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Welshness and Fertility

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The population of Wales can be divided into two parts, the Welsh and the non-Welsh, who differ in some genetic characters (Ashley and Davies, 1966a) and in their susceptibility to a number of common diseases (Ashley and Davies, 1966b; Ashley, 1966, 1967a, b, c). Both moieties of this population share the environment of the Principality of Wales and have similar occupations and similar social status (Ashley and Davies, 1966a) but can be separated on the basis of two parameters, the ability to speak the Welsh language and the possession of a Welsh surname.

The present study is directed to an investigation of the differential fertility of the Welsh and non-Welsh people of Wales.

I: Geographical Differences

Wales can be divided clearly into three zones according to the frequency with which the Welsh language is used (Registrar General, 1962a). In the western counties of Anglesey, Caernarvon, Merioneth, Cardigan, and Carmarthen, which comprise the area of the Glyndwr revolt of 1400–1415 (Rees, 1951), more than 65% of the people are Welsh speaking; in the counties of Brecon, Denbigh, Flint, Glamorgan, Montgomery, and Pembroke, and in the towns of Merthyr Tydfil and Swansea between 15 and 40% of the people are Welsh speaking, and in the remainder of the country, the counties of Monmouth and Radnor and the towns of Cardiff and Newport less than 10% of the people claim to speak Welsh.

A mean fertility index was calculated for these three zones for the years 1958 to 1963 inclusive. The number of live and stillbirths per year per 1000 women between the ages of 15 and 44 was determined for each area, using the data of the Registrar General for England and Wales (1960, 1961, 1962a, b, 1963, 1964a, 1965). In the area of high Welsh speaking the mean fertility index was 79; in the area of intermediate Welsh speaking it was 89, and in the area of low Welsh speaking it was 96 (Table I).

TABLE I

FERTILITY INDEX IN WALES

Welsh Speaking	Female Population 15–44	Live and Still-births	Fertility Index	% Women Married	Corrected Fertility Index Births/ 1000 Married Women/yr.
High	78,872	37,509	79	64	123
Intermediate	288,341	153,434	89	69	129
Low	142,020	80,327	96	69	139

The proportion of women who were married at the time of the 1961 census varies in different areas; in the high Welsh area it was 64% and in the other two areas was rather higher, 69% (Registrar General, 1964b). The fertility index has therefore been recalculated as the number of live and stillbirths per year per 1000 married women between the ages of 15 and 44 (Table I). The frequencies of illegitimate births, 5·73% in the high Welsh area, 5·3% in the intermediate area, and 5·75% in the low Welsh area were similar, and have been disregarded for this purpose of comparison.

The fertility index for married women shows a maximum in the low Welsh areas and a minimum in the high Welsh areas.

In England and Wales as a whole there are differences in fertility in the different urban and rural areas. In towns of over 100,000 inhabitants the fertility index per 1000 married women is 134, in towns of between 50 and 100,000 people it is 140, in smaller urban areas it is 124, and in rural areas it is 134. The three areas of Wales have different proportions of town and country; in the low Welsh area half the people live in the two big towns of Cardiff and Newport, while in the high Welsh area over 90% live in rural areas. The expected fertility index for married women for these areas was calculated on the basis of the proportion of the population living in the different urban and rural areas, and was compared with the observed index

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TABLE II

OBSERVED AND EXPECTED FERTILITY INDEX FOR MARRIED WOMEN

Welsh Speaking	Observed	Expected	Observed/ Expected
High	123	133	92·5
Intermediate	129	132	98
Low	139	133	105

(Table II). The ratio between the two was calculated, and shows a significant gradient between the high, intermediate, and low areas.

Fertility is related to socio-economic status, but analysis of the fertility index of the counties and county boroughs of Wales did not show a significant correlation with socio-economic status nor did a similar calculation on the fertility indexes in the Registrar General's standard Regions.

II: Differences by Names

Data were available on the obstetric history and the married and maiden names of 593 women over the age of 25 years who were delivered in the Maternity department at Morriston Hospital during the year 1962. These patients were divided into three age-groups 25–29, 30–34, and 35 years and over, and classified according to their married and maiden names. The number of patients, the total number of pregnancies, and the mean number of pregnancies were calculated for each group (Table III).

Within each group the greatest mean number of pregnancies was seen in the patients whose married and maiden names were both non-Welsh; in the youngest and the oldest groups the lowest mean number of pregnancies was seen in the patients whose married and maiden names were both Welsh. Names were regarded as Welsh if they were included in the list of Welsh names given in the previous papers (Ashley and Davies, 1966a, b).

TABLE III

NUMBERS OF PREGNANCIES ACCORDING TO WELSH OR NON-WELSH NAMES

Age (yr.)	Married Name	Maiden Name	No.	No. of Pregnancies	Mean No. of Pregnancies
25–29	Welsh	Welsh	72	164	2·28
	Welsh	Non-Welsh	59	137	2·32
	Non-Welsh	Welsh	56	138	2·46
	Non-Welsh	Non-Welsh	64	173	2·70
			251	612	2·44
30–34	Welsh	Welsh	49	131	2·80
	Welsh	Non-Welsh	41	110	2·68
	Non-Welsh	Welsh	43	111	2·58
	Non-Welsh	Non-Welsh	50	150	3·00
			183	508	2·78
35–	Welsh	Welsh	43	128	2·97
	Welsh	Non-Welsh	35	125	3·57
	Non-Welsh	Welsh	42	128	3·05
	Non-Welsh	Non-Welsh	39	143	3·67
			159	524	3·30

The numbers of pregnancies expected in each group, by age, were extracted and summed in Table IV. There was a deficiency of pregnancies in the patients with Welsh married names and also in the patients with Welsh maiden names. This deficiency was statistically significant in the case of the maiden names. There was a significant excess of pregnancies in the group of patients whose married and maiden names were both non-Welsh.

TABLE IV

NUMBER OF PREGNANCIES IN WOMEN WITH WELSH AND NON-WELSH MARRIED AND MAIDEN NAMES

	No. Observed	No. Expected	Observed/ Expected
Married name Welsh	801	827·2	97
Non-Welsh	843	818·6	103
Maiden name Welsh	806	848·5	95
Non-Welsh	838	797·3	105
Both married and maiden names Welsh	429	453·8	95
Non-Welsh	466	423·9	110
One name Welsh, one name Non-Welsh	749	767·1	98
Married name Welsh, maiden name Non-Welsh	372	373·4	99·5
Married name Non-Welsh, maiden name Welsh	377	394·7	96

TABLE V

MEAN AGE AT FIRST DELIVERY

Married Name	Maiden Name	Mean Age (yr.)
Welsh	Welsh	24·5
Welsh	Non-Welsh	25·4
Non-Welsh	Welsh	25·2
Non-Welsh	Non-Welsh	24·0
Married name	Welsh	24·9
	Non-Welsh	24·6
Maiden name	Welsh	24·8
	Non-Welsh	24·7

A possible reason for the difference in fertility is that, for cultural reasons, the Welsh might tend to marry later than the non-Welsh or to practise family limitation more effectively. No data are presently available on the latter point. The age at first pregnancy could, however, be examined and compared with the surname in a total of 342 women delivered of their first babies at Morriston Hospital during the year 1962. 22 of these women were single, they were generally younger than the married women and have been excluded from the analysis.

The mean age at first delivery in the women with Welsh married and maiden names was slightly

greater than in the women with non-Welsh names. The differences were small and no significant difference was observed. The slightly higher age at first delivery in the women whose married and maiden names were dissimilar may indicate a delay in choosing a spouse from some other geographical area.

Discussion

The fertility of the Welsh women has been shown to be lower than that of their non-Welsh sisters by the two methods of analysis which have previously been used in studies of disease incidence. Fewer babies are born in the western, Welsh speaking counties than in the more heavily anglicized south eastern part of the country; this difference is not related to differences in social class nor to the different urban-rural distribution in the different parts of Wales, and is probably not due to a later age of marriage in Welsh women. Study of women delivered of children in Morriston Hospital, which lies in one of the intermediate Welsh speaking areas of the Principality, shows that the average number of pregnancies is lower in women with Welsh married or maiden names than it is in women with non-Welsh names. Welsh women married to non-Welsh men and non-Welsh women married to Welsh men occupy an intermediate position.

It is suggested that the reason for this lower fertility among Welsh women is genetic in origin. The Welsh people form, with the peoples of the other areas of the 'Celtic Fringe', the last remaining elements of the earliest peoples of Britain who have been pushed westward by succeeding waves of immigrants. They have retained their language, which is learned and spoken by very few immigrants, and still show quite a high degree of assortative mating among themselves (Ashley and Davies, 1966a). This leads to some degree of genetic isolation and to the formation of a different gene pool in each of the two populations of Wales, the Welsh and the non-Welsh. If the difference in fertility was only seen in the geographical study it could be postulated that it was due to environmental differences between the three different areas, but when it is combined with a difference between women coming from the same environment to a single hospital whose only difference is in their names the inference that the difference is genetic becomes much stronger.

The data of Table IV suggest that the difference in fertility is greater in the wives than in the husbands, though this does not reach the level of statistical significance. The nature of the difference, the way in which a difference in genotype is expressed as a difference in fertility is uncertain. We have shown (Ashley and Davies, 1966a) that there are differences in the A B O and Rh blood group distributions of the Welsh and non-Welsh people of the Swansea area, and it is possible that minor differences in the frequency of genes such as these may interact to affect over-all fertility (*Brit. med. J.*, 1954) or even that differences in the leucocyte and transplantation antigens (van Rood, van Leeuwen, and Bruning, 1967) may be responsible.

Cultural differences between the Welsh and non-Welsh could be responsible for the difference in fertility. Analysis of the local data, however, showed no significant difference in the age at first delivery. Data on the use of contraceptive methods in the two groups were not available, and deliberate family limitation in one group remains a possibility.

Summary

Studies of the fertility of women in the three areas of Wales in which Welsh speaking is common, intermediate, and rare, and of the obstetric experience of women with Welsh and non-Welsh married and maiden names show that there is a lower fertility among the women of Wales.

It is suggested that this difference is genetic in origin and is related to the different gene pools of the Welsh and non-Welsh components of the population of Wales.

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