

## 6 Fertility and Maternal and Child Health

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The most widely recognized indicator of the health status of a population is infant mortality. The reason for its importance is that it reflects a broad range of factors important to the health of a population. These include the general standard of living, the adequacy of nutrition, the health habits of the population, and the adequacy of medical care.

The purpose of this chapter is to compare the ethnic groups in Hawaii in regard to fertility, health habits and care during pregnancy and the outcome of pregnancy in terms of the health of the infant. The Native Hawaiian is known to have higher infant mortality than other major groups. Some understanding of the specific factors involved will be provided by the analysis in this chapter. The data for this chapter come from a variety of sources, including the Hawaii Abortion Study, the U.S. Census, and vital statistics from the Hawaii State Department of Health.

### FERTILITY AND REPRODUCTIVE EVENTS

The analysis of recent birth trends of persons of Hawaiian background reflects the changing population definition and composition of this unique ethnic group. Of the total 18,129 births recorded in the State of Hawaii in 1980, there were 4,004 births to persons of Hawaiian blood, or 22.1 percent of the total births. Refined fertility rates show a decline in births by Native Hawaiians that resembles the pattern of reduced fertility achieved in the State of Hawaii during the past decade.

Certain demographic characteristics of the Native Hawaiian population should be noted. As a young, expanding and heterogeneous population, this group has a balanced sex ratio and a lower age composition than the general population of the State. Its adherence to traditional cultural practices is multivariied, reflecting social change that results from high rates of intermarriage. These factors may contribute to higher fertility than may be found in other older and more

homogeneous groups like the Japanese and Chinese who demonstrate recent marked suppression of births.

**Table 6-1 Fertility by Ethnicity of Mother in Hawaii, 1970-1980**

	1970		1980	
	U.S. CENSUS	HEALTH SURVEY	U.S. CENSUS	HEALTH SURVEY
<b>Crude Birth Rate (per 1,000 persons)</b>				
Total Population	21.4	22.3	18.8	18.8
Native Hawaiian	50.9	26.8	34.7	22.7
Black	23.9	37.1	23.4	21.9
Chinese	10.5	17.7	12.5	11.7
Filipino	26.2	42.6	22.7	22.2
Japanese	13.5	14.8	11.1	11.0
Korean	16.5	25.0	22.5	24.3
Samoan	--	--	34.8	37.9
Caucasian	20.0	26.1	18.4	20.7
<b>General Fertility Rate (per 1,000 women)</b>				
Total Population	96.1	95.8	78.8	80.7
Native Hawaiian	221.7	129.5	142.7	91.9
Black	149.3	147.4	126.7	105.1
Chinese	50.4	82.7	53.7	46.2
Filipino	131.4	197.2	94.9	97.8
Japanese	58.3	63.1	50.2	52.2
Korean	67.7	85.2	69.3	71.5
Samoan	--	--	150.9	162.5
Caucasian	90.1	101.9	74.2	88.2

SOURCE: N

	1970		1980	
	U.S. CENSUS	HEALTH SURVEY	U.S. CENSUS	HEALTH SURVEY
<b>Total Fertility Rate (per 1,000 women)</b>				
Total Pop.	2728.5	2738.5	2091.5	2166.0
Native Hawaiian	6121.5	3658.0	3766.5	2543.5
Black	3505.5	4814.0	2620.5	2384.0
Chinese	1636.0	2551.0	1463.0	1321.0
Filipino	3787.0	5900.0	2625.5	2885.0
Japanese	1978.5	2147.0	1383.5	1552.0
Korean	2074.0	3415.0	1857.5	1886.0
Samoaan	--	--	4123.5	5200.0
Caucasian	2276.5	2595.5	1897.5	2271.0
<b>Child-Women Ratio (per 1,000 women in age group 15-44)</b>				
Total Population	414.3	427.7	338.3	324.7
Native Hawaiian	514.1	727.9	463.6	496.2
Black	797.7	445.5	620.5	781.5
Chinese	380.2	201.5	239.8	166.7
Filipino	586.0	416.1	394.7	394.5
Japanese	282.0	230.3	223.2	184.3
Korean	329.9	60.0	201.0	212.9
Samoaan	--	--	664.1	660.1
Caucasian	428.5	360.8	314.0	280.6

SOURCE: Nordyke (1987).

Determining the fertility rates for Native Hawaiians is problematic because of ambiguities in defining and obtaining a count of the population. A careful examination of 1970-1980 data in Table 6-1 reveals that the fertility rates varies, depending upon whether the population denominator used is from the United States Census or from the Health Surveillance Program of the Hawaii State Health Department. Rates that use figures from the United States Census, which counted only 118,251 Native Hawaiians in 1980, would be expected to be higher than calculations using figures from the State Health Survey, which estimated 175,909 Native Hawaiians at that time.

On the assumption that figures from the State Health Survey are more accurate, the crude birth rate of 22.7 births per 1,000 persons in the Native Hawaiian population in 1980 is higher than the State crude birth rate of 18.8. The general fertility rate and the total fertility rate for Native Hawaiians also exceed the State average. The number of children under 5 years of age per 1,000 women age 15-44 has dropped from 728 in 1970 to 496 in 1980, indicating some utilization of birth control practices.

However, looking at the 1980 Census figures, the differences for the various rates were much more pronounced, indicating that the more realistic fertility pattern may lie somewhere between these two sets of rates.

### VITAL INDICATORS FOR MATERNAL AND CHILD HEALTH

Table 6-2 is a summary table from a 1981 report (Gannaway, *et al.*, 1981) containing rates of eight vital indicators of maternal and child health of women. They are (1) illegitimacy ratio: the number of births to unmarried women per 1000 live births; (2) teenage birth rate: the number of births to females 13-17 years of age per 1000 13-17 year old females; (3) teenage pregnancy rate: the total number of live births, elective abortions, and standard fetal deaths to females 13-17 years of age per 1000 13-17 year old females; (4) late prenatal care rate: the number of births to mothers getting prenatal care after the first trimester of pregnancy per 1000 live births; (5) rate of births with no prenatal care: the number of births to mothers getting no prenatal care per 1000 live births; (6) LBW rate among single live births: the percentage of low birth weight babies (babies born weighing 2500 grams,

**Table 6-2 Rates of Eight Vital Indicators of Maternal and Child Health by Ethnicity of Women, State of Hawaii 1975-1979**

ETHNICITY OF WOMAN	VITAL INDICATORS								CONGENITAL ANOMALY RATES	INFANT MORTALITY RATES
	ILLEGI-TIMACY RATIOS	TEENAGE BIRTH RATES	TEENAGE PREG-NANCY RATES	LATE PRENATAL CARE RATES	RATES OF BIRTH WITH NO PRENATAL CARE	LBW RATES, SINGLE LIVE BIRHTS	CONGEN-ITAL ANOMALY RATES	INFANT MORTALITY RATES		
TOTAL	140.7	15.1	26.7	266.2	12.2	6.7	9.3	12.6		
CAUCASIAN	97.3	11.5	24.6	245.4	9.6	5.2	8.9	10.5		
JAPANESE	56.6	3.9	11.3	136.0	9.7	7.1	7.3	10.6		
HAWAIIAN/ PART-HAWAIIAN	284.3	34.5	51.0	331.5	16.0	7.3	10.6	13.0		
FILIPINO	118.2	27.8	45.0	294.9	10.0	9.1	10.1	12.0		
CHINESE	45.5	3.5	10.1	143.3	6.2	5.5	8.8	6.5		
KOREAN	53.0	8.2	18.9	264.4	11.3	5.9	10.6	10.9		
SAMOAN	229.1	60.8	82.8	534.5	40.9	3.0	9.7	10.3		

SOURCE: Gannaway, et al. (1981).

5 pounds 8 ounces, or less) among single live births; (7) congenital anomaly rate: the number of babies born with congenital malformations per 1000 live births; and (8) neonatal mortality rate: the number of deaths to infants under 28 days of age in a given year per 1000 live births in that year.

The data show that Native Hawaiians are a high-risk target population for maternal and child health programs. Late or no prenatal care rates among Native Hawaiian women are very high, suggesting they would benefit from more concerted outreach work. Also, Native Hawaiian teenagers have the highest illegitimacy ratio, as well as higher teenage pregnancy and birth rates, suggesting a need for family planning education and services. In addition, since Native Hawaiians rank highest in congenital anomaly rate and infant mortality rate, identification of specific risk factors in this group is necessary to plan special programs targeted to their needs.

**Table 6-3 Rates of Four Vital Indicators of Maternal and Child Health by Ethnicity of Woman, State of Hawaii, 1980-86.**

	VITAL INDICATORS			
	LATE PRENATAL CARE RATES	ILLEGI- TIMACY RATIOS	LBW RATES AMONG SINGLE LIVE BIRTHS	INFANT MORTALITY RATES
All Ethnicities	247.4	191.0	61.5	9.3
Caucasians	205.6	124.5	47.3	6.6
Japanese	130.1	85.3	60.0	7.3
Hawaiian/Pt. Haw.	325.0	386.6	65.9	14.1
Filipinos	266.3	176.6	89.2	8.8
Chinese	153.0	62.8	47.0	7.7
Others	247.4	191.0	61.5	9.3

SOURCE: Hawaii State Department of Health. *Statistical Report*, (annual) 1980-86.

Table 6-3 is an attempt to update these vital indicator rates from 1980 to 1986. Using the data in the State Department of Health's annual Statistical Reports, rates for four of the eight MCH vital indicators were calculated for comparison with Table 6-2. These four indicators show that the same high-risk patterns persist and Hawaiians/Part-Hawaiians continue to have higher rates for late prenatal care, illegitimacy, low birth weight, and infant mortality for the period 1980-1986.

The following data is from a 1982 study (Burch, 1984) which obtained vital records for the five years centered around 1980, 1975 and 1970. Statewide data show that Native Hawaiians have the highest rates per 1000 live births for three vital indicators for maternal and child health:

**Table 6-4 Infant Deaths and Abnormalities, 1970, 1975 and 1980, State of Hawaii.**

	CAU	FIL	NAT. HAWN	JAPAN
Birth Defects	9.4	11.2	11.4	8.1
Neonatal Deaths	9.1	9.8	10.9	8.3
Very Low Birth Weight Births	10.1	11.7	11.9	10.0

SOURCE: Burch, 1984.

In a 1985 report (Ibrahim, 1985), three major causes of infant deaths were studied: immaturity, SIDS (Sudden Infant Death Syndrome), and congenital anomalies. These major causes were then linked to other variables for analyses, including ethnicity and geographic areas. Findings show that Native Hawaiians have the highest (5.5 per 1,000) death rate from immaturity among the five major ethnic groups. Native Hawaiians also have the highest incidence of SIDS (1.5 per 1,000). Another finding is the high death rate from congenital anomalies in the island of Molokai, where more than 60% of the population are Native Hawaiians.

Based on these vital indicators, the general state of health of Native Hawaiian infants is shown to be worse than the other major ethnic groups living in the state of Hawaii.

### Implications

In addition to identifying target groups in need of services, these data can be used to evaluate the effectiveness of services which are expected to impact on the specific health indices such as incidence of teenage pregnancy or neonatal mortality. These data can also lead to more realistic planning by assisting planners to consider whether the services provided to obtain certain objectives are truly capable of doing so. For example, health services alone may not be capable of reducing the high incidence of low birth weight in Native Hawaiians.

The study of these vital indicators is not enough if it is confined to statistics only. Such study must also be accompanied by information on socioeconomic data, medical and health care facilities, personnel, programs and their allocation to the population. In looking into the data, consideration in the accuracy and adequacy of reporting and identification on causes of these negative vital indicators must also be taken into account.

The data as displayed represent a continuum of measures related to all phases of the reproductive cycle. Intuitively one feels that characteristic events of one phase of the life cycle must bear a relationship to the occurrence of characteristic events in another phase. A women's experience in family planning or in education for family life will relate to her experience during pregnancy and to its eventual outcome. Therefore, family planning, education and services must be provided which are easily available, accessible, and acceptable to Native Hawaiians.

## A SURVEY OF THE PREGNANCY PROCESS AND OUTCOMES

### Data Sources

An analysis of the pregnancy process and outcomes for women in Hawaii was possible from two data files which are linked by the



woman's age, name and ethnicity. The first source was a follow-up to the Hawaii Pregnancy, Birth Control and Abortion (HPBCA) Study, based on a panel of 815 women known to have had a pregnancy between 1969-74. They were interviewed in 1979, 1980 or 1981 about all pregnancies they had experienced during the previous decade. The second source was the state vital statistics records for the same period.<sup>1</sup>

### **Demographic Profile**

A majority of the women (71%) were born in the State of Hawaii with the exception of Caucasian women. Over one-half of the total sample were under the age of 25 and married (63%), and 9 percent were single. The women were well-educated (35% had some high school and 36% had obtained a college degree).

### **Sexual Behavior and First Conception**

Over 90% of the women had their first sexual experience by the age of 24. Fifteen percent of the women reported their age at first intercourse to be 15 years or younger, and 27% were at the ages of 16 and 17 years. Native Hawaiian and Caucasian women had the largest percentages who experienced their first sexual intercourse at the youngest age, while Filipino and Chinese/Japanese tended to delay intercourse until their twenties.

Most of the married women were not in the labor force at the time of their first conception. Caucasian teenagers were the only ethnic group to have experienced divorce, separation or remarriage.

The average age for a woman's partner at conception was between 25 and 29 years. Native Hawaiian women had the largest proportion of young male sexual partners, that is, 41% of the Native Hawaiian partners were under the age of 24 years; whereas, only 23% and 19% of Caucasian and Filipino partners, respectively, were of the same age.

The first conception was more likely to have been wanted than planned.<sup>2</sup> The older the woman's age at first birth the more likely her pregnancy was wanted and intended. The first conception for Native Hawaiian women tends to be unwanted and unintended and

occurs without the utilization of any regular contraceptive plan across all age groups. Caucasian women had the highest percentages of regular contraceptive use, both across age categories and compared to the other ethnic groups. The percentages were particularly high among Caucasian teenagers 17 years of age and younger.

### Socio-economic Indicators

Family socio-economic status were also studied in relation to pregnancy, based on parent's occupation and education, and husband's education, occupation, and employment status. Many of the women (35%) reported their fathers to be in blue collar occupations such as transport/laboring and farming. Approximately 40% of the women's mothers were housewives, another 20% were service workers. Only 7% of the mothers were in professional/ technical occupations, a proportion similar to the women's fathers. Over 70% of the women had parents with only elementary or high school education. Filipino parents were overrepresented (60%) in the elementary school group while Caucasian parents had the highest proportions with college or post-graduate degree.

Approximately 70% of the women had husbands who were employed in either full or part time jobs and only 3% were not employed or retired. Most of the husbands were in skilled labor or craft occupations, and had either a high school or college degree. Filipino husbands were the most likely to be employed and Caucasians were the least likely. However, Caucasian and Chinese/Japanese husbands were the most likely to be in professional/technical jobs and to have had a post-graduate education. Native Hawaiian and Filipino husbands tended to have blue collar jobs with low school education.

### Medical Family History

The following variables were examined for ethnic differentials: (a) chronic illness, (b) diabetes and, (c) allergies. The age of the women was controlled in the analysis.

Most of the women had no chronic health problems, diabetes, or allergies. Of those who did, Native Hawaiian and Caucasian women had the highest proportion who experienced chronic illness. There was a

positive relationship between allergies and the age of the woman. Native Hawaiians and Filipinos were more likely to be diabetics and to receive diabetic treatment than other ethnic groups. The percentage of Native Hawaiians who were diabetics increased with the age of the women. The largest percentage of Native Hawaiian women experienced the onset of diabetes at 30 years of age and over. (See Table 6-5.)

### Medical Condition During Pregnancy

Over 60% of the women who became pregnant did not experience toxemia or urinary tract infections. Native Hawaiian women were the most likely to develop toxemia and urinary tract infections while Filipino women were the least likely. There was a tendency for women in the youngest and oldest age groups to have the highest risk for these medical conditions during pregnancy.

### Pregnancy Care

Women aged 18 to 19 years and those over 30 years of age were more likely not to have obtained prenatal care. Within the youngest age group, Native Hawaiian women were more likely to be without prenatal care, the opposite was true for Caucasian and Filipino women.

Of the approximately 25% of the women who drank alcohol during their pregnancy, the percentage decreased only slightly over the trimesters. There are substantial ethnic differences in alcohol use. Caucasian and Native Hawaiian women were more likely to drink and the Filipino and Chinese/Japanese were the least likely. Native Hawaiians in the youngest and oldest age groups tended to consume more alcohol during their pregnancy. (See Table 6-6.)

Of the 20% who reported smoking during their pregnancy, Native Hawaiian women had substantially higher percentages in every age group for all trimesters. (See Table 6-7.)

### Pregnancy Outcome

Of the total sample, 59% of the women gave birth, 10% terminated their pregnancy through induced abortion. Filipino and

Table 6-5 Diabetes among a Sample of Child-Bearing Women in Hawaii, HPBCA Panel, 1969-1979

	ETHNIC GROUP								TOTAL NO.	PCT.
	CAUCASIAN NO.	PCT.	CHINESE/ JAPANESE NO.	PCT.	FILIPINO NO.	PCT.	NATIVE HAWAIIAN NO.	PCT.		
AGE OF DIABETES ONSET										
19 & UNDER	4	0.7	6	0.9	3	0.9	6	0.7	38	1.3
20 TO 24	4	0.7	--	--	7	2.1	20	2.4	37	1.2
25 TO 29	--	--	8	1.2	9	2.7	14	1.7	34	1.1
30 & OLDER	3	0.5	3	0.4	6	1.8	44	5.2	56	1.9
NOT DIABETIC	544	98.0	671	97.5	312	92.6	760	90.0	2816	94.5
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0	2981	100.0
DIABETES TREATMENT										
NOT NEEDED	539	97.1	671	97.5	312	92.6	769	91.1	2827	94.8
TREATED	16	2.9	17	2.5	25	7.4	75	8.9	154	5.2
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0	2981	100.0

Table 6-6 Alcohol Consumption among a Sample of Pregnant Women in Hawaii, HPBCA Panel, 1969-79

ALCOHOL CONSUMPTION	ETHNIC GROUP								TOTAL	
	CAUCASIAN	JAPANESE	FILIPINO	NATIVE HAWAIIAN	TOTAL	CAUCASIAN	JAPANESE	FILIPINO		NATIVE HAWAIIAN
	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.	NO.	PCT.
<b>FIRST TRIMESTER</b>										
DID NOT DRINK	138	35.7	263	56.2	160	74.4	261	49.8	1033	51.9
DID DRINK	113	29.2	75	16.0	33	15.3	162	30.9	466	23.4
PREG. TERMINATED	136	35.1	130	27.8	22	10.2	101	19.3	491	24.7
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0
<b>SECOND TRIMESTER</b>										
DID NOT DRINK	127	32.8	249	53.2	156	72.6	242	46.2	986	49.5
DID DRINK	101	26.1	60	12.8	25	11.6	128	24.4	369	18.5
PREG. TERMINATED	159	41.1	159	34.0	34	15.8	154	29.4	635	31.9
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0
<b>THIRD TRIMESTER</b>										
DID NOT DRINK	124	32.0	249	53.2	154	71.6	241	46.0	977	49.1
DID DRINK	96	24.8	56	12.0	24	11.2	112	21.4	338	17.0
PREG. TERMINATED	167	43.2	163	34.8	37	17.2	171	32.6	675	33.9
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0

Table 6-7 Smoking among a Sample of Pregnant Women in Hawaii, HPBCA Panel, 1969-79

SMOKING	ETHNIC GROUP													
	CAUCASIAN			JAPANESE			FILIPINO			NATIVE HAWAIIAN			TOTAL	
	NO.	PCT.		NO.	PCT.		NO.	PCT.		NO.	PCT.		NO.	PCT.
<b>FIRST TRIMESTER</b>														
DID NOT SMOKE	184	47.5		257	54.9		163	75.8		275	52.5		1064	53.5
DID SMOKE	67	17.3		82	17.5		30	14.0		150	28.6		440	22.1
PREG., TERMINATED	136	35.1		129	27.6		22	10.2		99	18.9		486	24.4
TOTAL	387	100.0		468	100.0		215	100.0		524	100.0		1990	100.0
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<b>SECOND TRIMESTER</b>														
DID NOT SMOKE	173	44.7		238	50.9		153	71.2		236	45.0		982	49.3
DID SMOKE	55	14.2		71	15.2		28	13.0		136	26.0		378	19.0
PREG., TERMINATED	159	41.1		159	34.0		34	15.8		152	29.0		630	31.7
TOTAL	387	100.0		468	100.0		215	100.0		524	100.0		1990	100.0
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<b>THIRD TRIMESTER</b>														
DID NOT SMOKE	171	44.2		235	50.2		150	69.8		228	43.5		960	48.2
DID SMOKE	50	12.9		70	15.0		28	13.0		127	24.2		360	18.1
PREG., TERMINATED	166	42.9		163	34.8		37	17.2		169	32.3		670	33.7
TOTAL	387	100.0		468	100.0		215	100.0		524	100.0		1990	100.0

Native Hawaiian women had higher percentages of births and Caucasian women had the highest percentages of abortions.

Native Hawaiian women had lower levels of education, perhaps in part as a result of a substantially earlier age at first birth than any of the other ethnic groups. Not only was the Native Hawaiian age-schedule earlier but so too was the timing of the second and third births compared to the Caucasian age-schedule. Of the first births that were teenage pregnancies, Native Hawaiian teenagers had a higher proportion of unwed mothers compared to the Filipino, Chinese/Japanese and Caucasian teenagers. This is important in light of the adverse economic and social consequences attached to early ages at first birth.

The majority of the women reported no labor and delivery complications. Of those women who experienced complications, Caucasians and Filipinos tended to report higher percentages in the three youngest age groups. Caucasian and Native Hawaiian women over 35 years of age tend to experience labor and delivery complications.

Infants born to women in the youngest and oldest age groups were more likely to experience medical problems compared to other age groups. Controlling for the ethnic differential of the mothers, we find that most infants were born within the normal birth weight range. However, Filipino and Native Hawaiian mothers had the highest percentages of births in which the infant was of a low birth weight.

Regardless of the pregnancy outcome, most women reported no subsequent effect upon their health, and this finding holds across the four ethnic groups. Most women reported no changes in their method or utilization of contraception after the pregnancy. The youngest age groups were more likely to have experienced an effect on their contraceptive use patterns and change in their method of contraception.

### Summary

The study found that the parents of Native Hawaiian and Filipino women were of lower occupational and educational status than the parents of Caucasian and Chinese/Japanese women. The majority of the husbands were similar to the women's parental socio-economic background.

Native Hawaiian women reported the earliest ages at first intercourse. They also tended to have earlier age schedules for the first, second, and third births compared to Caucasians, Filipinos and Chinese/Japanese. More important than the ethnic differences are the findings that Native Hawaiian women also tended to have lower educational attainment levels, higher percentages of unintended conceptions and irregular or non-use of contraception, and lower proportions of prenatal care compared to the other ethnic groups. The timing of the second birth may be due to such socio-economic factors as education and contraceptive use rather than ethnicity. Although most women neither drank or smoked during their pregnancy, significantly high percentages of Native Hawaiian mothers did both during the course of their pregnancies.

Native Hawaiian mothers are both more likely to be diabetic and to become diabetic when becoming older than any other ethnic group. This is a significant health care issue for Native Hawaiian women. An interesting research question related to diabetes is to ask if Native Hawaiian mothers tend to be "gestational" diabetics and, if so, whether this is related to the quality of their dietary habits.

The study suggests the need for maternal and child health programs for Native Hawaiian women, particularly among adolescent girls who have unwanted and unplanned conceptions; more education should be provided on the adverse effects of smoking and alcohol use on an unborn child and the mothers' health. There appears to be a gap in the utilization of contraception when we consider the proportion of Native Hawaiian women who do not wish to be pregnant but did so in the absence of any regular contraceptive program.



### NOTES

1. The HPBCA study was based on a stratified random sample of 815 women known to have had a pregnancy between 1969 and 1974, who were interviewed in 1979, 1980 or 1981 about all pregnancies they had experienced during the previous decade. The interview centered on a time line designed to capture events in the areas of marital and work life, smoking and drinking, fertility and health factors during 1969-1981. Separate instruments provided the general demographic and health inventory, and details for each pregnancy reported. The initial sampling was designed to reflect the ethnic and age distribution of pregnant women in the state in 1970-1974. Tables are available from the authors upon request.
2. The literature suggests that the reason why more women have an unplanned pregnancy is due to a shift in attitudes over time. An initially unplanned conception becomes more positively viewed as the delivery date approaches. The Hawaiian pattern of no preference for planning pregnancy and more unintended conceptions compared to either Japanese or Caucasian women, can perhaps be explained by the extended family and close knit social support system, the "Spirit of Ohana," which are inherent parts of the Hawaiian community. Childbirth in general and adolescent childbirth, in particular, do not carry the stigma which may be found within the Japanese and Caucasian communities.

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