Low weight gain in infancy and suicide in adult life

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One theory suggests that depression in adult life originates through parental indifference, abuse, and other adverse influences in childhood. The possible contribution of development in infancy has received little attention.¹ We therefore examined the association between infant growth and later suicide in 15 500 men and women. Depression underlies 70% of deaths by suicide.²

Methods and results

As previously described, all births in Hertfordshire from 1911 onwards were notified by the attending midwife.³ Health visitors saw the babies periodically throughout infancy, recorded the method of feeding, and wrote general comments on the baby's development and well being. At 1 year the babies were weighed. We traced 10 141 (79%) of the boys born during 1911-30 and 5585 (60%) of the girls born during 1923-30. The average birthweight and weight at 1 year of those who were traced were the same as those of the babies who were not traced. We compared the numbers of deaths from suicide at ages 20-74 (*International Classification of Diseases* (9th revision) codes E950-959) during 1951-93 with the national rates for men and women of a corresponding age and year of birth. Death rates were expressed as standardised mortality ratios with the national average as 100. Tests for trend were based on the corresponding log-linear model, and for differences between means we used a two sample t test.

Thirty three men and 10 women had died from suicide, this difference reflecting the smaller number and younger age of women in the study. The average age at death was 51 years (range 26-71). The average birthweight of the 43 men and women was similar to that in the total sample of 15 726, being only 32 g (0.07 lb) lower after allowing for the different proportions of boys and girls. The average weight at 1 year, however, was 443 g (0.98 lb) lower ($P=0.002$). Whereas there was no trend in standardised mortality ratios with birthweight, ratios fell with increasing weight at 1 year (table; χ^2 for trend=5.3, $P=0.02$). Each kilogram decrease in weight gain between birth and 1 year was associated with an increased risk of suicide of 45%

(95% confidence interval 7 to 98) in men and 31% (-29 to 142) in women. Trends in deaths under 65 years were similar to those at all ages ($P=0.02$). All causes of death fell with increasing weight at 1 year in men but not women, reflecting the trends in coronary heart disease.³

The infant feeding for people who committed suicide was similar to that of the total population, 20 (47%) being exclusively breast fed and weaned before the age of 1 year. Social class at death could be classified for 39 subjects: 12 were in I, II, III non-manual; 10 were in III manual; and 17 were in IV or V. The social class distributions of samples of the surviving population have been reported.³ After adjusting for social class the mean weight at 1 year of those who had died from suicide remained 395 g (0.87 lb) lower ($P=0.02$).

Comment

These findings show that men and women who commit suicide had low rates of weight gain in infancy taking account of their current social class and the way they were fed as infants. In the study we traced men and women born in Hertfordshire over a defined period. Rates of infant weight gain of those who were successfully traced were the same as in those not traced and our findings are therefore unlikely to be due to selection bias. Rates of suicide in our study population were below the national average. This is consistent with the generally low rates around London and is unlikely to introduce bias.

Although low weight gain in infancy could indicate parental neglect, we have no evidence of this. In none of the 43 subjects did the health visitor record that parental care or general development were unsatisfactory. Nevertheless, there may have been other adverse psychosocial influences which were unrecorded and which led to low weight gain in infancy and disturbance of mood in later life. This would be in keeping with established theories for the causes of depressive illness. Recent observations, however, suggest that hormonal disturbances may underlie depression. Patients have been found to have abnormal secretion of growth hormone and prolactin and abnormalities in the hypothalamic-adrenal and hypothalamic-thyroid axes.⁴ Patterns of hormone release by the hypothalamus are known to be programmed, or imprinted, in utero.⁵ Altered programming could influence both growth in infancy and mood throughout life. This hypothesis can be developed by studying the endocrine correlates of failure of weight gain in infancy.

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Conflict of interest: None.

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Standardised mortality ratios for suicide in men and women according to birthweight and weight at 1 year

Weight (lb)	No of deaths	No expected	Standardised mortality ratio
At birth:			
<5.5	2	3.3	60
-6.5	8	10.3	78
-7.5	17	21.9	78
-8.5	9	21.6	42
-9.5	4	9.8	41
>9.5	3	4.3	70
At 1 year:			
≤18	3	4.9	61
-20	11	13.6	81
-22	20	23.3	86
-24	8	18.2	44
-26	0	8.3	0
>26	1	2.9	34
Total	43	71.2	60