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ADOLESCENT PREGNANCIES IN MAINE: A DEMOGRAPHIC ANALYSIS¹

Richard A. Cook², Walter G. McIntire², and Rose-Marie C. Louten³

INTRODUCTION

Maine, along with the rest of the country, has experienced a steady decline in the number of live births. In 1960 there were 4,258,000 live births in the United States; with 237,000 (5.6%) in New England, and 23,000 (0.5%) in Maine. By 1973, the number of live births had decreased to 3,137,000, 156,000 (5.0%), and 16,000, (0.5%) in the United States, New England, and Maine, respectively (1).

In contrast, the proportion of total births to teenage mothers is increasing. Whereas in 1959 13.6% of American births were to teenage mothers, in 1971 it was 18.0%. From 1959 to 1974, the proportion of births to teenage mothers in Maine increased from 14.1% to 18.0% of total births (2).

Pregnancy among teenagers continues to be widespread and creates specific problems both for the young mother and society in general. Pregnancy for the teenager is often far more stressful than for the adult. Physiological, emotional, social, and economic problems are common. Most are still experiencing physical growth and have high nutritional requirements and often poor eating habits. The probability of bearing a low birth weight infant increases as a mother's age decreases, with concomitant increases, especially among unwed mothers, of neonatal death, poor infant development, mental retardation, cerebral palsy, and epilepsy (2, 3). The occurrence of such problems, if found in samples in Maine, would suggest that providing specialized care during the neonatal period be increased. Having to care for a child during the teenage years jeopardizes completion of secondary school requirements. Any successive pregnancies during the teen years often prevents the mother from continuing her education, may further deplete her nutritional reserves, and conceivably leads to poorer overall health.

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Information concerning teenage pregnancy in Maine is limited. Published data have been incomplete and fail to provide for adequately planning specific health and/or educational programs. This research was designed to examine data pertaining to fertility patterns of women 19 years of age and younger in Maine by county, by city, by age of mother, and by birth order of child. Data concerning children born to teenage mothers and incidences of low birth weight, illegitimacy, subsequent pregnancies, prenatal care, complications with pregnancy, congenital malformations, and educational services for mothers are reported separately (4).

METHODS

Records of all recorded births to teenage mothers in the State of Maine from 1972-74 were obtained from the State Office of Computer Services. Of the data available, only the number of births to mothers under age 20 had been published by the State Office of Vital Statistics, Department of Human Services. Thus, in this study, births were categorized by age of mother and birth order of child by county and city as well as the State level.

The coefficient of relative variation was used as an index to determine if statistically significant changes were occurring by county, or to determine if, for a particular characteristic, there were changes occurring among the counties that made the counties more homogeneous or more diverse with respect to each other. The index may take values of zero (complete homogeneity) to infinity (highest degree of variation). It is calculated as follows:

- 1) Find the mean, \bar{X} , of all scores.
- 2) Calculate the sum of the absolute values of all $(X - \bar{X})$.
- 3) The value obtained in 2) is divided by N; this = A_D .
- 4) $A_D / \bar{X} =$ Coefficient of Relative Variation.

RESULTS AND DISCUSSION

Total recorded births in the State decreased over the three year period, 1972 to 1974 (Table 1). There were 16,269 births in Maine in 1972; 15,730 in 1973; and 14,750 in 1974 (5,6,7). Total births to teenage mothers also decreased during that period. There were 3,152, 2,995, and 2,723 births to adolescent mothers in 1972, 1973, and 1974, respectively. Nationally, births to teenage mothers comprised 17% of total births in 1968 and 18% of total births in 1971 (8). In Maine, teenage mothers delivered 19.4% of children born in 1972, 19.0% in 1973, and 18.5% in

1974. Thus, over the three years, total births and proportion of total births to teenage mothers both decreased slightly in Maine and appeared to be similar to national trends.

Births by County

Total births to teenage mothers, by county, are shown in Table 1. The largest number of births generally occurred, as would be expected, in the most populated counties (Cumberland, York, Kennebec, and Penobscot) (9). With the exception of Lincoln county, all counties had fewer births to teenage mothers in 1974 than in 1972. Therefore, the trend for fewer births to teenage mothers has been maintained on the county level. The coefficients of relative variation for the number of births to teenage mothers were 0.6 in 1972, 0.6 in 1973, and 0.6 in 1974. These figures indicate that the counties were relatively homogeneous in terms of births to teenage mothers, and there were no relative changes over the three year period.

The largest towns or cities contained the majority of teenage pregnancies. In the following counties, one half or more of the teenage pregnancies occurred in the listed towns:

Androscoggin:	Lewiston, Auburn
Aroostook:	Caribou, Presque Isle, Limestone, Houlton
Cumberland:	Portland, South Portland, Westbrook, Brunswick
Franklin:	Farmington, Wilton, Phillips, Jay
Hancock:	Ellsworth, Bucksport, Bar Harbor
Kennebec:	Waterville, Augusta, Gardiner, Winslow
Knox:	Rockland, Camden, Thomaston
Lincoln:	Bristol, Waldoboro, Boothbay Harbor
Oxford:	Rumford, Norway, Paris, Mexico
Penobscot:	Bangor, Brewer, Old Town, Millinocket
Piscataquis:	Dover-Foxcroft, Milo
Sagadahoc:	Bath, Topsham
Somerset:	Skowhegan, Pittsfield, Madison, Fairfield
Waldo:	Belfast, Burnham, Winterport
Washington:	Calais, Machias, Lubec, Eastport, Baileyville
York:	Sanford, Biddeford, Saco, Kittery

Births by Age of Mother

In Table 2, the number of births to teenage mothers, by age, is presented for the three years combined. Data for mothers of ages 16 through 19 were listed separately by age but grouped for mothers aged 15 or younger due to the infrequency of births at the younger ages.

TABLE 1
Total Births to Teenage Mothers, by County, 1972-1974

County	1972			1973			1974			1972-1974		
	Total Births	Teen Births	(%) ¹	Total Births	Teen Births	(%)	Total Births	Teen Births	(%)	Total Births	Teen Births	(%)
Androscoggin	1475	276	(18.7)	1477	258	(17.5)	1479	244	(16.5)	4435	778	(17.5)
Aroostook	1707	330	(19.3)	1645	363	(22.1)	1459	262	(18.0)	4811	955	(19.8)
Cumberland	3031	515	(17.0)	2899	465	(16.0)	3409	430	(12.6)	9339	1410	(15.1)
Franklin	372	92	(24.7)	334	76	(22.8)	343	64	(18.7)	1049	232	(22.1)
Hancock	549	108	(19.7)	570	103	(18.1)	507	98	(19.3)	1626	309	(19.0)
Kennebec	1563	311	(19.9)	1475	281	(19.0)	1826	253	(13.8)	4864	845	(17.4)
Knox	476	106	(22.3)	442	110	(24.9)	495	77	(15.6)	1413	293	(20.7)
Lincoln	305	47	(15.4)	318	72	(22.6)	204	61	(29.9)	827	180	(21.8)
Oxford	654	145	(22.2)	623	139	(22.3)	489	126	(25.8)	1766	410	(23.2)
Penobscot	1913	366	(19.1)	1910	394	(20.6)	1982	339	(17.1)	5805	1099	(18.9)
Piscataquis	252	65	(25.6)	255	59	(23.1)	301	48	(15.9)	808	172	(21.3)
Sagadahoc	422	70	(16.6)	432	86	(19.9)	115	57	(49.6)	969	213	(22.0)
Somerset	672	158	(23.5)	666	152	(22.8)	377	155	(41.1)	1715	465	(27.1)
Waldo	439	113	(25.7)	396	82	(20.7)	148	88	(59.5)	983	283	(28.8)
Washington	492	117	(23.8)	501	126	(25.1)	389	113	(29.0)	1382	356	(25.8)
York	1947	333	(17.1)	1787	229	(12.8)	1227	308	(25.1)	4961	870	(17.5)
Maine Total	16269	3152	(19.4)	15730	2995	(19.0)	14750	2723	(18.5)	46749	8870	(19.0)

¹Per cent of total births as teenage births per county.

TABLE 2

Number of Births by Age of Mother as Percent of the Total Teenage Births Per County, 1972-1974

County	Age of Mother in Years									
	≤ 15		16		17		18		19	
	N	%	N	%	N	%	N	%	N	%
Androscoggin	32	4.1	77	9.9	161	20.7	234	30.1	275	35.4
Aroostook	33	3.5	75	7.8	179	18.7	274	28.7	394	41.3
Cumberland	72	5.1	149	10.6	268	19.0	413	29.3	508	36.0
Franklin	15	6.5	30	12.9	49	21.1	73	31.5	65	28.0
Hancock	12	3.9	35	11.3	62	20.1	91	29.4	110	35.6
Kennebec	47	5.6	102	12.1	183	21.7	239	28.3	274	32.4
Knox	11	3.8	38	13.0	49	16.7	99	33.8	96	32.8
Lincoln	7	3.9	15	8.3	45	25.0	46	25.6	67	37.2
Oxford	26	6.3	52	12.7	76	18.5	103	25.1	153	37.3
Penobscot	45	4.1	122	11.1	192	17.5	321	29.2	419	38.1
Piscataquis	9	5.2	20	11.6	30	17.4	52	30.2	61	35.5
Sagadahoc	6	2.8	22	10.3	50	23.5	62	29.1	73	34.3
Somerset	23	5.0	42	9.0	96	20.6	139	29.9	165	35.5
Waldo	13	4.6	33	11.7	52	18.4	86	30.4	99	35.0
Washington	20	5.6	53	14.9	68	19.1	101	28.4	114	32.0
York	38	4.4	92	10.6	166	19.1	234	26.9	340	39.1
Maine Total	409	4.6	957	10.8	1726	19.5	2567	28.9	3213	36.2

There were 409 infants born to mothers 15 years of age or younger during 1972, 1973, and 1974: these births comprised 4.6% of all births to teenage mothers during those three years. Cumberland, Kennebec, and Penobscot Counties had the largest actual numbers of births while Franklin, Oxford, Washington, and Kennebec Counties experienced the highest proportions of all births to this age group. The fifteen-year-old and younger mothers are the group with the greatest risk of experiencing complications with pregnancy and of having premature infants (2). At these young ages, the possibility is greater that there is a short interval between menarche and conception. A recent study in Maryland suggested that prematurity is correlated with the length of time between menarche and conception with the probability of prematurity greatest when the interval between first menstrual period and conception is shortest (10).

At the county level, births to mothers 15 or younger constituted from 2.8% to 6.5% of all births to teenage mothers. Of the 409 births reported, 80 were to girls less than age 15. The coefficients of relative variation were 0.3 for 1972, 0.3 for 1973, and 0.2 for 1974. In regard to the relative occurrence of births to mothers less than or equal to 15 years, the counties are homogeneous.

There were 957 infants born to mothers 16 years old during 1972, 1973, and 1974. These births represented 10.8% of all births to teenagers in Maine during those three years. Cumberland, Penobscot, and Kennebec Counties had the largest number of such births. The portion of teenage births to mothers 16 years of age ranged from a low of 7.8% in Aroostook County to a high of 14.9% in Washington County. In 1972, the coefficient of relative variation for this characteristic at the county level was 0.2 and remained 0.2 for 1973 and 1974.

There was a higher percentage of births to 17-year-old mothers than there was to mothers less than 17 years of age. The 1,726 births constituted 19.5% of all births to teenage mothers during the three years. Cumberland, Penobscot, and Kennebec Counties had the largest number of births, followed by Aroostook, York, and Androscoggin Counties. Seventeen-year-olds gave birth to more children than any other age group in Lincoln, Sagadahoc, and Kennebec Counties. The percentages ranged from 16.7% in Knox County to 25.0% in Lincoln County. The occurrence of births to 17-year-old mothers was relatively homogeneous in the counties; the coefficient of relative variation was 0.1 for each of the years: 1972, 1973, and 1974.

Births to mothers 17 and younger, represented 6.6% of births to mothers of all ages in Maine for 1972, 1973, and 1974. Mothers 17 and younger gave birth to 34.9% of the total children born to teenagers. One-third of these infants were born in Cumberland, Penobscot and Kennebec Counties. Births to these mothers represented the highest proportions of births to adolescents in Franklin, Washington, and Kennebec Counties (40.5%, 39.6%, and 39.3%, respectively) and the smallest percentage in Aroostook County (30.0%). These mothers are still of school-age and are in jeopardy of not completing high school. Subsequent pregnancies during the remaining teenage years are a probability, and, in fact, occur most often among teenagers who have left school.

There were 2,567 infants delivered to 18-year-old girls in 1972, 1973, and 1974. This represents 28.9% of births to teenage mothers in Maine during that period. More women became married at age 18 than at any other age (2). This obviously accounts for some of the pregnancies among 18- and 19-year-old girls. Also, it is probable that the majority of 18-year-old mothers are able to finish high school before giving birth. Over one-third (36.2%) of infants born to teenage mothers were born to 19-year-old girls (N=3213). In Aroostook County, births to 19-year-old mothers comprised the largest percentage of births to teenage mothers, while births to mothers less than or equal to 17 years of age comprised the smallest percentage. Thus, in Aroostook County, and York and Penobscot Counties as well, the majority of births to teenage mothers were born to older teenage girls. The opposite occurred in Franklin

County. In that county, girls 17 or younger gave birth to 40.5% of the infants born to teenagers: 18-year-olds - 31.5%; 19-year-olds - 28.0%.

The coefficients of relative variation for all counties for the years 1972-1974 were 0.1 for 18- and 19-year-old mothers. The counties were homogeneous, and there were no relative changes.

Birth Order

Nationally, approximately 78% of children born to adolescent mothers are first borns, and 22% are second or later borns (8). In Maine, 83.3% of all children born to teenage mothers were first borns (Table 3).

TABLE 3

Percent of all Births to Teenage Mothers That Were First Born by Age of Mother and County, 1972-1974

	Age of Mother in Years					All Ages 15-19 %
	≤ 15 %	16 %	17 %	18 %	19 %	
Androscoggin	96.8	94.8	89.4	85.0	73.4	83.3
Aroostook	100.0	96.0	88.8	86.1	76.9	84.1
Cumberland	100.0	94.0	91.4	81.8	75.2	83.5
Franklin	100.0	90.0	93.9	84.9	76.9	86.2
Hancock	100.0	94.3	93.6	81.3	69.0	81.6
Kennebec	100.0	95.1	94.0	82.8	73.4	84.6
Knox	100.0	97.4	91.8	75.8	67.7	79.8
Lincoln	100.0	93.3	91.1	82.6	73.1	82.8
Oxford	88.5	92.3	89.7	80.6	77.8	83.7
Penobscot	100.0	98.4	91.7	83.8	75.2	84.2
Piscataquis	100.0	100.0	73.3	82.7	77.0	82.0
Sagadahoc	100.0	100.0	82.0	79.0	82.2	83.6
Somerset	95.6	93.8	89.6	82.7	69.0	78.9
Waldo	100.0	100.0	84.6	80.2	74.8	82.3
Washington	100.0	94.3	89.7	83.2	74.6	84.3
York	100.0	89.1	89.8	78.6	75.6	81.6
Maine Total	98.8	94.9	90.3	82.4	74.7	83.3

Percentages of first borns ranged from 86.2% in Franklin County to 78.9% in Somerset County. Franklin, Kennebec, and Washington Counties contained the largest percentages of first born infants to teenage mothers. These three counties also had the highest percentage of births to mothers less than or equal to 17 years of age. Most births to fifteen- and sixteen-year-olds were first borns. All mothers of this age in Sagadahoc, Waldo, and Piscataquis Counties gave birth to first borns over the three year period.

Infants who were not first born comprised 16.7% of all births to adolescent mothers (4). Mothers as young as age 15 gave birth to non-first borns in Androscoggin, Oxford, and Somerset Counties. Stratification of birth order by county is presented in Table 4. Every county in Maine had teenagers experiencing their third pregnancy. A sixth, a fifth, and eight fourth pregnancies were also identified to teenagers in Maine during the three year period. Thus, it was not uncommon to find teenage mothers of two and even three infants throughout the state.

SUMMARY AND CONCLUSIONS

With reference to teenage pregnancies, the incidence in Maine does not differ significantly from national distributions. Approximately 18% of all infants were born to teenage mothers. There is some evidence that the percentage of births to teenage mothers may be decreasing in Maine. One must recognize the tentativeness of this finding as a three year period is not a sufficient length of time in which to positively identify such a trend. The counties of Maine were relatively homogeneous with respect to the incidence of adolescent pregnancies.

Stratification of data at the county and city levels are of value to professionals working in programs related to the welfare of pregnant adolescents. Health, nutrition, and education are specific areas of concern for these teenagers and programs dealing with these factors should be made available to as many individuals as possible.

The implications for practitioners in the medical, social, and mental health fields of large numbers of pregnancies to teenagers are numerous. First, one must consider that a teenage mother and her child each are individuals who are more likely than chance to require out of the ordinary assistance from society. Medical, nutritional, educational, mental health, legal, social service, and homemaking problems abound for such mothers and for their children.

The economic burden to individual families, communities, schools, and local and regional governmental agencies of such individuals is of everyday concern. For example, of all children born out of wedlock, it has been reported that at least 60% end up on welfare (11). In a related manner, and at a cost to our society that is difficult to assess, it has been found that teenaged parents (married or unmarried, male or female) are much more likely than their classmates to have their education truncated (12). Such childbearing has a more negative effect on young mothers than fathers, but both suffer dramatic educational setbacks. This, in turn, affects job level, job security, and job satisfaction and the socioeconomic environment in which subsequent children are raised. These young parents have more children than their age-mates and less stable marriages (12).

TABLE 4
Subsequent Pregnancies of Teenage Mothers, 1972-1974

County	1972			1973					1974			
	Pregnancy No.			Pregnancy No.					Pregnancy No.			
	Two	Three	Four	Two	Three	Four	Five	Six	Two	Three	Four	Five
Androscoggin	42	7	1	36	3	-	-	-	36	3	1	1
Aroostook	49	4	1	45	1	-	-	1	46	4	-	-
Cumberland	68	9	-	73	10	-	-	-	69	3	-	-
Franklin	15	-	-	7	1	-	-	-	9	-	-	-
Hancock	19	-	-	16	2	-	-	-	19	1	-	-
Kennebec	41	7	-	36	3	1	-	-	42	-	-	-
Knox	19	2	-	24	3	-	-	-	11	1	-	-
Lincoln	8	-	-	9	3	-	-	-	10	1	-	-
Oxford	18	2	-	26	1	-	-	-	18	2	-	-
Penobscot	55	10	-	46	4	-	-	-	53	5	-	-
Piscataquis	10	2	-	9	1	-	-	-	7	2	-	-
Sagadahoc	7	1	-	15	1	-	-	-	9	1	-	-
Somerset	29	-	1	21	5	1	-	-	25	4	1	-
Waldo	16	-	1	16	3	-	-	-	12	2	-	-
Washington	17	-	-	14	1	-	-	-	23	1	-	-
York	57	8	-	33	3	-	-	-	45	5	-	-
Maine Total	470	52	4	426	45	2	0	1	434	35	2	1

These are merely tip-of-the-iceberg costs to individuals and society of early pregnancies. With sexual activity among children apparently increasing and beginning earlier, it is clear that teenage pregnancy is a long term problem requiring planned programs of assistance and education in the areas of health and nutrition, child care, mental and physical health, and assorted social services. Maine is not different than the rest of the country. The data presented here reflect both the lack of adequate programs and the need for public policy planning relative to adolescent pregnancies.

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