HISTORIC FERTILITY PATTERNS IN A NORTHERN ONTARIO

OJIBWA COMMUNITY: THE FORT HOPE BAND

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Cet article examine le problème de la fertilité des femmes de la nation odjibwée inscrites comme membres de la bande indienne de Fort Hope. Il s'agit du groupe de celles qui avaient contracté mariage dans la période entre 1930 et 1944. La présente étude possède un caractère inhabituel en ce que les données utilises aux fins de l'enquête sur les modes de reproduction du groupe sont presque exclusivement extraites de listes annuelles d'avant le traité de 1960. On laisse entendre que les relevés du gouvernement canadien concernant les populations autochtones seraient plus utiles qu'on le pensait pour l'étude des modèles de démographie historique.

This paper describes the fertility patterns of a cohort of Ojibwa women who were registered members of the Fort Hope Indian Band and who married in the late contact traditional period between 1930 and 1944. The study on which the paper is based is unusual in that data used for reconstructing the cohort's reproductive patterns are derived almost exclusively from pre-1960 treaty annuity lists. It is suggested that Canadian government records of native populations may be more useful for studying historic demographic patterns than was previously supposed.

INTRODUCTION

Research into the historic demography of northern Algonkian populations is hampered by a lack of empirical data. Archaeological information on boreal forest populations is scant (Sieciechowicz 1982), and discussions of demographic parameters in ethnographic studies tend to be scattered, fragmentary, and organized around divergent research questions (see Dunning 1959a; Rogers 1962;

Taylor 1972; Young 1979). The situation has developed, in part, out of the general reluctance of anthropologists to collect demographic information (Morrill and Dyke 1980), and from misgivings about the information that has been collected (Turnbull 1972; Salzano 1972; Hurlich 1983). Reports that Canadian government records of vital events for native people are unreliable prior to 1960 (Romaniuk and Piché 1972; Piché and George 1973) may also have discouraged attempts to reconstruct the past demographic patterns of Algonkian peoples.

This paper contributes to the sparse demographic literature on historic northern Algonkian populations by describing the fertility experience of a cohort of Ojibwa women who were registered members of the Fort Hope Band and who married in the late contact-traditional period between 1930 and 1944. The study is unusual in that data used to reconstruct the cohort's reproductive patterns are derived almost exclusively from pre-1960 treaty annuity lists. The main thrust of this paper is to suggest that Canadian government records of native populations may be more useful for studying historic demographic patterns than was previously supposed.

THE POPULATION

The Fort Hope Band is a small, isolated, Ojibwa-speaking community living in the boreal forest region of northern Ontario (latitude 51.8o, longitude 86o; see Map 1). From about 1900 to 1950, band members lived in contact-traditional base communities as a loose confederation of seminomadic hunters, trappers, fishermen, and gatherers (Taylor 1972). The gradual transformation into permanent settlements began after World War II and coincided with the decline of the fur trade and the extension of government services to native people (Driben and Trudeau 1983). Demographic information, available for isolated points in time, indicates that the band grew slowly from about 475 people at the time of the signing of Treaty Nine in 1905 to 800 people in 1950. Previous research has shown that the development of permanent settlements was accompanied by the demographic transition from high birth and death rates from 1950 to 1964, to moderate birth and low death rates from 1965 onward (Sawchuk, Herring, and Driben 1981).

MATERIALS AND METHODS

Treaty annuity lists for the Fort Hope Band, which are held by the Membership Section of the Department of Indian Affairs and Northern Development in Ottawa, were collected in 1975. Vital events information contained in these lists was used to identify a cohort of women who entered into a first marital union between

1930 and 1944. Using standard record linkage methodology (Wrigley 1966), all reports of births, deaths, marriages, remarriages, transfers to other bands, and enfranchisements were compiled for each woman using names and family registration numbers. In this way, a life history of vital events was produced for the eighty-four Fort Hope women who married between 1930 and 1944, and for their biological families.

The use of record linkage techniques to construct historical demographic data sets improves the accuracy of information on the study population (Drake 1972). By prospectively linking vital events for the Fort Hope band and creating biological family histories, a number of errors were detected in the records that might otherwise have gone unidentified. Late registrations of births and deaths, missing birth dates, multiple marriages, and double entries were corrected. In this way, some of the known sources of distortion that plague aggregate studies based on government records were reduced (see Romaniuk and Piché 1972; Piché and George 1973; Kunitz 1974).

Of the original sample of 84 women, eight were lost to observation through enfranchisement or transfer to other bands, and are not reported on here. Another 26 women were excluded either because they lacked a date of birth, or because they failed to survive to age 45. Thus, it was necessary to discard about one-third of the original cohort in order to derive the study sample of 50 women.

Information on the reproductive histories of these women was entered into and processed by the University of Toronto IBM-360 mainframe computer via Statistical Package for the Social Sciences (SPSS) computer programs (Nie, Hull, Jenkins, Steinbrenner, and Bent 1975). Age-specific and total fertility rates were calculated according to the following formulae (Howell 1979:124):

(1) Age Specific Fertility (ASF) = f_i/risk

   Where: f_i = number of births per five-year age interval

   risk = number of women in the sample X 5

(2) Total Fertility (TF) = sum of ASF X 5

The accuracy of the total fertility rate, and, hence, the quality of information upon which it is based, was assessed via the United Nations Test for Underreporting (United Nations 1967:31)[1]. Other standard fertility measures generated for the Fort Hope Band were the mean age of mothers at first birth, the mean age of mothers at last birth, the mean length of the reproductive period,

and the mean birth space. The infant mortality rate per one thousand live births was also determined for the cohort.

Statistical testing of the findings was accomplished using the G statistic, a log-linear test for homogeneity (Sokal and Rohlf 1979). These tests were carried out using SYSTAT (Wilkinson 1986) on an IBM personal computer.

RESULTS

The preliminary results indicated that there were problems with the treaty annuity data (Table 1). First, age-specific fertility failed to peak in the 20-24 or 25-29 age groups as expected for North American Indian populations of this period (see Romaniuk and Piché 1972; Piché and George 1973; Kunitz 1974). Second, when the age-specific fertility data were subjected to the United Nations Test for Underreporting, these data yielded a higher observed than expected total fertility (TF). However, the rates should be very similar, or the expected TF should exceed the observed TF. In the 1930-1944 marriage cohort, not only did the observed TF of 7.7 exceed the expected TF of 6.1, but it did so by a wide margin of 1.6 live births per woman. Even when the effects of the small sample of births was reduced by redefining P_3 as the mean cumulative births between ages 25-30, the expected TF (7.2) remained lower than the observed TF (7.7).

To investigate time differences in the quality of information, the cohort was subdivided into two groups: (1) women who married between 1930 and 1937 (n=27); and (2) women who married between 1938 and 1944 (n=23). Age-specific fertility rates, observed and expected total fertility, and infant mortality rates were compared between these two series of women (see Tables 2 and 2a). This analysis revealed that most of the problems in the full fifteen year cohort stemmed from women who married between 1930 and 1937.

For the women who married between 1930 and 1937, the treaty annuity lists generate a late fertility peak in the 30-34 and 35-39 age groups, rather than the expected peak in the 20-24 and 25-29 age groups (see Table 2). The United Nations Test for Underreporting shows that the expected TF (7.9) continued to exceed the observed TF (6.5). As Table 3 indicates, infant mortality rates were low at 37.7 per 1000 live births, which was well below the very high levels of infant mortality (136 to 200/1000) expected for this time period (see Latulippe-Sakamoto 1971; Sawchuk, et al. 1981).

Although a small degree of underreporting was also found in the 1938 to 1944 marriage cohort, this was substantially less than in the previous cohort. The fertility peak for this cohort was more

in line with expectations, occurring in the 25-29 age group (see Table 2a). The United Nations Test for Underreporting also produced more satisfactory results with an expected TF of 8.0, which exceeded the observed TF of 7.5. Moreover, the infant mortality rate of 145/1000 live births was closer to the expected very high values. Indeed, the disparity in infant death rates between the two cohorts was highly significant ($p < 0.001$), and was clearly a major factor in the underreporting inherent in the 1930-1937 cohort.

In view of the deviations introduced by the women who married between 1930 and 1937, the 27 women making up this cohort were eliminated from the study. Using only the more reliable data for the 1938 to 1944 cohort, a number of standard fertility measures were then generated for the Fort Hope Band (see Table 4).

As Table 4 demonstrates, Fort Hope women who began reproducing in the late contact-traditional period bore, on average, 7.5 children. These births occurred at 27.4 month intervals from the time a woman began reproducing at about age 21.5, until she ceased bearing children at about the age of 38.6 years of age. Fertility peaked in the 25-29 age group which, according to DeJong (1972), is characteristic of a developed nation. Given the probability of underreporting in the early age intervals of the cohort, the maximum age-specific fertility rate probably occurred earlier.

DISCUSSION

The results of this analysis should be viewed with caution owing to the small number of women upon which they are based (n=23). The findings reveal, however, that the total fertility rate of 7.5 live births per woman in the Fort Hope 1938-1944 marriage cohort falls midway between the low value of 4.7 for the Dobe !Kung (Howell 1979) and the high value of 10.2 for the Hutterites (Eaton and Mayer 1953). Given the results of the United Nations Test, TF probably approached 8.0, the upper limit suggested by Howell (1976:33) for well-nourished hunting and gathering groups.

Other features of the reproductive pattern of the Fort Hope 1938-1944 cohort include a relatively late mean age at first birth of 21.5, and a relatively long mean reproductive period of 17.1 years, with the last birth occurring around age 39. Like the Hutterites, the Fort Hope Ojibwa women appear to have been fertile for practically their entire reproductive period, and to have borne a child about every two years.

When the Fort Hope pattern was compared to those of other northern Algonkian and Athapascan groups (Table 5), the fertility

measures of these groups proved to be remarkably similar (see Piché and Romaniuk 1968; Sawchuk 1972; Roth 1981). The birth of a first child between the ages of 20 and 22, an average of seven to eight children, and a seventeen to nineteen year reproductive span may represent a widespread, contact-traditional fertility pattern.

Perhaps of greater significance, however, is that the findings of this study were generated from information contained in pre-1960 treaty annuity lists. While it is evident that the quality of the records is not uniform, this study has demonstrated that at least for the Fort Hope Indian Band, the 1940s mark the beginning of greater reliability in the treaty annuity lists.

Improved record keeping during this period stems, in large measure, from administrative and historic processes that occurred in northern Ontario. Much of the improvement in record keeping can be attributed to a statistically-significant increase in the number of infant deaths recorded for the later cohort. However, other improvements in record keeping also occurred at about the same time. For example, it became customary to record the names of individuals who were born, died, or were married. Previously, only a cryptic "boy born" or "girl married" accompanied the family registration number. The inclusion of given names facilitated the cross-referencing of deaths or marriages to the correct individual. Furthermore, the 1952 treaty annuity list which followed upon the heels of the new 1951 Indian Act, included the names and birth dates of the living members of the biological families. This filled in many of the gaps and clarified confused entries in the Fort Hope records. As the reporting of infant deaths and other improvements in record keeping occurred, the enumeration of births also became more reliable. Thus, fertility estimates for the 1938-1944 cohort were based on a more accurate reflection of the total number of children born.

The improvement in the Fort Hope records in the 1940s was not a random occurrence, and was closely tied to the shift from the preadministrative to the postadministrative era in the region (cf. Brody 1977). This improvement coincided with the expansion of Canadian government involvement in the lives of native people of northern Ontario (Dunning 1959b), and in the lives of the Fort Hope people in particular (Taylor 1972). Increasing numbers of non-native specialists living in native communities provided an opportunity to keep closer track of vital events. A case in point is the establishment of a nursing station at Lansdowne House in 1946 as a result of the reorganization of native health services under the Department of National Health and Welfare in 1945 (Graham-Cumming 1967). The presence of a full-time nurse undoubtedly meant that there was greater administrative awareness of births and deaths in the Fort Hope Band.

The development of permanent settlements and the demise of the contact traditional lifestyle were inextricably entwined with these administrative changes. Since under-enumeration of births, deaths, and marriages is likely to occur when populations are mobile, even for relatively short periods of time (Levine 1976; Pitkanen 1977; Wrigley 1978), the trend toward increased sedentism and social nucleation in the 1950s also led to more accurate recording of vital events in the band. As a result of these interacting trends, the quality and representativeness of government records increased[2].

CONCLUSIONS

The most important finding of this study is that, under certain conditions, it may be possible to estimate demographic parameters for native Canadian populations from pre-1960 treaty annuity lists. Although the lower limit for the Fort Hope Band appears to be around 1940, the quality of record keeping undoubtedly varied widely and it may be possible to push this horizon further back for other groups. Significant influences on the quality of government records for the Fort Hope people proved to be the extent of the involvement of Canadian government and biomedical institutions in the daily life of the band, and the degree of the band's mobility.

In addition, the reproductive pattern of Fort Hope women who married between 1938 and 1944 fits well with the available evidence for other northern Algonkian and Athapascan groups. Large families of seven to nine children, with births occurring about every two years between the ages of 20 and 40, appear to have prevailed among women who began to reproduce in the contact-traditional period. While it is premature to suggest that fertility patterns in northern North American native groups may have been relatively homogeneous during this period, further studies of this nature will help to confirm or reject such speculation.

Finally, exclusive reliance on any one set of records imposes severe limitations on the accuracy of demographic estimates. This point argues strongly for the collection of as many sets of records as possible for a population. Record linking of information contained in oral histories, parish records, and government records will inevitably produce an increasingly sound basis for demographic reconstructions of northern Algonkian populations than will dependence on only one source.

NOTES

1. The method uses the fertility rates of women in the 20-24 and 25-29 age categories to estimate completed fertility at 45-59 according to the formula:

$$TF = (P_3)2/P_2$$

Where: TF = Total Fertility Rate

P_3 = Mean Parity at 25-29

P_2 = Mean Parity at 20-24

The observed fertility rate is then compared to the expected total fertility rate. The test assumes that fertility has been constant in the recent past; that the age pattern of fertility conforms to the model of non-contraceptive populations; that there is no fertility bias associated with maternal survivorship; and that migration has not substantially affected reported fertility histories.

The first three assumptions are likely to be met by the data, given that Canadian Indian populations have been characterized as stable or quasi-stable (Romaniuk and Piché 1972) and noncontraceptive (Romaniuk 1974) up to 1960. However, the demographic pattern of seasonal dispersion and high geographic mobility throughout the subarctic during the contact-traditional period (Dunning 1959:63; Hallowell 1955:119; Rogers 1963:71) may preclude fulfillment of the migration assumption.

2. Sieciechowicz (1982:112) criticizes population estimates derived from treaty annuity lists. On the other hand, she also suggests (1982:210) that the administrative units represented by treaty annuity lists have come to coincide with the community structure of native groups over time.

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TABLE 1: Age-Specific and Total Fertility Rates in the Fort Hope Band: 1930 to 1944 Marriage Cohort

Age Category	0	1	2	3	4	5	6	7	8	9	10	11	12	13	Sum	ASF[1]	Mean Cumulative Parity
15-19		17	7	1											25	0.10	0.50
20-24		19	24	19	6										68	0.27	1.86
25-29		8	10	16	19	16	4	2	1						76	0.30	3.38
30-34		4	4	6	12	15	19	12	7	3	1				83	0.33	5.04
35-39			3	4	5	6	9	12	12	10	9	4			74	0.30	6.52
40-44					2	4	6	5	7	4	6	7	2		43	0.17	7.38
45-49								3	2	3	5		2		15	0.06	7.68
	2	48	48	46	42	39	36	32	28	22	17	15	7	4	384	1.54	7.68

[1]Age-Specific Fertility

> Risk = 250
> Observed Total Fertility Rate = 7.7
> Expected Total Fertility Rate if P3 = Mean Cumulative Parity 25-30 = . 2

TABLE 2: Age-Specific and Total Fertility Rates in the Fort Hope Band: 1930 to 1937 Marriage Cohort

Age Category	0	1	2	3	4	5	6	7	8	9	10	11	12	13	Sum	ASF[1]	Mean Cumulative Parity
15-19		8	3	1											12	0.09	0.44
20-24		12	16	9	2										39	0.29	1.89
25-29		2	2	9	12	9	1	1							36	0.27	3.22
30-34		3	2	3	6	8	13	6	4	2					47	0.35	4.96
35-39			2	3	3	4	5	8	7	5	6	2			45	0.33	6.63
40-44						1	2	4	2	2	2	3	4	2	22	0.16	7.44
45-49									2	2	2	4		1	11	0.08	7.85
	2	25	25	25	23	22	21	19	15	11	10	9	4	3	212	1.57	7.85

[1]Age-Specific Fertility

> Risk = 135
> Observed Total Fertility Rate = 7.9
> Expected Total Fertility Rate if P3 = Mean Cumulative Parity 25-30 = 6.5

TABLE 2a: Age-Specific and Total Fertility Rates in the Fort Hope Band:
1938 to 1944 Marriage Cohort

Age Category	0	1	2	3	4	5	6	7	8	9	10	11	12	13	Sum	ASF[1]	Mean Cumulative Parity
15-19		9	4												13	0.11	0.57
20-24		7	8	10	4										29	0.25	1.83
25-29		6	8	7	7	7	3	1	1						40	0.35	3.57
30-34		1	2	3	6	7	6	6	3	1	1				36	0.31	5.13
35-39			1	1	2	2	4	4	5	5	3	2			29	0.25	6.39
40-44						1	2	2	3	5	2	3	3		21	0.18	7.30
45-49									1		1	1		1	4	0.03	7.48
	0	23	23	21	19	17	15	13	13	11	7	6	3	1	172	1.50	7.48

[1]Age-Specific Fertility

Risk = 115
Observed Total Fertility Rate = 7.5
Expected Total Fertility Rate if P3 = Mean Cumulative Parity 25-30 = 8.0

TABLE 3: Infant Mortality Rates by Marriage Cohort:
The Fort Hope Band, 1930 to 1944

| Marriage Cohort	Number of Livebirths	Number Died < 1 Year	IMR per 1,000	G-Value	P
Full Cohort:					
1930-1944	384	33	85.9		
Cohort Subdivisions:					
1930-1937	212	8	37.7		
				14.32	< 0.001
1938-1944	172	25	145.3		

df = 1

TABLE 4: Fertility in the Fort Hope Band: 1938 to 1944 Marriage Cohort
Compared to the Dobe !Kung and Hutterites[1]

Population	Total Fertility Rate	Mean Age at First Birth (Years)	Mean Age at Last Birth (Years)	Mean Length of Reproductive Period (Years)	Mean Birth Space (Months)
Fort Hope Ojibwa 1938-1944 Cohort	7.5	21.5	38.6	17.1	27.4
Dobe !Kung (Howell 1979)	4.7	18.8	34.4	15.6	50.6
Hutterites (Eaton and Mayer 1953)	10.2	22.3	40.9	18.7	25.5

[1]Adapted from Roth 1981

TABLE 5: Fertility in the Fort Hope Band Compared to Other Northern Algonkian
and Athapaskan Groups

Population	Total Fertility Rate	Mean Age at First Birth (Years)	Mean Age at Last Birth (Years)	Mean Length of Reproductive Period (Years)	Mean Birth Space (Months)
Fort Hope Ojibwa 1938-1944 Cohort	7.5	21.5	38.6	17.1	27.4
James Bay Cree 1968 Survey (Piché and Romaniuk 1968)	7.2	21.9	38.7	16.8	32.5
Island Lake Cree/Ojibwa 1910-1924 Cohort (Sawchuk 1972)	7.8	20.0	-	-	-
Old Crow Kutchin Post-1900 Cohort (Roth 1981)	6.6	19.8	39.0	19.2	38.9
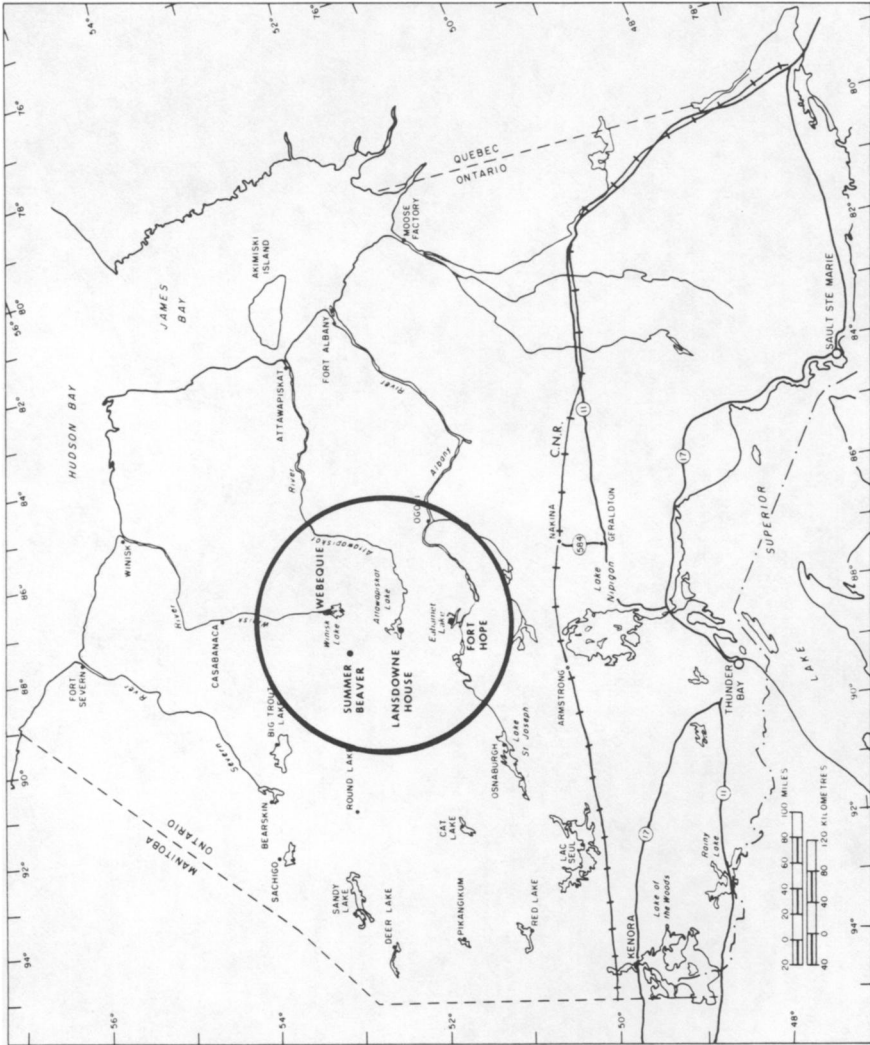
THE FORT HOPE RESERVE, LANSDOWNE HOUSE, WEBEQUIE and SURROUNDING TERRITORY.