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AUTHOR	Spencer, Carole M.
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ABSTRACT

While most programs for prospective teenage parents address the obvious and immediate needs of the parents - prenatal care, nutrition, delivery, and financial assistance - the purpose of this paper, one of several reports forming a comprehensive policy study of early childhood education, is to identify the problems associated with teenage childbearing, review the research on teenage pregnancy, discuss intervention programs, and recommend additional intervention programs. It has been assumed that children of teenage mothers have more physical, emotional, and intellectual handicaps than do children born to older mothers. Until recently, few studies have analyzed the evidence related to this claim. Some current findings attempt to assess the impact of adolescent motherhood on infants and young children. This review presents data regarding the demographics of teenage pregnancy. Specifically addressed are the problems associated with teenage childbearing: infant death risk, premature and low-birth-weight babies, Aid to Families With Dependent Children and other welfare assistance, and the education of the teenage parent. A review of the research related to the problems associated with teenage childbearing forms the second part of the paper, focusing on (1) economic and social consequences, (2) physical health consequences, and (3) emotional, developmental, and cognitive consequences. Also reported are the results of some intervention programs for teenage parents and their children. Recommendations are made for intervention programs in Illinois. Extensive 1982 data on Illinois teenage mothers are provided in tables throughout the paper. Two appendices provide listings and findings of research studies dealing with the outcomes of teenage pregnancies and the children of adolescent parents. (DST)

CHILDREN OF TEENAGE PARENTS: A REVIEW OF THE LITERATURE

Illinois State Board of Education

Walter W. Naumer, Jr., Chairman
State Board of Education

Ted Sanders
State Superintendent of Education

Department of Planning, Research and Evaluation

Springfield, Illinois

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FOREWORD

This report is one of a series of papers written in response to a request from the State Board of Education to conduct a comprehensive policy study of early childhood education. This report was prepared by Dr. Carole M. Spencer from the Research and Statistics Section, Department of Planning, Research and Evaluation. The interpretations and conclusions expressed herein do not necessarily reflect the position of the State Board of Education.

Ted Sanders
State Superintendent of Education

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Introduction and Purpose

During the past decade there has been an emerging interest in the children of teenage parents and the special needs they may have. It has been assumed that children of teenage mothers have more physical, emotional, and intellectual handicaps than do children born to older mothers. However, until recently few studies have analyzed the evidence related to this claim. Some current findings attempt to assess the impact of adolescent motherhood on infants and young children. Most programs for prospective teenage parents address the obvious and immediate needs of the parents--prenatal care, nutrition, delivery, and financial assistance. The purpose of this paper is to identify the problems associated with teenage childbearing, review the research on teenage pregnancy, discuss intervention programs, and recommend additional intervention programs.

The first part of the paper will present data regarding the demographics of teenage pregnancy. The second part of the paper will be a review of research related to the problems associated with teenage childbearing. The third part of this paper will report on the results of some intervention programs for teenage parents and their children, and the last section of the paper will propose recommendations for possible programs in Illinois. For the purposes of this paper, an adolescent or teenage parent is a parent between the ages of ten and nineteen.

Problems Associated with Teenage Childbearing

Educators are becoming more concerned with the 1.2 million adolescents who become pregnant each year and give birth to over 550,000 children (Anastasiow, 1983). According to the Alan Guttmacher Institute, teenage mothers raise one out of every six children born annually in the United States. From 1977 to 1982, adolescent mothers in Illinois gave birth to 232,027 children. (See Table 1.) At present, in Illinois, according to the Illinois Department of Public Health and census data, approximately 130,000 teenage mothers--two thirds of whom are under the age of seventeen--are raising 150,000 children under the age of five. In addition, many other children have mothers who were teenagers when they had their first child.

TABLE 1: Births to Teenage Mothers in Illinois

Year	Number of Births
1975	31,120
1976	29,778
1977	29,886
1978	28,634
1979	29,800
1980	29,783
1981	27,460
1982	25,566
Total	232,027

Most adolescent mothers face adverse and long-lasting social and economic consequences because of serious problems in the areas of health, finance, education, and social development. Usually these problems occur because young mothers lack the preparation for parenthood. Studies show that most teenage pregnancies are unplanned. In a 1981 survey of 1,898 young mothers under the age of eighteen and receiving Aid to Families with Dependent Children (AFDC) in Illinois, 83 percent considered their first pregnancy an accident. In the follow-up survey of these same women in 1983, 53 percent were pregnant with a second child, and 70 percent of them stated their second pregnancies were also unplanned (Testa, 1981).

Infants born to teenage women may suffer serious consequences and often have high rates of neonatal health problems. A greater number of low-birth-weight, premature infants are born to women under age fifteen, who are often physically immature themselves. Low birth weight and prematurity are associated with many handicapping conditions; therefore, more handicapped children are born because of the effects related to the mother's age rather than to genetic defects (Anastasiow, 1983). However, even if the mother receives excellent prenatal care which results in the birth of a healthy, normal-weight infant, the child may be jeopardized by lack of parenting skills and social and economic consequences that affect physical, emotional, and intellectual development (Furstenberg, 1981). This means that because of the mother's lack of parenting skills, lack of education and job skills, marital status, and the consequential poverty and isolation, the normal child of a teenage parent may be handicapped by the time he or she begins school.

Infant Death Risk

Medical studies on biomedical differences between the pregnancy outcome of teenagers and that of older women indicate that the younger the mother, the greater the risk obstetrically. Although the average female in the United States achieves gynecological maturity by age fifteen, reports reveal there is a very high incidence of pregnancy complications for those under eighteen years of age including anemia, toxemia, urinary tract infections, uterine dysfunction, prematurity, and abnormal labor and delivery. According to Dr. Susan Phipps-Yonas of the Minnesota Department of Corrections (1980), these risks seem to decrease for pregnant adolescents as a function of age. Even though older pregnant adolescents have fewer problems, it should be noted that gynecological maturity, which is the length of time past menarche, is more important in these findings than is chronological age.

Studies of neonatal outcomes of infants of adolescent mothers reveal these infants are a high-risk group with increased rates of fetal and perinatal deaths as well as maternal mortality. These deaths are the result of the teenage mother's low socioeconomic status, poor nutrition, unwed marital status, and lack of prenatal care (Scott, Field, and Robertson, 1981).

Table 2 indicates infant mortality in Illinois, for Chicago, and for downstate in 1981. Neonatal includes the time period from birth to twenty-eight days of life. The postneonatal period is from twenty-eight days up to one year of age. For mothers ages ten to fourteen, the infant mortality rate (both neonatal and postneonatal) was 27.6 per 1,000 births

and for mothers ages fifteen to nineteen, 20.4. These state rates are almost twice as high as those for mothers in all other age categories except mothers ages forty and over.

Infant mortality rates vary significantly by age of mother and geography of the state. The infant mortality figures for downstate Illinois for mothers ages ten to fourteen (42.3) are more than twice as high as for Chicago (19.1). For mothers ages fifteen to nineteen, the downstate figure (18.1) is lower than the figure for Chicago (23.5).

TABLE 2. Infant Neonatal and Postneonatal Mortality Rates* by Age of Mother: Illinois, 1981 Live Birth Cohort

Illinois

Age of Mother	Infant Mortality	Neonatal Mortality	Postneonatal Mortality
10-14	27.6	20.7	6.9
15-19	20.4	13.1	7.3
20-24	14.0	9.6	4.4
25-29	11.1	8.2	2.9
30-34	10.8	8.5	2.4
35-39	14.0	10.8	3.3
40+	20.9	15.2	5.8
All Ages	13.6	9.6	4.0

Chicago

Age of Mother	Infant Mortality	Neonatal Mortality	Postneonatal Mortality
10-14	19.1	16.4	2.7
15-19	23.5	14.3	9.2
20-24	19.1	12.3	6.9
25-29	16.0	11.6	4.4
30-34	14.3	11.1	3.1
35-39	18.7	13.9	4.8
40+	14.9	11.2	3.7
All Ages	18.5	12.5	6.0

Downstate

Age of Mother	Infant Mortality	Neonatal Mortality	Postneonatal Mortality
10-14	42.3	28.2	14.1
15-19	18.1	12.3	5.9
20-24	11.7	8.4	3.3
25-29	9.5	7.1	2.4
30-34	9.7	7.5	2.1
35-39	11.9	9.3	2.6
40+	24.8	17.7	7.1
All Ages	11.5	8.4	3.1

* Per 1,000 Live Births

Source: Data as published by the Illinois Department of Public Health, 1982.

Premature and Low-Birth-Weight Babies

Teenage mothers are more likely to deliver premature or low-birth-weight babies. A premature infant is one born after less than thirty-seven weeks in the uterus; a low-birth-weight infant is one born full term weighing under 5,500 grams or 5 1/2 pounds. Infants in these categories are at risk for severe and continuing health problems. Low-birth-weight children have increased risk of having one or a combination of the following: vision and hearing problems, cerebral palsy, epilepsy, mental retardation, physical handicaps, behavioral problems, infant and childhood injuries, and birth injuries.

According to a 1978 publication of the National Institute of Education (NIE), the baby is endangered if born small or prematurely. The authors state:

... Three-fourths of all premature children weighing less than three pounds develop physical or mental defects.

... The lower the birth weight, the higher the risk of brain damage and mental retardation.

... The prevalence of the premature in institutions for the mentally retarded is more than two times as high as the prematurity rate in the general population.

... Two-thirds of infants born under 5 1/2 pounds sustain mental or emotional handicaps in infancy or childhood.

Eight percent of all infants are born prematurely. For teenage mothers, the incidence of low birth weight is two times greater (NIE, 1978). In 1982, there were 183,564 registered live births to Illinois women. Of those, 553 births were to females ages ten to fourteen and 25,013 were to females ages fifteen to nineteen. Table 3 indicates that for all births, 7.2 percent or 13,243 infants were classified as being low-birth-weight. The table also shows the statistics of low-birth-weight infants born in Chicago and downstate to both white and non-white mothers. The percentage of low birth weight infants born to white mothers ages ten to fourteen in Chicago as 10.4 percent and for downstate, 10.1 percent. For white mothers ages fifteen to nineteen in Chicago, the percentage of low-birth-weight infants decreased to 7.5 percent and for downstate, 7.6 percent. However, the percentages of low-birth-weight infants born to non-white mothers in these age categories were much higher. For non-white mothers ages ten to fourteen in Chicago, 16.2 percent of the infants had low birth weight; for downstate, 23.6 percent. For non-white mothers ages fifteen to nineteen in Chicago, 14 percent of their infants have low birth weight; for downstate; the percentage of low-birth-weight infants was 12.9 percent. The probability of a low-birth-weight infant is greater for non-whites, probably because of socioeconomic differences and amount of prenatal care. Table 4 gives further detail of low-birth-weight statistics for mothers ages ten to nineteen. Both tables show that for both white and non-white mothers ages ten to fourteen in Chicago and downstate, the probability of delivering a low-birth-weight infant is greater than for older mothers.

TABLE 3: Low Birth Weight by Race and Age of Mother: Illinois, 1982

Illinois

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Ages	13,243	7.2	7,688	5.5	5,553	12.9
10-14	89	16.1	15	10.2	74	18.2
15-19	2,526	10.1	1,100	7.6	1,426	13.7
20-24	4,318	7.6	2,424	5.7	1,894	13.2
25-29	3,573	6.1	2,493	4.7	1,280	12.4
30-34	1,951	6.1	1,306	4.9	645	12.0
35-39	661	7.5	463	6.5	198	11.5
40+	121	8.5	85	7.9	36	10.3

Chicago

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Ages	5,650	10.3	1,697	6.4	3,951	13.9
10-14	53	15.4	5	10.4	48	16.2
15-19	1,272	12.0	248	7.5	1,024	14.0
20-24	1,893	10.7	536	6.7	1,357	14.0
25-29	1,390	9.3	491	5.8	899	13.8
30-34	725	8.8	279	5.6	446	13.7
35-39	262	9.8	109	6.8	153	14.1
40+	52	9.7	28	9.3	24	10.3

Downstate

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Ages	7,593	5.9	5,891	5.3	1,602	11.1
10-14	36	17.2	10	10.1	26	23.6
15-19	1,254	8.7	852	7.6	402	12.9
20-24	2,425	6.2	1,888	5.4	537	11.6
25-29	2,183	5.0	1,802	4.5	381	10.1
30-34	1,226	5.2	1,027	4.8	199	9.5
35-39	399	6.5	354	6.4	45	7.1
40+	69	7.7	57	7.3	12	10.2

Source: Data as published by the Illinois Department of Public Health, 1982.

TABLE 4: Low Birth Weight of Infants Born to Teens by Race and Age of Mother: Illinois, 1982

Illinois

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Teens	2,615	10.2	1,115	7.6	1,500	13.8
10-14	89	16.1	15	10.2	74	18.2
15	158	11.9	42	8.3	116	14.0
16	372	12.5	130	9.6	242	14.9
17	537	10.7	244	8.6	293	13.5
18	683	9.6	317	7.4	366	13.0
19	766	9.1	367	6.6	409	13.7

Chicago

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Teens	1,325	12.1	253	7.6	1,072	14.1
10-14	53	15.4	5	10.4	48	16.2
15	88	12.2	8	5.2	80	14.1
16	208	14.3	36	10.4	172	15.5
17	262	11.9	51	7.8	211	13.7
18	361	11.6	75	8.0	266	13.4
19	373	11.3	78	6.5	292	14.1

Downstate

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Teens	1,290	8.8	862	7.6	428	13.2
10-14	36	17.2	10	10.1	26	23.6
15	70	11.5	34	9.6	36	14.0
16	164	10.7	94	9.3	70	13.6
17	275	9.8	193	8.8	82	13.1
18	342	8.2	242	7.3	100	12.1
19	403	7.6	289	6.6	114	12.7

Source: Data as published by the Illinois Department of Public Health, 1982.

AFDC/and Other Welfare Assistance

Aid to Families with Dependent Children (AFDC) provides financial aid and extends eligibility for medicaid to families of seven million poor children in the United States. In Illinois, one-half million children and 200,000 parents receive AFDC benefits. Families headed by unmarried adolescent women are seven times more likely than other families to be existing at the poverty level. Half of the Illinois AFDC families are headed by women who were pregnant as teenagers. According to Moore (1983):

> Of all the children born out of wedlock, at least 60 percent end up on welfare. They represent over 30 percent of all children receiving Aid to Families with Dependent Children (AFDC).

Moore concludes that the cycle of poverty seems inevitable for the teenage mother, particularly if she is unwed, comes from a low SES background, and is a member of a racial minority.

It is difficult to ascertain the exact amount of tax dollars spent on adolescent pregnancy and teenage childbearing. The amount of welfare money spent for services for teenagers is complex and hard to detail. For example, AFDC is a major source of income for adolescent parents; but if the teenage parent is a member of an AFDC household in which another person is the grantee, the adolescent is included in that stipend. The Illinois Department of Public Aid (IDPA) spent $46,289,501 in 1983 for income maintenance for 15,064 teenage mothers. IDPA spent an additional $4 million in medical care for births to 4,483 teenage mothers, and the Illinois Department of Public Health spent an estimated $4,620,084 in health services for pregnant teens, teenage mothers, and their children. The United States Bureau of the Census reports that in 1982, 31 percent of families headed by single women received food stamps and about 48 percent of these families with children in school received free or reduced-price school lunches. So, it appears that women who become teenage mothers must rely on AFDC and other means of welfare for existence.

Some people conclude that welfare (approximately $250/month, plus free medical care, food stamps, and nutritional allowances) provides an incentive to some adolescents to become pregnant. According to Testa (1981):

> The best possible evidence to date suggests that welfare is only remotely related to adolescent pregnancy--it being mostly a consequence of sexual unpreparedness, wishful thinking, and reproductive ignorance. What seems more pertinent is the fact that welfare dependency is highly correlated with a host of other factors, such as single parenthood, family size, lower educational aspirations, and neighborhood impoverishment, which create an environment that is only weakly regulative of adolescent sexuality.

Further, Moore (1983) says that a 1976 Survey of Income and Education could not substantiate the critics' claims of a correlation between welfare benefits and increased adolescent childbearing. Also, a study of changes in AFDC policies showed no connection in predicting teenage pregnancy. Hariette Pipes McAdoo, a family researcher and educational psychologist, contends that "AFDC benefits are so low and waiting lists for public housing so long that they hardly offer strong incentive for motherhood" (Cordes, 1984).

Education of the Teenage Parent

Becoming a teenage parent usually reduces educational attainment, preparation for a career, and job opportunities. Most pregnant students still drop out of secondary as well as elementary schools, sometimes with encouragement from "well-meaning" parents, teachers and counselors. Eighty percent of these drop-outs never return to formal schooling, and 25 percent become pregnant again within a year (Dunkle, 1984).

Data from the first follow-up survey of the High School and Beyond Study show that 31 percent of the Illinois females who were sophomores in 1980 and who dropped out of school reported they were pregnant. (This compares with the 23 percent national average.) A nationwide survey by Planned Parenthood reported that 11 percent of mothers ages thirteen to fifteen and 18 percent of mothers ages sixteen and seventeen graduate from high school (Illinois Department of Public Health, 1984).

Researchers have contemplated the question of whether pregnancy causes lower education or whether low educational aspiration or performance leads to pregnancy. In one longitudinal study cited by Furstenberg (1981), analysts Card and Wise (1977) found that a woman who had her first child by age eighteen was half as likely to earn her high school diploma as a woman who waited to have children. Young fathers were about 70 percent as likely to get their high school diplomas as those teenage males who were not fathers.

Card and Wise concluded (Furstenberg, 1981):

> It is important to note that virtually all of the men and women who did not have children before age 20 received high school diplomas. The adolescent parents [in this study] had the same level of academic ability, the same racial and socioeconomic background, and even the same expectations regarding college. Yet a high proportion of the adolescent childbearers did not complete high school and were therefore apparently severely handicapped with respect to future educational and (presumably) occupational attainment.

Because few schools have formal policies regarding student pregnancy and because of inflexible transfer and absence policies, the likelihood that adolescent mothers will complete their schooling is low. However, for those students who do stay in school, there are problems because they are taken from the mainstream of school life, often by coercion. Females report that as pregnant teenagers and school-age parents, they were treated differently than other students, including the teenage father (Testa, 1981). Some were excluded from graduation exercises, extracurricular activities, and the

rosters of clubs and sports teams. Many pregnant teens are transferred to separate curricular programs or special schools. Although many of the alternative or special schools for pregnant and parenting teens have good programs, the students often have fewer curricular choices and fewer extracurricular activities. Often times, these isolated programs for pregnant teenagers are the same programs to which so-called "problem students" such as alcohol and/or drug abusers, chronic truants, and students with behavioral or discipline problems are sent. Students enrolled in programs outside the mainstream of school do not usually return to the regular school program.

Review of the Research

In the studies concerning the children of teenage parents, researchers have found few consequences directly associated with the age of the mother. Studies show that even the increased risk of perinatal mortality and the mortality of children born to young mothers can be lessened with excellent early prenatal care.

The children, however, suffer from the poor socioeconomic status of their mothers. The youngsters have a greater likelihood of living in a one-parent home with a mother who is more likely to be immature, little educated, and dependent on welfare. The children, even if born healthy, but economically and socially disadvantaged, appear to demonstrate poor cognitive development and suffer problems of social and behavioral adjustment. Most researchers conclude that family structure is far more important than parental age in influencing psychological and intellectual growth and maturation. Dryfoos (1983) says:

> A very high proportion of unintended childbearing occurs to young women from economically and socially deprived families; the birth of the baby results in negative consequences for the mother, the family, the grandparents, and the child itself. Many of these consequences are related to social circumstances of the family rather than to maternal age per se.

Economic and Social Consequences

In Illinois as well as nationwide, there has been a slight decline in the number of teenage childbirths, but there has been a large increase in the number of births outside marriage. More young, unwed women are keeping and raising their children, often without assistance from the child's father--creating physical, emotional, and economic problems for both mother and child. Samuel H. Preston, President of the Population Association of America, states that the quality of life of children in the United States has greatly deteriorated since 1960. He indicates there is a decreased interest in children, citing the growing numbers of fathers who fail to support or even maintain contact with their children. If the child was born out of wedlock, most often the father never assumed any responsibility. If the parents are divorced, less than half of the fathers pay child support.

Consequently, with the increase of unwed mothers and the growing divorce rate, more children under the age of fourteen live in poverty. Governor Thompson's Task Force on Children (1983) found that Illinois is one of six states which had a statistically significant rise in the proportion of children in poverty between 1970 and 1980, from 11 percent up to 16 percent. According to Preston (1984), family instability and the resulting poverty lead to deterioration in the psychological well-being of children.

Nationally, between 1963-1966, 71 percent of unmarried white teenagers who became pregnant married before the birth of the child. By 1975-1978, 58 percent married. While the number of out-of-wedlock births has increased, fertility within marriage has decreased (Furstenberg, 1981). In 1950, 12 percent of all children and 20 percent of all first children were born to women under age twenty. In 1978, 17 percent of all children and 31 percent of all first children were born to teenage mothers. Also during this period, the number of births to unwed women in this age range increased. In 1978, 46 percent of all out-of-wedlock births were to teenage mothers and 45 percent of births to teenagers were to unwed mothers. In 1982 in Illinois, 97 percent of births to women ages ten to fourteen were of out-of-wedlock. For women ages fifteen to nineteen, 62.9 percent were unmarried when they gave birth. The younger the mother, the more likely she is to be unmarried. The number of out-of-wedlock births in Chicago is three times greater than for downstate. According to IDPH, in 1982, 64 percent of births to teenagers occurred out of wedlock, up from 61 percent in 1981 and 58 percent in 1980. (See Table 5.) Therefore, the number of children being raised by a single teenage mother either in Chicago or downstate has increased significantly.

TABLE 5: Out-of-Wedlock Births by Race and Age of Mother
Illinois, 1982

Illinois

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Ages	42,638	23.2	15,942	11.3	26,696	62.2
10-14	537	97.1	135	91.8	402	99.0
15-19	15,730	62.9	6,068	41.6	9,662	92.6
20-24	15,517	27.2	5,675	13.3	9,842	68.7
25-29	7,088	12.1	2,533	5.2	4,555	44.2
30-34	2,714	8.5	1,052	4.0	1,662	31.0
35-39	877	9.9	397	5.6	480	27.8
40+	168	11.8	81	7.5	87	24.9
Unknown	7		1		6	

Chicago

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Ages	24,912	45.2	5,547	20.8	19,365	68.1
10-14	338	98.3	44	91.7	294	99.3
15-19	8,620	81.2	1,751	53.1	6,869	93.9
20-24	9,162	51.6	2,011	25.0	7,151	73.8
25-29	4,428	29.7	1,041	12.4	3,387	51.9
30-34	1,719	20.8	477	9.5	1,242	38.1
35-39	523	19..5	179	11.2	344	31.7
40+	115	21.5	43	14.2	72	31.0
Unknown	7		1		6	

Downstate

Age of Mother	All Races #	All Races %	White #	White %	Non-White #	Non-White %
All Ages	17,726	13.8	10,395	9.1	7,331	50.6
10-14	199	95.2	91	91.9	108	98.2
15-19	7,110	49.4	4,317	38.3	2,793	89.5
20-24	6,355	16.2	3,664	10.6	2,691	58.1
25-29	2,660	6.1	1,492	3.7	1,168	31.0
30-34	995	4.2	575	2.7	420	20.0
35-39	354	5.7	218	3.9	136	21.3
40+	53	5.9	38	4.9	15	12.7
Unknown	0		0		0	

Source: Data as published by the Illinois Department of Public Health, 1982.

Physical Consequences

Infants of teenage mothers are a high-risk group because the teenage mother has certain characteristics. According to Scott, Field, and Robertson (1981), a study by Monkus and Bancalari (1981) showed that the teenage mother is:

> ...characterized by low socioeconomic status, poor nutrition (not only for financial reasons but also due to cultural idiosyncrasies), increased illegitimacy, and lack of early prenatal care, as well as a higher rate of pregnancy and delivery complications.

Monkus and Bancalari reviewed several studies each involving 500 or more teenagers. Appendix A lists several of the studies and their findings. There is a lack of consistency in the findings of these studies which the authors attribute to different approaches to analyzing the data. However, all the studies indicate the greater risks of lower birth weight and prematurity to children born to teenagers particularly those ages fifteen and younger. The studies also cite the other factors besides age that have an adverse effect on the infant, such as poor socioeconomic status, poor nutrition, or lack of prenatal care.

There are many studies that reveal that children born to adolescent mothers have substantially higher morbidity (disease) and mortality rates. According to a study by Oppel and Royston (1971), children born to mothers younger than eighteen (and to mothers ages eighteen and nineteen who have already had a child) have an increased chance of dying during the first month after birth because of low birth weight. The children born to mothers in this category are at greater risk of death and illness throughout the first year of life because of poor socioeconomic factors. The children in this study experienced higher rates of illness and injury requiring medical attention and hospitalization.

During a six-year study of over 6,000 births in four regions of the United States (McCormick, et al., 1984), the rate of survival for low-birth-weight infants increased slightly, probably due to advances in medical care. However, McCormick et al. indicated an increase in the postnatal mortality rate, which means that infants in this category are at greater risk to die before the age of one year, either because of continuing problems associated with their low birth weight or because of the adverse health effects caused by their socioeconomic disadvantages (Family Planning Perspectives, March/April, 1984).

This finding was also substantiated in the General Mills survey on family health (1979). Over half of the infants born to young mothers experienced a health problem within the first few months of life, almost 25 percent had been hospitalized, and there was a high incidence of recurring health problems (53 percent) including colds, diarrhea and injuries requiring medical attention.

Analyses of the 1970 British Births Survey and the follow-up Child Health and Education Study also revealed that children born to teenagers are more likely to be involved in accidents and have gastrointestinal infections than children born to older mothers. For the first five years of life, children of teenage mothers are at higher risk to be hospitalized for poisoning, burns, and superficial injuries and lacerations. After an adjustment for socioeconomic and biological factors was made, maternal age was highly associated with the rates of hospitalization and accidents, indicating that "being born to a young mother of itself appears to constitute a health hazard for young children" (Family Planning Perspectives, September/October, 1984). The researchers concluded that morbidity and accidents experienced by these children may reflect their mothers' inexperience and inadequate supervision.

Emotional, Developmental and Cognitive Consequences

In a review of the literature, Scott, Field, and Robertson (1981) cite several studies which conclude that the factors which are responsible for the undesirable developmental and cognitive outcomes for the teenage mother and her infant are the lesser education of the mother, her less viable socioeconomic status, and related undesirable attitudes toward children and childrearing. In a study by Oppel and Royston (1971) of 86 mothers less than age eighteen who were compared with mothers who delivered at age eighteen or older, the researchers matched the mothers' socioeconomic status and race and the infants' birth weight. When the children were given IQ tests at eight years of age, scores of the two groups differed slightly but not significantly. There were, however, other differences. Fifty percent of the children of older mothers were reading at grade level compared to only 29 percent of the children of younger mothers. Also, the children of younger mothers were less likely to have been reared by their mothers, showed more behavioral problems, were underweight, and were shorter (Scott, Field, and Robertson, 1981).

Data gathered by Furstenberg (1981) indicate that children born to teenagers show "a marked deficit in the cognitive performance" when compared to children born to working class parents because the children were unable to complete the tasks identified on a preschool inventory. Another study in Britain (Wadsworth, 1984) which controlled large samples for socioeconomic status revealed a link between the young age of the mother and the lowered IQ of the infant. Wadsworth (1984) found that:

> ...children born to teenage mothers and living with them through the first 5 years overall did worse than those born to older mothers in tests of vocabulary and behavior...These findings in general support the belief that low maternal age adversely affects children's development, not through some biological effect but rather through the social disadvantage frequently accompanying teenage mothering....
>
> There is no doubt that a teenage pregnancy, planned or unplanned, can be a cause of social disadvantage, particularly if the parents have hurried into marriage and the child is born before a home has been established....Thus it is possible that the child itself is a contributing factor to the poor social circumstances in which it is brought up.

Scott et al. (1981) reported on researchers' analyses of a wide range of medical, social, and maternal criteria to predict intelligence levels in childhood. They found that the major predictor of the child's IQ appears to be the mother's education. Therefore, the consequence of a teenage mother leaving school may have serious impact upon her child.

Other studies cited by Field (Scott, Field, and Robertson, 1981) involved a longitudinal follow-up of children of teenage parents. One study, the National Collaborative Parental Project, found that the children of teenage mothers had lower IQ scores at ages seven through eleven. These children were not only disadvantaged by their mothers' socioeconomic status, but also by their mothers' age. The study also found that children of teenage mothers suffered more incidences of cerebral palsy and battered child syndrome. More of the children lived either with unmarried mothers who had lower levels of education and were on public assistance or in foster homes.

Several studies (Lester, 1978; Marecek, 1979; Card, 1977) involving preterm infants for all mothers indicate that premature babies experience developmental delays. Researchers examined early interaction and social development of premature babies and found that at preschool and school age these children show behavioral problems and delays in language development. In a longitudinal study of preterm infants, Scott et al. (1981) reported that their IQ scores at ages seven through eleven, although within normal range, were lower than the scores of other children.

In searching for differences between teenage mothers and older first-time mothers that might contribute to developmental and cognitive problems for the children, maternal characteristics, parenting knowledge, and attitude have been examined. (See Appendix B). Studies (DeLissovoy, 1973 and Roosa and Vaughn, 1984) indicate that teenage mothers lack adequate knowledge and positive parenting attitudes regarding child care. Also these studies indicate a link between the socioeconomic status and its impact on maternal knowledge, attitudes, and behavior. Teenage mothers as a group have little knowledge regarding infant and child development. They expect either "too much, too soon" or "too little, too late" (Roosa and Vaughn, 1984).

Field cites a study by DeLissovoy (1973) who suggests that teenagers are deficient in parenting skills, describing young parents as being "... uneducated, intolerant, impatient, insensitive, irritable, and prone to use physical abuse" (Scott, Field, and Robertson, 1981). The young parents he studied had unrealistic expectations regarding the growth and development of their children, expecting them to sit unassisted at six to twelve weeks and be toilet trained at six months. In a 1981 study of teenage mothers' attitudes about child development and child care, there were indications that the adolescent mother had attitudes that were similar to those demonstrated by emotionally disturbed and abusive parents (Anastasiow, 1983). Other studies reveal that from 23 to 50 percent of abused children were those born prematurely and that the population of teenage mothers has a greater incidence of abuse. Therefore, the premature child born to a teenage mother is at risk for abuse that might lead to developmental problems (Scott, Field, and Robertson, 1981).

Camp (1984), at the University of Colorado School of Medicine, found that teenage mothers who had authoritarian attitudes regarding parenting had children who were at a slight developmental advantage at one year of age over infants of older mothers who had nonauthoritarian attitudes. But, at four years of age, most children of teenage mothers showed more developmental and behavioral problems than the children of the older mothers. However, young mothers with authoritarian attitudes who were free of school problems, not abused as children, and satisfied with their own upbringing had children who scored higher on the Bayley Motor Scale scores. Camp concluded that the developmental status of the child was related to the characteristics of the mothers; therefore, further study of the relationship between authoritarian characteristics of their children may explain the inability of teenage mothers to maintain the rate of cognitive and developmental growth of their offspring after the first year of age.

Two other studies (McLaughlin et al., 1979 and Osofsky and Osofsky, 1971) found little difference between adolescent and post adolescent mothers' attitudes. They did, however, find that teenage mothers scored high on warmth and physical interaction with their children, but scored low on verbal interaction, indicating that mother-child interactions are critical in infant cognitive and developmental growth.

These studies show that the impact of adolescent childbearing on the emotional, developmental, and cognitive growth of infants is determined by the mother's education or knowledge, parenting attitudes and behaviors, the environment, and her socioeconomic background. Family structure of the teenage mother's home if she remains with her mother and/or father also influences the psychological and intellectual growth of her child. Furstenberg (1981) says:

> The cognitive development of the child is less likely to be impaired if a teenage mother lives with other adults who share childrearing than if she lives alone....whether or not a supportive network exists may be a critical determinant of the life course of teenage parents and their children.

Researchers Roosa and Vaughn (1984) agree, stating, "Programs that strengthen the social support system of teenage mothers also may have a positive effect on the teenagers' maternal attitudes."

Teenage mothers attempt to be children and parents simultaneously (Miller, 1983). Dr. Robert J. Thompson, Duke University Medical Center, states that teenage parents need assistance in meeting their own needs as well as those of their offspring. Thompson (1982) says:

> They [adolescent mothers] require comprehensive health care programs that integrate psychological, educational, vocational, and medical components.

He established a home-based intervention program for adolescent mothers with monthly home visits by a nurse for two years after birth to improve the child's developmental functions and reduce cognitive delays. The children in the home-visit group at two and one-half years of age scored 8.45 points higher on I.Q. tests than those children who were not in the program.

Thompson reported that teenage mothers in the intervention program were more verbal with their children, gave more positive feedback, were less restrictive and negative, and were less directive. All of these parental differences led to positive improvement in the infant's developmental and cognitive growth.

Intervention Programs

Most efforts to assist teenage parents are targeted on prenatal care and the delivery of the child. Many of these programs give evidence of minimizing and preventing obstetric complications. However, in the few follow-up studies in these programs, findings indicate that teenage mothers need assistance following the delivery. Since few programs deal with the teenage mother and her child in the postnatal period, the long-term social and educational consequences caused by early motherhood are not addressed. The young mother's unrealistic expectations for the infant and her lack of knowledge regarding child growth and development affect her interaction with the child and create negative physical, emotional, and behavioral problems.

Field (1981) studied four groups of 150 experimental and control infants and mothers. The pairs were divided into groups of preterm infants with teenage mothers, full-term infants with teenage mothers, and preterm and full-term infants born to adult mothers. A portion of the paired groups were involved in an intervention program with home visits to educate mothers regarding child growth and development, childrearing, age-appropriate exercises and stimulation practices, and developing communications and warm relationships between mothers and their infants. The infants were tested at birth, at one-month, and at four-months. Most all participants were black and the teenage mothers were predominately unmarried.

At the four-months' assessment, the children of the teenage mothers were of lower weight and shorter length. The preterm infants of teenage mothers received lower scores in tests of adaptability and gross-motor skills. Their face-to-face interactions with their mothers were less optimal. Also the teenage mothers showed less desirable attitudes about childrearing. The preterm infants of teenage mothers who were in the intervention group were of greater weight and length and received better test scores. The mothers also appeared less anxious and had better face-to-face interactions (Scott, Field, and Robertson, 1981). These mothers also viewed their children as having less difficult temperaments. Field concluded from her study that even a relatively inexpensive intervention program can ameliorate the risk factors associated with teenage parenting.

Scott, Field, and Robertson (1981) cite a study by Belmont which used three large sets of data. Belmont attempted to determine if children of teenage mothers suffered adverse intellectual consequences. She stated:

> ...young mothers appear to be at a particular disadvantage in our society; they never catch up with their peers who do not experience childbirth during adolescence in regard to education, earnings, or career status. Their chances of marital dissolution if they marry are high.

Assuming that the economic, social, and demographic disadvantages would affect the child's I.Q., she examined additional problems created by the mother's youth or immaturity. Belmont found:

> ...that the test score in a child tends to reflect the educational and social position of the mother. Since part of the social disadvantage of the teenage mother results from a downward mobility associated with early pregnancy, social action might be aimed at preventing or reducing that decline.

So, intervention programs such as those that provide the mother with education, job skills, and work training so the parent can earn money to improve her environment are beneficial to the children.

Another study reported by Scott, Field, and Robertson (1981) is an analysis by Broman and others (1981) of intervention programs. Broman's group designed a longitudinal study which attempted to identify risks to teenage mothers and their children. They compared two groups of mothers twelve to fifteen and sixteen to seventeen with an older group ages twenty to twenty-nine on social and physical characteristics and development of children during their first seven years. These three groups were compared on sixty-eight variables--thirteen were maternal and familial, eight were conditions during pregnancy and delivery, and forty-seven were the child's physical, cognitive, and behavioral outcomes.

Broman concluded that prematurity, low birth weight and low Apgar scores (an index of the infant's psychological status) were more frequent among the children of adolescent mothers. When tested at four years of age, more children of teenage mothers had lower IQ scores, a higher rate of retardation, poorer motor development, and a higher incidence of deviant behavior than the children born to older mothers. However, the study also found that the socioeconomic status of the family had more effect on the test scores that did maternal age. When studied at age seven, the children born to teenage mothers were more frequently living in foster or adoptive homes, their mothers were more frequently unmarried, had a lower level of education and were on public assistance rolls. When the researchers compared socioeconomic index scores from the prenatal and seven-year follow-up studies, they found that adolescent mothers had experienced downward social mobility. Between ages two and seven, the children of teenage mothers showed increased frequencies of cerebral palsy, battered child syndrome and severe anemia.

Broman also concluded that the differences among age groups were smaller than those found among socioeconomic or ethnic groups for most of the maternal and offspring characteristics studied. Broman states:

> Biological deficit was not strongly associated with early childbearing in this population of women, all of whom received some prenatal care, but the adverse effects of environmental deficit were evident in the lower performance levels of the offspring in early childhood. These findings and related ones from other studies of cognitive development suggest that support systems for pregnant teenagers should focus on plans for continued education for the mother and supplementary stimulation programs for the child.

Several intervention programs have been successful, greatly benefiting those who have participated. Even so, researchers and experts in the field of teenage pregnancy and adolescent parenting are calling for additional programs - some following already developed models and some meeting unserved needs.

Recommendations for Additional Incervention Programs

Those who work in the field of teenage pregnancy and adolescent parenting agree that there are three intervention stages - primary prevention, secondary prevention, and tertiary prevention. Primary prevention focuses on the dissemination of accurate information about sexuality, conception, and responsibility for behavior. Secondary prevention includes assistance and counseling for the teenager who finds herself pregnant, including information regarding her options - such as abortion or adoption. Tertiary prevention involves assistance to adolescent mothers who elect to raise their children. Some adolescent pregnancy programs include elements from one, two, or three levels of prevention.

Primary prevention begins in the home, churches, organizations, and the schools. Miller (1983) says:

> The acquisition of knowledge about human sexuality must be viewed as a life-long process, best begun in the home under parental supervision...information must be presented gradually, in ever increasing levels of complexity. A one-hour discussion with a parent or a 10-week course in school during puberty does not fulfill one's responsibility for helping children understand their sexuality.

The effectiveness of sex education programs in school has not been demonstrated. Most sex education programs do not begin early enough, particularly in the school curriculum. Also school programs often are of short duration and do not contain enough information regarding conception, contraceptives, child development, and parenting. Since one-fourth of students nationwide do not complete high school, many students do not receive the information if it is offered in their school. Teenagers are often sexually active before they enter the school sex education program. Also information for young males, focusing on responsibility for sexual activities and prevention of pregnancy, is missing.

Anastasiow (1983) suggests that educators should:

> ...make young people at the junior-high level knowledgeable about infant and child development and provide them an opportunity to experience to some degree the responsibilities of child care. In other words, even though efforts to reduce the number of births may fail, young people need to know how to facilitate their offsprings' development. Further, they need to know how to recognize potential delays or disruptions in the developmental process so that they may seek screening and/or diagnostic services. They should also know where to go for help when it is needed.

Dryfoos (1984) calls for a broader perspective, involving other social institutions. She emphasizes:

> ...that the social and welfare needs of disadvantaged adolescents must be addressed before the need for the 'traditional' sex education and family planning services that work so well for advantaged young people. ...better utilization of reproductive health care services will follow improved academic achievement, enlarged employment opportunities and a heightened sense of the future.

Secondary prevention programs are available for the pregnant teenager and prospective adolescent parent. These programs include counseling about choices - whether to marry, to terminate pregnancy, to place the baby for adoption, to complete schooling, etc. It is during this time that pregnant adolescents are urged to get sufficient prenatal care, to learn about nutritional needs, and to get information about delivery and infant care. Young women are also educated on the reproductive process and contraceptives to avoid future unwanted pregnancies.

Both state agencies and private organizations, such as Planned Parenthood, concentrate on secondary prevention services. However, clients state there is a lack of cooperation among the various social institutions and agencies to coordinate these services (Testa, 1981). Recognition of this lack of cooperation and coordination is one reason Governor Thompson initiated the Parents Too Soon program in Illinois. One of the goals of the program is to acquaint educators with social services available in their areas of the state so they can recommend assistance programs to students.

Tertiary prevention programs focus on minimizing the problems faced by the teenage mother. These programs include completion of high school education and acquisition of job skills; family counseling and child development courses; and assistance with welfare practices, including Women, Infants, and Children (WIC) food programs, transportation, health services, AFDC, and day care.

It is on this third level of prevention that young mothers learn about child care and development. However, most of these programs terminate when the infant is between twelve and eighteen months of age. In a study by Miller (1983), half of the participating adolescent mothers expressed the need for parenting education when their children were eighteen months old. Miller notes:

> Providing parenting education during pregnancy seems ineffective and inefficient. At that time, the pregnant adolescent is more concerned with the developing fetus and her reactions to pregnancy, not how she will toilet train her baby 2 years later. Emphasis during pregnancy should be placed on nutrition, exercise and preparation for delivery. After the baby is born, new needs of information and services appear, but this is typically when most comprehensive programs end.

> Ideally, parenting education should begin soon after delivery right in the hospital maternity unit and continue until the child enters school. The study data have shown that most babies born to mothers in the sample fare quite well during the first year and a half after delivery. However, other research indicates that cognitive deficits appear as early as the preschool years, making intervention when the children are toddlers especially important.

Miller emphasizes that the young mothers' immaturity should be considered when programs are developed. Because these teenagers have few role models and concrete experiences, they cannot generalize information for their own needs. Parenting programs must convey information regarding the child's cognitive, social, and language development as well as recognize the mother's developmental needs. As Miller states, these young mothers are both children and parents simultaneously.

> It is clear that the young mother's information needs and interests change after the baby is born and during the first few years after delivery. Although many respondents said they had no need for information at the first interview, the fact that some lack adequate knowledge regarding appropriate child development expectations and that half reported that they needed parenting education at the follow-up interview 18 months post partum is evidence that they would probably benefit from additional classes on parenting, a supportive one-to-one relationship with someone who has been a successful parent, and extensive information about child development given at a level appropriate to their age.

Furstenberg (1981) reports on a study by Baldwin and Cain (1980) who urge researchers to study adolescent parents' childrearing because of the "decrements in infant health after the neonatal period." Baldwin and Cain suggest that the adolescent mother's family structure and the presence of other adults in the home who assist in the child's care create a better environment for the infant. Children in these settings of familial support fare better than children raised only by teenage parents. Programs that encourage the support of other adult family members and provide them with additional training, i.e., grandmother's programs, have proven helpful for the outcome of both the infant and the mother. The extended family is the first and often the only means of support to the young mother.

Home-based intervention programs, peer counseling, and weekly group child-care programs for mother and child have improved the young mother's skills and understanding of child development and promoted the child's developmental processes, lowering the risk for cognitive delays and behavioral problems. Although the Minnesota Early Learning Design (MELD) is a model parenting education program involving a self-help peer group method, Miller (1983) says that it doesn't last long enough. Young parents meet for only forty or fifty two-hour sessions to share problems, and this program ends when the child is two years old. Miller concludes that in order to have optimum impact on the teenage mothers and their infants, assistance programs should continue until the child enters school.

Another form of intervention, sometimes called primary prevention and sometimes called tertiary prevention, is comprehensive early childhood programs for children of teenage parents and disadvantaged families. Programs such as Head Start and the Perry Preschool Program begun in Michigan have proven to assist at-risk children in breaking the cycle of poverty and dependency. The researchers involved in the two decade longitudinal Perry pre-school study wanted to test whether a good beginning makes a good ending. Enrollment in preschool was found to result in many significantly desirable educational outcomes.

Although researchers have found many intervention programs to be successful, more programs for primary, secondary, and tertiary prevention are needed to break the cycle. Gershenson (1983) surmises that in developing intervention programs:

> The public drama that is being created by the attention paid to adolescent motherhood may be creating a myopia that blinds us to other social issues which have an equal impact on these same adolescents' lives.

Summary

One of every six children is born to and raised by a mother who is a teenager. Children born to these young mothers, who are often uneducated, unskilled, and unmarried, have a higher incidence of physical, emotional, and intellectual handicaps. They are at-risk for prematurity, low birth weight, and birth defects. Even if born healthy, the low socioeconomic environment in the homes of most teenage parents affects the achievement levels and the behavior of their offspring, handicapping them before they enter school. Adverse effects on the children of teenage parents occur more frequently as a result of the social disadvantages of the mothers' environment than biological or genetic factors, and both occur more frequently to the children of teenagers than to the population at large.

The children of teenage parents are more likely to have special needs than children of older parents. Intervention programs have assisted some young mothers in identifying and satisfying those needs. With proper training, young mothers can learn to prevent further early childbearing and to provide proper nurturing, nutrition, stimulation, and training for their youngsters to prevent them from suffering severe emotional, behavioral, and educational losses.

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Appendix A

RESEARCH STUDIES REGARDING OUTCOMES OF TEENAGE PREGNANCIES

Analysts	Data	Findings
Aznar and Bennett (1961)	Analyzed 16 studies on teenage pregnancy (TAP) between 1922-1959 in Cleveland, Ohio.	Found a high incidence of low birth weight (LBW) - less than 2500g. - for teenage mothers.
Aznar and Bennett (1961)	Investigated 1,083 deliveries to females aged 12 to 16 in Cleveland, Ohio between 1953-59.	Women ages 12 to 16 delivered 18.7% of LBW infants (4% more than the control group).
Marchetti and Menaker (1950)	Reviewed 10,000 deliveries between 1945-47 in Washington, D.C.	15% of women ages 16 and under had LBW infants compared with 12% of all other mothers who delivered during the same time period.
Donnelly, et al. (1960)	Studied teenage mothers in North Carolina between 1954-1956.	Highest incidence of LBW infants was to mothers younger than 15 years old; the lowest incidence of LBW was to mothers ages 20-29.
Israll and Woutersz (1963)	Analyzed data from 40,000 births in ten urban hospitals in Boston in 1963. 4,000 births to mothers less than 20 years old were compared with a control group.	The number of premature/LBW infants was 12.8% greater than those of the control groups. Differences between premature nonwhite infants (15.9%) and premature white infants (9.8%) were more marked than differences related to maternal age because black teenage mothers delivered twice as many LBW infants.
Stine, et al. (1964)	Studied birth certificates from Bureau of Vital Statistics in Baltimore, Maryland in 1957, 1960, 1961.	11% of infants born to white mothers ages 16 or less were LBW, compared to 8.6% of infants born to mothers ages 17 to 19, and 7.8% of infants born to mothers ages 20 to 24. LBW incidence for nonwhites ages 16 and under was 20%; for ages 17 to 19, 17%; and for ages 20 to 24, 14%.
Battaglia, et al. (1963)	Studied 636 women ages 14 or younger at John Hopkins Hospital from 1936-1960. (86% were single and 89% were nonwhite.)	LBW for nonwhite infants was 23.4%.

Appendix A. (Continued)

Semmens (1965)	Analyzed 63,000 deliveries, 20% were to teenage mothers, at 22 Naval Hospitals between 1960 and 1962.	Teenage mothers' incidence of premature births was 9.5%; for older mothers, 9.4%. Rate demonstrated good prenatal care for teenage mothers.
Zackler, et al. (1969)	Compared 2,400 mothers under age 15 in a Chicago Board of Health Prenatal Comprehensive care program with 4,400 mothers of same age not in the program.	The study demonstrated importance of prenatal care. There was no increase in LBW for young mothers under care.
Duenhoelter, et al. (1975)	Paired 500 mothers less than 15 years old with mothers ages 19 to 25, in Dallas, Texas, between 1968-72. Compared birth weight and prematurity of infants.	Neonatal outcome for young mothers is not different from older mothers when race and socioeconomic status are matched.
Weiner and Milton (1970)	Examined demographic correlates of LBW.	Although maternal age is a correlate, it was not as important as race or socioeconomic status. Patients who were underweight or who gained fewer pounds during pregnancy were more likely to produce LBW infants.
Evrard and Gold (1977)	Studied weight and weight gains before and during pregnancy of 124 women ages 13 to 16 in Rhode Island. Females were of low socioeconomic status but received good prenatal care.	26% of patients were 10% underweight and 25% gained less than 20 lbs. during pregnancy. When mother had one factor (either underweight or low gain), 64% of the infants were LBW. For women with both factors, 77% of the infants were LBW.
Marinoff and Schronholz (1972)		Mothers less than 17 years old who weighed less than 120 lbs. and gained less than 20 lbs. had a three-time greater incidence of LBW infants than those mothers over 17, who weighed more, and gained more weight during pregnancy.
Anderson (1976) (similar findings by: Westpral and Joski (1964); Perkins, et al. (1970)	Analyzed 17,000 births in England and Scotland to mothers who went into spontaneous labor before 37 weeks.	The spontaneous preterm delivery rate for all infants was 16.7 births for every 1000; for women under age 20, the rate was 21.7 per 1000 births.

Appendix A. (Continued)

Erkan, et al. (1971)	Analyzed females, ages 12 to 15, who gave birth in Maryland between 1957-67. (90% were black and unwed.)	124 mothers who were 24 months or less postmenarche before pregnancy delivered 31.4% LBW infants. 16% of the 137 mothers who were over 24 months postmenarche delivered LBW infants.
Zlatnik and Burmeister (1977)	Studied "low gynecologic age."	Found a significantly higher rate of LBW infants born to mothers within 24 months of the menarche.

Appendix B

RESEARCH STUDIES REGARDING CHILDREN OF ADOLESCENT PARENTS

Analyst/Researcher	Data	Findings
Brigitte Mednick (University of Southern California) (1979)	Used Danish Longitudinal Perinatal births study data. Studied 9,125 in Copenhagen from 1959-1961. Mothers and their children were examined during pregnancy and through one year of child's birth.	Because of excellent prenatal care, younger mothers (even though from a lower SES) had lower rates of stillbirths and neonatal mortality than older mothers.
Howard Sandler (Peabody College) (1979)	Examined data from all births at Nashville General Hospital from 1974-1976. Patients were mostly low-income, but they received high quality prenatal care.	Sandler found no significant or consistent differences between neonatal outcomes between age groups. Brazelton scores (social and neurological assessments at 2 days old) showed no difference where medical care was of high quality. However, children raised by adolescent mothers only had poorer physical health status scores.
Barry Lester (Children's Hospital Medical Center, Boston) (1978)	Administered Brazelton Neonatal Behavioral Assessment Scale to two groups of two-day old infants - 155 in Florida and 156 in Puerto Rico. Out of 311 babies, 62 were born to women under age 18. Study also looked at mother and child medical histories, birth weight, and one-and-five-minute Apgar scores. All mothers were from low-income or indigent families.	Brazelton scores for babies of teenage mothers showed infants were more likely to be overaroused or underaroused. Although these scores were still within the "normal" range, these infants are at risk to develop problems. The stress of early motherhood often affects the interaction between mother and child and exaggerates the test score differences.
Jeanne Marecek (Institute for the Continuous Study of Man) (1979)	Used Collaborative Perinatal Project (CPP) data from Philadelphia. Examined the consequences of teenage childbearing on predominately black, urban population.	Babies of black urban adolescent mothers were slightly less well developed according to the Bayley Scale of Infant Development at 8 months, Stanford-Binet at 4 years, and Wechsler Intelligence Scale for Children (WISC) and Wide Range Achievement Tests at age seven. Male children were affected most.
Joy Dryfoos (The Alan Guttmacher Institute) and Lillian Belmont (Columbia University (1979)	Used Collaborative Perinatal Project (CPP) data file. Studied only 7 year olds. Also administered Goodenough Draw-A-Person Test and the Wide Range Achievement Test. Had parents and children answer questionnaires and analyzed reports from children's schools.	Found small but significant effects of maternal age on IQ.

Appendix B. (Continued)

Kingsley Davis and Amyra Shechtman Grossbard (University of Southern California) (1979)	Examined relationships between maternal age and offspring's intellectual development and school performance in Health Examination Surveys (HES), Cycle II. Used a subsample of 1,750 ten and eleven-year-olds from two-parent families.	Using measures of grade repetition and reading scores, analysts found that offspring of teenage mothers who were financially disadvantaged did significantly more poorly in school than those who were from economically secure families.
Sheppard Kellam (University of Chicago) (1979)	Developed longitudinal study (10 years) of 1,242 first graders in 1966 - 200 had teenage mothers; 500 of the mothers were teenagers at first birth. Families were in a black, urban, low-income Chicago community. Analysts looked at social, psychological, and psychiatric outcomes.	Children of teenage mothers were less likely to adapt to school. This failure to adapt caused school problems at age 16 (particularly for males). If mothers had assistance with childrearing, the effect was ameliorated. Married teenage mothers were twice as likely to separate or divorce; parents' marital disruption happened earlier in child's life
Frank Furstenberg (University of Pennsylvania) (1976)	From 1966-68, 404 first-time pregnant women under 18 were interviewed in Baltimore. Follow-ups occured one, three and five years later. Classmates of adolescent mothers were interviewed at 3 and 5 years. Children of teenage mothers and their classmates were interviewed at 5-year follow-up. Preschool Inventory Test for school readiness and social-emotional development assessments were administered.	Intact two-parent families influenced favorably children's social and emotional development, partly because of economic advantage.
Josefina J. Card (American Institutes for Research) (1977)	Used TALENT Project data, extensive demographic, cognitive and socio-psychological data of nationwide sample of 375,000 high school students in 1960. Follow-ups at 1, 5 and 11 years after high school graduation (when participants were 19, 23 and 29 years old) checked progress of personal and professional lives.	Looking at educational, occupational, and social differences between children born to teenage mothers and those born to older mothers, Card found children of adolescents had lower cognitive development, were more likely to live in one-parent homes and more likely to bear children earlier.

Appendix B. (Continued)

Harriet Presser (University of Maryland) (1980)	Longitudinal study of New York City women having a first birth. Assessed demographic and sociological findings between teenage mothers and older mothers.	The child of a teenage mother is at relatively higher risk of becoming a teenage mother. 34% of the 16-to 19-year-old mothers who were married before the birth of the first child were separated from their husbands by the time the children were between the ages of 4 and 6 years old.
Jane Menken (Princeton University) and James McCarthy (Johns Hopkins University) (1979)	Focused on household contexts and the differences in family structure for children of teenage mothers and older mothers. Used 1973 National Survey of Family Growth (NSFG) sample of 9,797 women (3,856 black; 5,864 white; 77 other) between the ages of 16 and 44 raising a natural child.	Found that the younger the mother at the time of first birth, the greater the chance for the child to live in a one-parent home (up to the age of 8 years). Children born to young mothers were more likely to be born out-of-wedlock. 32% of first-born white children of teenage mothers lived in single-parent homes by age 2; and by age 8, the proportion had risen to 59%.

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