis, tool, consent form, or the procedure for data collection, this proposal must be resubmitted to this Committee. If data collection extends beyond one year the proposal must be resubmitted to the Committee.

We pray that the Lord will continue to bless your endeavors.

Sincerely,

Evelyn L. Elwell, Chairman
Ethics in Student Research Committee

xc: Research Committee Chairman - Darlene Johnson

APPENDIX E

Statement of Approval of Proposal Submitted
to Committee on Human Studies



GRANTS RESOURCES SERVICE

May 14, 1979

Barbara McCarthy
c/o Darlene Johnson, M.S.
School of Nursing
Loma Linda University

Dear Ms. McCarthy:

Your proposal for a study entitled "The effect of teen-mother program on the growth and development of the child" was reviewed by the Committee on Human Studies of Loma Linda University at its regular meeting May 9, 1979.

The committee requested the following changes in the consent form: in Item 3, state that there may be benefit to child and parent from the study because testing may identify areas of development (rather than underdevelopment).

Also, in the "Procedure for Informed Consent," specify that testing of the child will be repeated only if results of the first test are abnormal; state that the investigator will bring "a scale and other things" rather than tools; and refer to areas of "development" rather than "underdevelopment."

The actions of the committee are as follows:

There is minimal risk to the privacy of subjects. Protocol is approved subject to the above changes.

If there are any further modifications to the proposed research protocol or consent form, or problems arising from the study, please notify the committee in writing of these changes or problems. If you have questions, please feel free to contact us.

You will be asked to provide a progress report on this study in one year.

Best wishes in your project.

Sincerely yours,

A handwritten signature in cursive script that reads "Linda G. Halstead".

Linda G. Halstead
Secretary
Committee on Human Studies

APPENDIX F

Letters Requesting and Granting Permission
to Use Data from Perkins Study

August 3, 1979
25329 Hardt St.
Loma Linda, CA.

Richard P. Perkins, M.D.
Department of Obstetrics & Gynecology
University of New Mexico
2211 Lomas Blvd. NE
Albuquerque, New Mexico, 87106

Dear Dr. Perkins,

I am a student in the Master's Program in Nursing at Loma Linda University. For my thesis requirement I am conducting a research study entitled, "The Effect of a Teen Mother Program on the Growth and Development of the Child". I have read your study report on adolescent mothers in a special program, published in Obstetrics and Gynecology, August 1978. There is a table of data on prenatal care (Table 3), which I would like to refer to in my study data analysis, particularly the areas of Gestational age at delivery, racial composition of the group, and time of first prenatal visit.

I have had difficulty finding a research study to use for comparison and have not been able to obtain a control group for my study of teen-aged mothers who have completed a special program. It would be most helpful to me to be able to refer to this particular data in your report.

I would appreciate hearing from you in the near future if you feel you can allow my request to refer to your data collection.

Thank you for your consideration.

Sincerely,

Barbara M. McCarthy
Barbara M. McCarthy, R.N.

THE UNIVERSITY OF NEW MEXICO
SCHOOL OF MEDICINE
ALBUQUERQUE, N.M. 87131

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DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
S BLVD., N.E.
E 277-4051

August 8, 1979

DEPARTMENT OF MATERNAL - FETAL MEDICINE

PERKINS, M.D.

CONSULTANT
HARRINGTON, M.D.

ESSER, M.D.

JERRY, M.D.

JONES, M.D.

KKELSEN, M.D.

LOPEZ, R.N.

OBSTETRICS

ROSENSTEIN, M.D.

OBSTETRICS

SHADE, M.D.

OBSTETRICS

SMITH, M.D.

OBSTETRICS

OBSTETRICS

WYATT, M.D.

OBSTETRICS

OBSTETRICS

OBSTETRICS

OBSTETRICS

OBSTETRICS

OBSTETRICS & NEUROLOGY

OBSTETRICS

SOCIAL SERVICES

WILSON, M.A.

Barbara M. McCarthy, R.N.
25329 Hardt Street
Loma Linda, California 92354

Dear Ms. McCarthy:

Thank you for your letter. I would be delighted for you to use the information from my article for your Masters Program. As published material, anyone has access to quoting this material without obtaining permission from the author or the publishers. Such is necessary only if the material is to be reproduced verbatim.

If you have any questions about the legalities involved in your use of the material, please be assured that you have my permission. The permission of the publisher, in that case, will also be required.

Good luck in your program, and let me know if you ever need a job.

Sincerely yours,



Richard P. Perkins, M.D.
Associate Professor of Obstetrics,
Gynecology and Pediatrics

APPENDIX G

Verbal Explanation of Study

Procedure for Informed Consent

Verbal explanation for mother of subject: My name is Barbara McCarthy and I am a graduate student in nursing. As part of the requirements for my Master's degree, I am writing a thesis on the effect of attendance at a Teen Mother Program on the growth and development of the child.

Participation in the study will involve a visit to your home at a time convenient for you for a period of about one and one-half hours. During this time I will ask you some questions about your pregnancy and delivery. In your presence I will weigh and measure your child and administer a Denver Developmental Screening Test. This is a test to measure your child's development in areas of language and social development and ability to perform tasks using hands and feet, such as grasping, drawing, kicking, etc. This is not an I.Q. test. The test is not a total medical exam and no reliance should be placed on it as a substitute for medical care or a medical examination.

If any results from the tests show a reason to refer your child for further evaluation of development, you will be informed of this. The child will first be retested by me in two weeks to recheck the results which may vary sometimes depending on the child's cooperation and mood.

This consent explains briefly what is involved in your participation in the study. If you change your mind at any time after you have consented to be in the study, you can withdraw at any time without risk.

I will bring a scale and other materials needed for testing your child.

You and your child will benefit because the testing will show any areas of underdevelopment which may need referral for further evaluation.

Your participation in the study will also help to show what effect the Teen Mother Program may have on the child's development and could be helpful to the school in obtaining further funding for this type of program in the future.

APPENDIX H

Patient Consent Form

CONSENT FORM

I have been told that the purpose of this study is to investigate the effect of my attendance at the Teen Mother Program on the growth and development of my child. It has been explained to me and I am aware that, as a participant in this study:

1. My child will be weighed, measured and given the Denver Developmental Screening Test in my home and in my presence at a time convenient for me.
2. The Denver Developmental Screening Test is not an I.Q. test but a measurement of my child's development according to his/her age.
3. My child and I will benefit from the study because the testing may identify areas of development which may need to be further evaluated by a physician.
4. The nurse will have access to the results of the test, but my name or my child's name will not be used in the study or in any other way for any other purpose.
5. Neither my child nor I will be harmed by participating in this study and there is no risk to our physical, social or emotional health, or to our privacy that would result from our participation in this study.
6. I have been given the opportunity to ask questions and my questions have been answered satisfactorily.
7. I may withdraw my participation at any time without incurring any disadvantage to myself or my child. Our participation is completely voluntary.
8. I have been told that I may contact Mrs. McCarthy at 796-8094 if I have any further questions.

"It has been explained to me and I am aware that participation in this research project is voluntary and that I have the right to withdraw from it at any time without incurring any disadvantage. Any and all information obtained through this study will be treated in a confidential manner. Reports or publications resulting from this study will not contain any information which might lead to our identification as participants in this study.

"I have considered all of the above statements and hereby give my free and voluntary consent to participate in the Effect of a Teen Mother Program on the Growth and Development of the Child under the supervision of Barbara McCarthy, R.N., a graduate student in nursing, Loma Linda University, and of Darlene Johnson, faculty member of the Loma Linda University School of Nursing, and in witness thereof I have signed this consent.

Signature _____ Date _____

Witness _____

APPENDIX I

Data Collection Sheet

DATA COLLECTION SHEET

Code # _____

Date of Interview and Testing _____

QUESTIONNAIRE

Mother's age at delivery _____

Child's date of birth _____ Child's Sex M F

Child's Birth Weight _____ lb. _____ oz.

Length of gestation _____ weeks

Serious complications of pregnancy or delivery (ex., C-Section, toxemia):

_____Method of feeding infant: Bottle BreastSmoking history during pregnancy: <1 pk/day >1 pk/day None

Other family members smoked during pregnancy and or at present.

 Yes No

Length of time in Teen Mother Program: _____ months

EXAMINATION RECORD

Age of Child: _____ yr. _____ mo. _____ da.

Height: _____ ft. _____ in. Weight: _____ lb. _____ oz.

Denver Developmental Screening Test Scores

| | #P | #D |
|-------------|----|----|
| Social | | |
| Fine Motor | | |
| Gross Motor | | |
| Language | | |

Score: Normal _____
Abnormal _____
Questionable _____

Comments _____

Area of delay _____

Reason for score _____

Description of child _____

Date for retest _____

APPENDIX J

Data Collection Tables

APPENDIX K

Table 5

Table 5

Demographic Data on All 50 Subjects

| Code No. | Date of Birth | Age yr/mo/da | Birth Wt. lb/oz | Week Ges-tation Period | Age of Mother at Delivery | Sex of Child | Weight of Child | Height of Child | D.D.S.T. | | | | Bottle or Breast Fed | Smoke >1 Pack Per Day | Week In T.M.P. | Compli-dated Pregnancy | Week Prenatal Care Began | Nation-ality* |
|----------|---------------|--------------|-----------------|------------------------|---------------------------|--------------|-----------------|-----------------|----------|------------|-------------|----------|----------------------|-----------------------|----------------|------------------------|--------------------------|---------------|
| | | | | | | | | | Social | Fine Motor | Gross Motor | Language | | | | | | |
| 1. | 11/23/76 | 02/06/20 | 5/14 | 40 | 16 | M | 35 | 37.50 | N | N | N | N | Bottle | No | 24 | No | 12 | C |
| 2. | 07/10/75 | 03/11/03 | 7/00 | 40 | 17 | M | 40 | 41.00 | N | N | D | D | Breast | No | 36 | No | 12 | C |
| 3. | 06/25/77 | 01/11/19 | 8/05 | 40 | 16 | M | 25 | 38.00 | N | N | N | N | Bottle | No | 36 | No | 18 | C |
| 4. | 12/31/77 | 01/07/13 | 3/09 | 28 | 18 | F | 20 | 29.00 | N | N | N | N | Bottle | No | 55 | Yes | 12 | C |
| 5. | 09/12/74 | 04/02/16 | 3/02 | 30 | 18 | M | 40 | 44.50 | N | N | N | N | Bottle | No | 12 | Yes | 12 | B |
| 6. | 05/28/77 | 02/00/17 | 8/13 | 40 | 16 | M | 32 | 36.00 | N | N | N | N | Breast | No | 20 | No | 20 | C |
| 7. | 01/15/79 | 00/05/03 | 7/09 | 40 | 17 | M | 18 | 27.00 | N | N | N | N | Bottle | No | 24 | No | 28 | C |
| 8. | 03/21/79 | 00/02/27 | 7/05 | 40 | 15 | M | 12 | 22.00 | N | N | N | N | Bottle | No | 36 | No | 16 | C |
| 9. | 02/17/78 | 01/04/01 | 8/00 | 40 | 15 | M | 24 | 30.50 | N | N | N | N | Breast | No | 36 | Yes | 16 | C |
| 10. | 06/20/77 | 02/00/02 | 5/02 | 36 | 15 | F | 30 | 34.00 | N | N | N | N | Bottle | Yes | 20 | No | 16 | C |
| 11. | 09/29/76 | 02/09/06 | 8/01 | 40 | 17 | F | 36 | 37.00 | N | N | N | N | Breast | No | 24 | No | 8 | W |
| 12. | 03/14/79 | 00/03/05 | 7/15 | 40 | 17 | M | 15 | 24.50 | N | N | N | N | Bottle | Yes | 36 | Yes | 12 | C |
| 13. | 01/30/77 | 02/04/19 | 9/02 | 40 | 18 | F | 35 | 38.25 | N | N | N | N | Breast | No | 36 | No | 12 | C |
| 14. | 12/09/78 | 00/06/16 | 6/10 | 40 | 16 | M | 17 | 28.00 | N | N | N | N | Bottle | No | 36 | No | 12 | W |
| 15. | 04/18/79 | 00/02/09 | 7/06 | 40 | 16 | M | 12 | 23.00 | N | N | N | N | Bottle | Yes | 36 | No | 4 | C |
| 16. | 04/17/76 | 03/02/10 | 6/10 | 40 | 15 | M | 41 | 44.25 | N | N | N | N | Bottle | Yes | 32 | No | 28 | W |
| 17. | 09/11/78 | 00/09/16 | 7/13 | 40 | 15 | M | 22 | 28.00 | N | N | N | N | Bottle | No | 36 | No | 8 | C |
| 18. | 11/23/77 | 01/07/04 | 7/03 | 40 | 14 | M | 26 | 33.75 | N | N | N | N | Bottle | No | 24 | No | 6 | C |
| 19. | 11/17/77 | 01/07/11 | 8/02 | 40 | 15 | M | 27 | 32.00 | N | N | N | N | Bottle | No | 28 | No | 9.5 | C |
| 20. | 01/31/76 | 03/04/28 | 7/05 | 40 | 17 | F | 28 | 37.50 | N | N | N | N | Bottle | No | 32 | Yes | 12 | C |
| 21. | 07/05/76 | 02/11/24 | 8/15 | 40 | 17 | M | 38 | 38.00 | N | N | N | N | Breast | No | 24 | No | 10 | N/A |
| 22. | 04/28/78 | 01/02/07 | 7/05 | 40 | 18 | F | 22 | 29.50 | N | N | N | N | Bottle | No | 36 | No | 4 | C |
| 23. | 11/22/74 | 04/07/14 | 7/12 | 40 | 16 | F | 45 | 43.50 | N | N | N | N | Bottle | Yes | 36 | No | 12 | C |
| 24. | 07/13/76 | 02/11/23 | 8/15 | 40 | 16 | F | 35 | 37.25 | N | N | N | N | Breast | No | 24 | Yes | 12 | W |
| 25. | 11/25/76 | 02/07/10 | 7/12 | 40 | 16 | M | 35 | 35.75 | N | N | N | N | Breast | Yes | 36 | Yes | 12 | W |
| 26. | 03/24/79 | 00/04/13 | 8/03 | 40 | 17 | M | 17 | 26.50 | N | N | N | N | Bottle | No | 12 | No | 24 | W |

| Code No. | Date of Birth | Age yr/mo/da | Birth Wt. lb/oz | Week Gestation Period | Age of Mother at Delivery | Sex of Child | Weight of Child | Height of Child | D.D.S.T. | | | | Bottle or Breast Fed | Smoke >1 Pack Per Day | Week in T.M.P. | Complimented Pregnancy | Week Prenatal Care Began | Nationality* |
|----------|---------------|--------------|-----------------|-----------------------|---------------------------|--------------|-----------------|-----------------|----------|------------|-------------|----------|----------------------|-----------------------|----------------|------------------------|--------------------------|--------------|
| | | | | | | | | | Social | Fine Motor | Gross Motor | Language | | | | | | |
| 27. | 05/26/79 | 00/01/00 | 6/11 | 40 | 16 | M | 10 | 22.00 | N | N | N | N | Breast | Yes | 32 | Yes | 12 | W |
| 28. | 06/30/76 | 02/11/28 | 6/07 | 40 | 16 | F | 33 | 36.00 | N | N | N | N | Breast | No | 36 | No | 8 | C |
| 29. | 02/14/75 | 04/04/14 | 5/11 | 36 | 19 | M | 36 | 41.50 | N | N | N | N | Bottle | No | 20 | No | 16 | C |
| 30. | 04/27/78 | 01/02/08 | 8/01 | 40 | 16 | F | 22 | 30.00 | N | N | N | N | Breast | Yes | 32 | No | 20 | W |
| 31. | 06/24/78 | 00/12/19 | 8/15 | 40 | 17 | F | 20 | 30.00 | N | N | N | N | Bottle | No | 28 | No | 4 | W |
| 32. | 03/03/76 | 03/04/09 | 8/10 | 40 | 15 | M | 40 | 39.50 | N | N | N | N | Bottle | No | 70 | Yes | 22 | C |
| 33. | 06/04/74 | 05/01/09 | 8/09 | 40 | 17 | M | 38 | 41.50 | N | N | N | N | Bottle | No | 24 | No | 6 | W |
| 34. | 01/16/78 | 01/05/26 | 6/05 | 40 | 17 | M | 26 | 32.00 | N | N | N | N | Breast | No | 36 | No | 12 | C |
| 35. | 07/20/76 | 02/11/22 | 6/08 | 40 | 17 | F | 37 | 37.00 | N | N | N | N | Breast | No | 24 | No | 4 | C |
| 36. | 08/07/78 | 00/11/10 | 8/03 | 40 | 16 | M | 26 | 31.00 | N | N | N | N | Breast | No | 18 | No | 20 | W |
| 37. | 12/06/77 | 01/07/11 | 8/02 | 40 | 17 | F | 29 | 32.50 | N | N | N | N | Breast | Yes | 36 | No | 24 | W |
| 38. | 03/22/75 | 04/03/25 | 7/02 | 40 | 16 | F | 35 | 39.00 | N | N | H | N | Bottle | No | 36 | No | 8 | C |
| 39. | 10/26/77 | 01/08/21 | 8/13 | 37 | 16 | F | 26 | 33.00 | N | N | N | N | Bottle | Yes | 20 | Yes | 10 | W |
| 40. | 07/06/77 | 02/00/18 | 6/10 | 40 | 15 | M | 30 | 34.00 | N | N | N | N | Bottle | No | 36 | No | 16 | C |
| 41. | 07/01/75 | 04/00/18 | 9/13 | 40 | 17 | M | 40 | 41.50 | N | N | N | N | Bottle | Yes | 28 | Yes | 16 | W |
| 42. | 09/26/78 | 00/09/28 | 8/05 | 40 | 18 | F | 19 | 28.50 | N | N | N | N | Bottle | No | 16 | No | 8 | C |
| 43. | 08/28/77 | 01/10/22 | 7/13 | 40 | 19 | M | 26 | 33.50 | N | N | N | N | Bottle | No | 16 | No | 8 | C |
| 44. | 04/19/75 | 04/03/00 | 8/07 | 40 | 17 | M | 42 | 43.50 | N | N | N | N | Bottle | No | 20 | No | 12 | W |
| 45. | 06/01/77 | 02/01/19 | 8/04 | 40 | 17 | F | 30 | 33.00 | N | N | N | N | Bottle | No | 36 | No | 8 | W |
| 46. | 04/23/76 | 03/03/01 | 7/10 | 40 | 15 | M | 26 | 37.00 | N | N | N | N | Bottle | Yes | 32 | No | 12 | W |
| 47. | 07/11/75 | 04/00/13 | 6/11 | 40 | 18 | M | 34 | 39.00 | N | N | N | N | Bottle | No | 28 | No | 8 | C |
| 48. | 11/06/76 | 02/07/29 | 6/00 | 40 | 15 | M | 32 | 36.00 | N | N | N | N | Bottle | No | 32 | No | 28 | C |
| 49. | 12/13/74 | 04/07/11 | 6/06 | 40 | 15 | M | 58 | 44.50 | N | N | N | N | Bottle | No | 36 | Yes | 28 | C |
| 50. | 01/09/79 | 00/06/22 | 7/05 | 40 | 16 | M | 22 | 27.25 | N | N | N | N | Breast | Yes | 24 | No | 8 | W |

*W = White; B = Black; C = Chicano; N/A = Native American

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