Twinning in Greece

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Abstract. Mean MZ and DZ twinning rates in seven big Greek cities were 3.2 and 4.75 per 1,000 maternities, respectively, during the 1980-1985 period. The seasonal variations in twinning frequencies are not significant. The total twinning rate in Greece shows a decreasing trend from 1956 to 1985.

Key words: Twinning rates, Survival, Secular variation, Seasonality

INTRODUCTION

Monozygotic (MZ) twinning rate is nearly constant in all populations, while the dizygotic (DZ) rate varies widely. The frequency of twins' births has been found to be related to different factors [1].

The present study deals with the frequency of twinning in different areas of Greece from 1980 to 1985.

MATERIALS AND METHODS

The Demographic Yearbooks of different cities throughout Greece have been our source of data. This survey includes records for 1,222 twin pairs born during the period 1980-85. The data contain information about sex, birth date, paternal age, parental place of birth and residence, live birth or fetal death. Monozygotic and dizygotic twinning rates are calculated by Weinberg's method [8].

An additional source has been the annual report of the National Statistical Service of Greece which has provided us with data on twinning rates from 1956 to 1979.

RESULTS

The total number of maternities, the singleton, twin and multiple birth rates for the years 1980-1985, are given in Table 1. Mean twinning rate in this period is 7.95 per 1,000 deliveries, while the rate of higher multiple births is 0.09 per 1,000 deliveries. The average MZ and DZ twinning rates are 3.20 and 4.75 respectively, with a MZ/DZ ratio of 0.67. No significant differences in the MZ and DZ twinning rates among the five years were found ($\chi^2 = 1.28$ for MZ, $\chi^2 = 0.95$ for DZ, $\chi^2 = 1.1$ for MZ/DZ, df= 5).

Table 1 - Twin and higher multiple births in Greece, 1980-1985*

| Years | Total maternities | Twin births | | MZ rate (‰) | DZ rate (‰) | MZ/DZ ratio | Higher multiple births | |
| | | MZ +DZ | | | | | | |
		N	Rate (‰)				N	Rate (‰)
1980	26,135	205	7.84	3.41	4.43	0.77	2	0.09
1981	24,337	187	7.68	2.50	5.18	0.48	1	0.05
1982	22,877	223	9.75	3.54	6.21	0.57	2	0.09
1983	21,874	150	6.86	3.75	3.11	1.20	2	0.09
1984	34,803	286	8.22	3.28	4.94	0.66	2	0.06
1985	23,744	171	7.20	2.74	4.46	0.61	5	0.22
Total	153,770	1,222	7.95	3.20	4.75	0.67	14	0.09

* Areas studied: Athens and Pireus, Patras, Ioannina, Kozane, Kastoria and Thessaloniki. The inhabitants of these cities account for more than 50% of the population of Greece.

More like-sexed than unlike-sexed twins were born (70% are like-sexed), while the secondary sex ratio is 109 males per 100 females. The correlation between the percentage of twin births and father's age is significant and positive ($r = + 0.97$) up to the age of 30-34 years, while after that age it becomes negative ($r = -0.95$). The highest twinning rate is seen in June (10.4%), the lowest in January (6.9%).

A high percentage of twins died (Table 2), 137 out of 2,444 infants, most of them belonging to pairs in which both twins died. Like-sexed pairs show greater mortality than unlike-sexed pairs, while the sex ratio of infants who died is 121 males per 100 females.
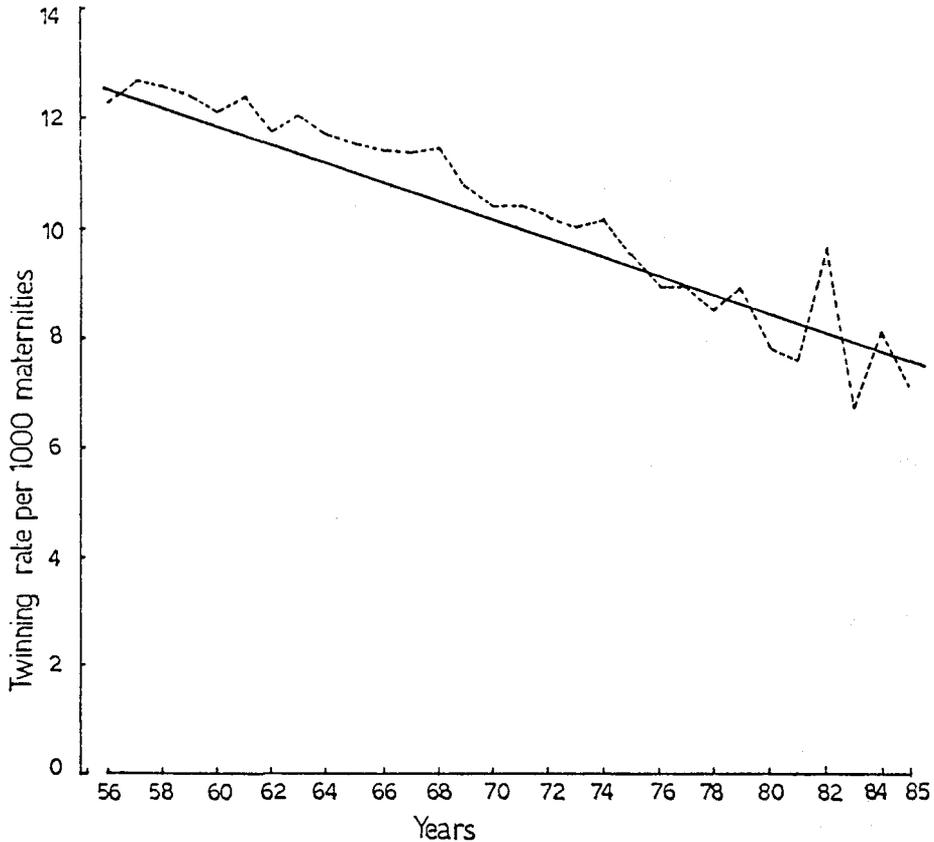
Figure. Yearly variation of twinning rates in Greece, 1956-1985.

DISCUSSION

Over 30 years, a gradual fall in the ratio of twin births to total maternities has been reported from many countries, in all parts of the world [5,7]. This phenomenon, which has been observed by different investigators, has not been completely explained, although many suggestions have been made [1]. Twinning incidence is decreasing in Greece too. The Figure shows the annual fluctuation of the twinning rate in the 30-year period, 1956-1985. During this period, the theoretical annual fall of the twinning rate is found to be 0.191. The possible explanation for this phenomenon is the reduction of parity in most of the Greek families from 4-5 children to only 2 and the reduction of mother's reproductive period from 30 years to 20. Thus, the changed fertility behaviour of Greek families as well as family planning during recent years may have acted upon the twinning rate.

The MZ twinning rate is constant during the period 1980-85 at about 3.5 per 1,000 maternities, while the DZ twinning rate seems to vary. These results are in accordance with published data [1].

Table 2 - Twinning mortality during 1980-1985

Mortality	No. infants	No. males	No. females
Total	137 (5.6%)	75 (3.07%)	62 (2.53%)
Only one twin	49 (2.0%)	28 (17 from MM) (11 from MF)	21 (14 from FF) (7 from MF)
Both twins	88 (3.6%)	47 (38 from MM) (9 from MF)	41 (32 from FF) (7 from MF)

Seasonal variation in twin births has been reported from England, New York, Finland, Hungary, Southern Moravia [6] and Japan [3]. In the sample studied, no significant seasonality is seen. Analysis according to month of birth shows that departure from homogeneity is not significant ($\chi^2 = 1.3$, df $= 11$). This may be due to the different climatic conditions in Greece.

Like-sexed pairs show greater mortality than unlike-sexed pairs, whereas male deaths are higher than female ones. The first may be explained by the higher mortality rate for MZ twins. Higher death rates in males than females and in MZ rather than in DZ twins agree with other reports [2,4]. The lower mortality (5.6%) observed in this study in comparison to 8.3% reported by others [2] may reflect the improvement of prenatal and neonatal care.

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