

Fertility and Contraception in the Marshall Islands

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Data on fertility and contraception in Micronesian women in the Marshall Islands were collected during a women's health survey in 1985. High total fertility rates were found. The reproductive pattern of many Marshallese women is one that has been associated with adverse health consequences: pregnancies in teenagers and in women over 39 years, high parities of four or more births, and short birth intervals. The practice of breastfeeding is declining in younger women. The prevalence of contraceptive use is low, and the availability of reversible methods is limited. Most contraceptive nonusers would like to practice contraception, but are inhibited by the lack of information about family planning. It is suggested that more attention needs to be given to family planning services in the Marshall Islands, in particular to improving the availability of reversible methods of contraception and of information about family planning. Further research is also needed on how family planning services might best be organized to maximize participation by women and their partners who wish to use such services. (STUDIES IN FAMILY PLANNING 1988; 19, 3:179-185)

In the Marshall Islands, as in many island countries, the provision of health services is hampered considerably by financial constraints, the distance between islands and lack of adequate transport, and a lack of trained health personnel. In addition, religious beliefs and cultural attitudes, which encourage large families and discourage open discussion of sex-related matters, have inhibited the development of comprehensive family planning services, although many women express the desire for more information about family planning. Family planning services have usually been incorporated into postnatal clinics, which are underutilized, reach only women in district centers, and are unlikely to attract women who have not yet had children. A US-funded maternal and child health program, which included a family planning service, was started in the Marshall Islands in 1974, but has not been maintained.

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The Territorial Health Plan 1980-85, which included the Marshall Islands, stated that "the present orientation of the family planning services is toward spacing of children for the health of the mother and child rather than toward limitation of family size or prevention of unwanted births."¹ However, anecdotal evidence exists to suggest that "unplanned" pregnancies are a particular problem among teenage girls.

This paper reports data on fertility and contraception from the Marshall Islands Women's Health Survey, which took place during April and May 1985. The survey was part of a South Pacific Regional Women's Health Survey, a project of the South Pacific Commission. The objectives of the survey were to collect data on the prevalence of some common diseases and risk factors for disease in women, and on health-related practices and attitudes.

Background

The coral atolls of the Marshall Islands are situated in the western Pacific between 5 and 15 degrees north of the equator. The Marshallese are a distinct Micronesian cultural group, believed to have origins in Southeast Asia. The Marshallese have had contact with Europeans since the sixteenth century. The Marshalls were a German protectorate from 1886 until the outbreak of World War I, after which they became a League of Nations

mandate to Japan. In 1947 the Marshall Islands became part of the United Nations' Trust Territory of the Pacific Islands (TTPI), administered by the United States. From 1946 to 1962, atomic tests were carried out by the US in the northern atolls of Bikini and Enewetak. In March 1982, the Marshall Islands proclaimed itself a republic, but remains linked to the US by a compact of free association.²

The total population of the Marshall Islands was 30,873 according to the 1980 census, although there are doubts about the accuracy of this census. The annual rate of increase from 1973 to 1980 was 2.7 percent, making the Marshall Islands one of the fastest growing populations in the South Pacific region, along with French Polynesia (annual growth rate of 3 percent from 1977 to 1983), Solomon Islands (3.4 percent from 1970 to 1976), and Vanuatu (3.1 percent from 1967 to 1979).³ More than one-third of the population lives on Majuro atoll, where the administrative center is located. The population density of the main urban district is over 6,500 per square kilometer (sq. km.). Over 6,000 people were living on Kwajalein atoll in 1980, 93 percent of them on tiny Ebeye (0.3 sq. km.), which is the most densely populated island in the Pacific (over 20,000 people per sq. km.). The rest of the population live on the rural outer islands.

The main economic activity is the production of copra (dried coconut meat yielding coconut oil). Other major sources of income are wages paid to Marshallese workers at the US missile base on Kwajalein, rental charges for Kwajalein, and US grants. Employment opportunities are extremely limited outside the urban areas. Education is now compulsory and free. In 1973, about 90 percent of 6- to 16-year-olds and 50 percent of 17- to 19-year-olds were at school, but the adult illiteracy rate was estimated at about 25 percent. High schools are found only in the two urban areas, and there are no tertiary education facilities. The population is strongly religious: 90 percent are Protestant and 9 percent are Roman Catholic (1973).⁴

Population and Methods

The survey methods are described in detail in the report.⁵ Random community samples of women aged 15 to 59 years were selected from the most urbanized area of Majuro atoll (Jarej-Uliga-Delap district), and from Ebeye Island in Kwajalein atoll. The sampling unit was the household. Using estimates from the 1980 census of the number of eligible women per household unit, and anticipating a response rate of 80 percent, the number of household units to be sampled was estimated. The sampling fraction corresponded to about one-third of households in Majuro and one-half in Ebeye. Once sampling began, however, it was evident that the number of eligible women per household was higher than expected,

and the sampling fraction had to be modified to about one-quarter of households in Majuro and one-third in Ebeye.

In each area, household units occupied by Marshallese families were sampled systematically and tagged. The selected houses were visited within a few days of tagging by the household survey team. A questionnaire was administered to collect information on the age and sex of all permanent household occupants, recent illnesses and deaths in the household, and living conditions. Data on household occupants were used as a base for calculating response rates. All women aged 15 to 59 years inclusive were recruited to attend the health survey the next day. Transport from home to the survey site was provided to most women.

The rural outer islands of Wotje and Ailinglaplap were chosen because they were typical and accessible. As the populations were small in these outer islands, all households were visited and all eligible women were recruited.

At the survey site, questionnaires were administered to participants by Marshallese women. Information was collected on maternity history, family planning practices, menstrual problems, and other health problems. A detailed physical and gynecological examination was performed.

Results

A total of 1,419 women were interviewed during the survey. In Table 1, the study samples are compared with the 1980 census population. The age distribution of the sample in Majuro was similar to that of the 1980 census population. Ebeye had a smaller proportion of 15-29-year-old women and a larger proportion in the 30-39-year age group than did the 1980 census population. The age structures of the study samples on Wotje and Ailinglaplap were different from those of the urban areas. The age distributions from the 1980 census were unavailable for these islands, but as all eligible women were recruited, and response rates were high, the study samples are likely to be representative.

The response to the survey (proportion of recruited women who participated in the survey) was satisfactory in all four locations. In Majuro, the response rate was 79 percent (613 respondents of 774 recruited). The lowest response rate (69 percent) was in the 15-19-year age group, mainly because some high school students were not permitted to leave class to participate in the survey. The highest response rate was in the 45-49-year age group. The response rate in Ebeye was 90 percent (621 respondents of a recruited 693), with the lowest rates in the 15-19- and 55-59-year age groups and the highest in the 40-44-year age group. The response rate was higher in Ebeye than in Majuro probably because Ebeye is a

Table 1 Comparison of 1985 study samples with 1980 census population age distribution, and response rates, Marshall Islands

Age group	1980 census population (%)	Respondents													
		Majuro				Ebeye				Ailinglaplap				Wotje	
		N	Relative frequency (%)	Response rate (%)	N	Relative frequency (%)	Response rate (%)	N	Relative frequency (%)	Response rate (%)	N	Relative frequency (%)	Response rate (%)		
15-19	22.4	118	19.3	68.6	80	12.9	73.4	15	13.4	62.5	12	16.4	85.7		
20-24	20.3	115	18.8	77.2	138	22.2	90.8	15	13.4	83.3	21	28.8	116.7		
25-29	15.9	110	17.9	77.5	99	15.9	93.4	25	22.3	92.6	7	9.6	77.8		
30-34	12.5	86	14.0	86.0	102	16.4	96.2	26	23.2	86.7	8	11.0	114.3		
35-39	7.8	56	9.1	77.8	79	12.7	94.0	12	10.7	120.0	10	13.7	71.4		
40-44	5.6	39	6.4	97.5	45	7.2	102.3	6	5.4	75.0	4	5.5	133.3		
45-49	5.9	33	5.4	103.1	31	5.0	93.9	5	4.5	166.7	6	8.2	100.0		
50-54	4.8	27	4.4	93.1	23	3.7	95.8	3	2.7	75.0	1	1.4	100.0		
55-59	4.9	29	4.7	80.6	24	3.9	75.0	5	4.5	100.0	4	5.5	100.0		
Total	100.1	613	100.0	79.2	621	100.0	89.6	112	100.0	86.8	73	100.0	96.1		

Note: Denominator for total response rates is number of women invited to attend.

smaller island and everyone lived within easy walking distance of the hospital where the survey was held. In Ailinglaplap, the response rate was 87 percent (112 respondents of a recruited 129). Again, the lowest response was in the youngest age group. In Wotje, the response rate was 96 percent (73 respondents of 76 recruited). The lowest response rate was in the 35-39-year age group, but this is likely to have arisen because women eligible for the health survey were not always present during the household survey, and ages given by the person who answered the household questionnaire were sometimes incorrect.

Most women, except in the 15-19-year age group, were married or in stable union: 73 percent in Majuro, 79 percent in Ebeye, and 80 percent in the outer island group. In the 15-19-year age group, 23 percent of women in Majuro, 33 percent in Ebeye, and 59 percent in the outer islands were married or in stable union. Few women had paid employment: 19 percent in Majuro, 15 percent in Ebeye, and 5 percent in the outer islands.

Fertility

The total fertility rate (TFR) is defined as the number of children a woman can expect to have by age 49 if she experiences the current age-specific fertility rates. TFRs were calculated for the five-year period 1980-84, using data on year of live birth (from maternity histories) and mother's age at birth (calculated by subtracting from mother's age at interview). The TFR was 6.0 children per woman in Majuro, 7.4 children per woman in Ebeye, and 9.4 children per woman in the outer island group.

In Majuro, 77 percent of women, and in Ebeye, 84 percent had been pregnant at least once in their lives. The highest proportion (92 percent) was in the outer island group, where in most age groups all women had been pregnant at some time in their lives. Even in the youngest age group in Ailinglaplap and Wotje, more than half of the women had been pregnant, compared with 25 percent in Majuro and 31 percent in Ebeye. When

standardized to the age distribution of the total study sample, the proportions were 79 percent in Majuro, 83 percent in Ebeye, and 91 percent in the outer islands.

The mean number of live births per woman is given and compared with 1980 census figures in Table 2. The results were similar to the 1980 census, except in the oldest age group where the survey figures were higher. Under-reporting of births may be higher in the census data. The age-standardized mean number of live births per woman was 3.5 in Majuro, 3.9 in Ebeye, and 4.5 in the outer island group. The inter-island difference was statistically significant ($p < .01$). Women who had a higher educational level or who were in paid employment had significantly fewer live births.

As exact dates of birth were not recorded, it is not possible to calculate accurate birth intervals. Also, to avoid bias from under-reporting of births further in the past, data for births in 1984 only are presented. The data in Table 3 on the year of birth for births immediately preceding the 1984 birth give an indication of the birth interval. One-quarter of 1984 births in Majuro and Ebeye, and a slightly higher proportion in the outer island group, were preceded by a birth in 1983, that is, an interval of

Table 2 Mean number of live births per woman by age, and comparison with 1980 census figures, Marshall Islands, 1985

Age group	Majuro		Ebeye		Ailinglaplap and Wotje		1980 Census Mean
	Mean	(sd)	Mean	(sd)	Mean	(sd)	
15-19	.30	(.63)	.35	(.60)	.56	(.64)	0.37
20-24	1.66	(1.56)	1.83	(1.35)	2.44	(1.30)	1.85
25-29	3.33	(1.96)	3.53	(1.98)	4.09	(1.80)	3.46
30-34	4.98	(2.33)	5.26	(2.51)	6.06	(2.37)	5.11
35-39	5.36	(3.19)	6.30	(3.00)	7.64	(3.50)	6.62
40-44	7.10	(3.71)	8.13	(3.31)	8.10	(3.73)	
45-49	7.82	(3.33)	8.54	(3.29)	8.64	(4.50)	6.75
All ages	3.34	(3.21)	3.99	(3.38)	4.56	(3.53)	—
Age standardized ^a	3.50	—	3.86	—	4.47	—	—

Note: sd = standard deviation.

^aBy analysis of variance with age as covariate.

Table 3 Year of preceding live birth for live births in 1984, Marshall Islands

Variable	Majuro	Ebeye	Ailinglaplap and Wotje
Number of live births in 1984	108	171	52
Year of preceding live birth	Percent of 1984 live births		
No previous births	18.5	17.0	11.5
1983	25.0	25.2	28.9
1982	29.6	31.0	34.6
1981	15.7	9.9	13.5
1980 or earlier	11.1	17.0	11.5

less than two years. Some of the 1982 births may also have occurred less than two years prior to the 1984 birth.

Breastfeeding Practices

Information on breastfeeding practices is given in Table 4. The proportion of women who breastfed their last child was 95 percent in Majuro, 92 percent in Ebeye, and 98 percent in the outer island group. The median duration of breastfeeding was 12.0 months in Majuro, 11.0 months in Ebeye, and 12.0 months in the outer island group. Duration of breastfeeding tended to be shorter in the younger age groups, but this is likely to be biased by the high proportion currently breastfeeding. Neither education nor employment had an independent significant effect on the prevalence or duration of breastfeeding,

Table 4 Breastfeeding practices by age, Marshall Islands, 1985

Location and age group	Women with one or more live births (N)	Currently breast-feeding (%)	Breastfed last child (%)	Duration of breastfeeding of last child* in months (median)
Majuro				
15-19	25	44.0	88.0	12.0
20-24	87	40.2	96.6	9.0
25-29	99	32.2	96.0	12.0
30-34	85	28.2	92.9	12.0
35-39	50	18.0	96.0	12.0
40-44	35	5.7	97.1	13.0
45-49	31	—	93.5	14.0
All ages	412	27.4	94.9	12.0
Ebeye				
15-19	23	65.2	87.0	7.0
20-24	112	34.8	92.0	8.0
25-29	90	45.6	93.3	8.0
30-34	99	33.3	92.9	12.0
35-39	77	20.8	93.5	7.0
40-44	44	11.4	90.9	12.0
45-49	31	6.5	87.1	12.0
All ages	476	31.7	92.0	11.0
Ailinglaplap and Wotje				
15-19	13	53.8	100.0	5.0
20-24	34	61.8	97.1	10.5
25-29	31	41.9	100.0	12.0
30-34	34	47.1	100.0	12.0
35-39	22	45.5	95.5	12.0
40-44	10	10.0	90.0	12.0
45-49	10	10.0	100.0	12.5
All ages	154	44.8	98.1	12.0

*Excludes women currently breastfeeding.

but women with higher levels of education and in paid employment breastfed for a shorter time.

Practice of Contraception

The proportion of women currently practicing contraception is presented by age group and location in Table 5. About one-quarter of women were practicing contraception in each location. Few young women, aged 15-24 years, were practicing contraception. A higher rate of contraceptive use was indicated in the youngest age groups (15-24 years) in the outer island group than in Majuro and Ebeye; this was because of the higher proportion of outer island women who said they used breastfeeding as a method of contraception. The highest prevalence of contraceptive use was in women aged 30-44 years. When women who were not at risk of pregnancy (those currently pregnant, postmenopausal, infertile, premenarchal, sexually inactive, or who had had hysterectomies) were excluded, about one-third of the remaining fecund women were currently practicing contraception.

The majority of contraceptive users were married or in stable union. Never-married women accounted for 10 percent of contraceptive users in Majuro, 8 percent in Ebeye, and only 4 percent in the outer island group. Women in paid employment were more likely to practice contraception, although the differences in prevalence of contraceptive use were statistically significant ($p < .001$) in the Majuro group only. Women in Majuro and Ebeye who had finished high school were more likely to practice contraception than those who had not, but the differences were not statistically significant.

The methods of contraception used are given in Table 6. In all three locations, the most common method was tubal ligation. The second most common method was the oral contraceptive in Majuro, the rhythm method in Ebeye, and breastfeeding in the outer island group. Oral contraceptives were used by 13 percent of women in Majuro, 9 percent in Ebeye, and 2 percent in the outer island group. The Billings' or rhythm methods were used

Table 5 Contraceptive use by age in all women aged 15 to 49 years, Marshall Islands, 1985

Age Group	Contraceptive use					
	Majuro		Ebeye		Ailinglaplap and Wotje	
	N	Current users (%)	N	Current users (%)	N	Current users (%)
15-19	118	4.2	80	5.0	27	11.1
20-24	115	11.3	138	14.5	36	27.8
25-29	110	37.3	99	30.3	32	21.9
30-34	86	45.3	102	34.3	34	41.2
35-39	56	48.2	79	45.6	22	27.3
40-44	39	43.6	45	46.7	10	20.0
45-49	33	39.4	31	22.6	11	36.4
All ages	557	27.9	574	26.7	172	26.7