

Relation between headache in childhood and physical and psychiatric symptoms in adulthood: national birth cohort study

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Abstract

Objective To elucidate the associations between frequent headache and psychosocial factors in childhood and to determine whether such children are at an increased risk of headache, multiple physical symptoms, and psychiatric symptoms in adulthood.

Design Population based birth cohort study.

Setting General population.

Participants People participating in the national child development study, a population based birth cohort study established in 1958.

Main outcome measures Headache, multiple physical symptoms, and psychiatric morbidity at age 33.

Results Headache in childhood was associated with several psychosocial factors. Prospectively, children with frequent headache had an increased risk in adulthood of headache (odds ratio 2.22, 95% confidence interval 1.62 to 3.06), multiple physical symptoms (1.75, 1.46 to 2.10), and psychiatric morbidity (1.41, 1.20 to 1.66). The outcomes of headache and multiple physical symptoms were not accounted for by psychiatric morbidity.

Conclusion Children with headache are at an increased risk of recurring headache in adulthood and may complain of other physical and psychiatric symptoms. Strategies for coping with psychosocial adversity in childhood may improve the prognosis in adulthood.

Introduction

Headache is the most common somatic complaint in children.¹ Although headache is rare before the age of 4, its prevalence increases throughout childhood reaching a peak at about 13 years of age in both sexes. Estimates of prevalence vary according to age, definition of headache, and method of data collection, but in children of school age as many as 75% may experience headaches infrequently and about 10% have recurring headaches.²⁻⁴

Reports have shown an association between headache in childhood and several psychosocial factors such as depression in the mother, depression in childhood, social disadvantage, and coming from a family with a history of "painful conditions."⁵⁻¹¹ Other reasons suggest that this complaint has a predominantly

psychosocial basis. These include a lack of evidence for organic disease in most patients and a high rate of headache with recurrent abdominal pain, another common somatic complaint of children.¹² A recent prospective cohort study followed children with recurrent abdominal pain into adulthood.¹³ As adults they had increased physical symptoms, but these were accounted for by the association with increased rates of psychiatric disorder. Additionally, a recent review of functional somatic symptoms in adulthood suggests that these syndromes share many factors, including psychological distress.¹⁴ It thus seems plausible to speculate that headache in childhood may be associated with an increased risk of both psychological and somatic complaints in adulthood.

Little is known about the long term outcome of headache in childhood. Only one study has followed up children with migraine into adulthood.¹⁵ Overall, 60% of those who had had migraine aged between 7 and 15 years were still experiencing migraine attacks 23 years later, but in half of these patients the attacks were neither as frequent nor as severe as in childhood. No study has yet reported in general on the outcome in adulthood of headache in childhood. Most studies have been cross sectional, often utilising populations of participants in clinical settings. Other prospective studies do not extend beyond adolescence. We aimed to elucidate the childhood associations between headache and psychosocial factors in a sample of the general population and to determine whether headache in childhood is associated with an increased risk of physical and psychiatric symptoms in adulthood.^{1 2}

Participants and methods

The national child development study is an ongoing population based birth cohort study. Its origins lie in the perinatal mortality survey that collected data on the births of 17 414 infants born to parents residing in Great Britain between 3 and 9 March 1958, representing 98% of all births. Five subsequent sweeps of data collection occurred at ages 7, 11, 16, 23, and 33. Information was collected from parents, medical staff, teachers, census records, and the participants themselves, by both postal questionnaire and interview. In 1991, 11 407 cohort members were interviewed, represent-

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Table 1 Relation between psychosocial factors in childhood and both grades of headache in childhood. Values are odds ratios (95% confidence intervals)

Variable in childhood (age at assessment)	Headache v no headache	Recurrent headache v no headache
Moderate or severe depression rating (7)	1.47 (1.15 to 1.87)	2.21 (1.50 to 3.27)
Parental separation or divorce (7)	1.17 (0.87 to 1.57)	1.53 (0.93 to 2.53)
Separation from mother for longer than 1 week ever (7)	1.39 (1.24 to 1.54)	1.56 (1.26 to 1.93)
Chronic maternal illness began aged <11 years (16)	1.48 (1.10 to 2.01)	2.39 (1.49 to 3.84)
Chronic paternal illness began aged <11 years (16)	1.23 (0.85 to 1.78)	1.70 (0.91 to 3.15)
Mental illness in family member (7)	1.69 (1.28 to 2.24)	2.58 (1.65 to 4.02)

ing 69% of the target population. The study has received approval from an ethics committee.

Variables in childhood

Headache—Parents were interviewed when the participants were aged 7 (1965) and 11 (1969). On both occasions they were asked “does your child suffer from frequent headache or migraine?” An ordered categorical variable was created dividing participants into no headache at age 7 or 11, headache at either 7 or 11 only, and headache at both 7 and 11.

Familial illness—When the participant was aged 7 the presence of any mental illness in a family member (excluding the participant) was inquired after. When the participant was aged 16 his or her parents were asked about their own health; if they had any chronic illness, data about the chronicity of the condition were obtained. From this information a variable was created indicating no illness or illness of 5 years or less and illness of greater than 5 years. This allowed for participants at age 11 or younger who had a chronically ill parent to be distinguished from those after that age whose parents developed illness or who had no chronically ill parent.

Social circumstances—Social class at birth was derived from the father’s occupation, determined during the perinatal mortality survey. Two variables were chosen to broadly represent familial and social adversity in early childhood. When the participants were aged 7 information was obtained from interviewing the parents regarding divorce or separation and whether the child had been separated from his or her mother for periods longer than a week before age 7.

Psychological health—When the participants were aged 7 the Bristol social adjustment guide was completed by their teachers.¹⁶ The guide rates behaviour at school and consists of 146 items. From these, 12 syndrome scores can be derived, representing aspects of behavioural deviance. Scores for one of these syndromes—depression—were converted into a binary variable denoting “no depression” (score 0-4 of 12) and “some depression” ratings (score >5 of 12).

Variables in adulthood

Multiple physical symptoms—At age 33 (1991) the participants were asked about specific somatic symptoms: backache, bad headaches, twitching of the face, head, or shoulders, indigestion, upset stomach, heart racing “like mad,” pains in the eyes, rheumatism or fibrositis, and worries about health. Only those who endorsed three or more symptoms were deemed to have multiple symptoms. This definition broadly corresponds to the notion of “abridged somatisation,”¹⁷ which is associated with major disability and is probably a clinically relevant level of symptomatology.

Headache—A binary variable denoting those participants who complained of frequent headache at age 33 was created.

Psychological health—When the participants were 33 they completed the 15 item psychological subscale of the malaise inventory, which measures the degree of psychiatric morbidity.¹⁸ From this information a binary variable denoting the presence of four or more symptoms was derived.

Results

Follow up and representativeness

Overall, 11 407 of the original birth cohort of 17 414 participants were interviewed at age 33, representing 69% of the target population. Complete data for the childhood variables of interest were available for 9841 participants.

Prevalence of headache in childhood

We found a prevalence of headache at age 7 of 8.2% (n=811), which increased to 15.4% (n=1511) by age 11. Most headache occurred in those of a manual social class at both age 7 (manual 75.2% (n=610), non-manual 24.8% (n=201); P=0.03) and age 11 (manual 77% (n=1163), non-manual 23% (n=348); P<0.001).

Associations between headache and other childhood variables

Table 1 shows the associations between headache and other variables in childhood. Those with headache were more likely to have a mother with a chronic physical illness that began before the participant was aged 11, or mental illness in a family member, but there was no significant association with having a father with a chronic physical illness. An association was found between headache in childhood and both depression rating at age 7 and separation from mother for periods of more than one week.

Table 2 Associations between factors in childhood and three outcomes in adulthood at age 33. Values are odds ratios (95% confidence intervals) unless stated otherwise

Variable in childhood (age at assessment)	Multiple physical symptoms	P value	Headache	P value	Psychiatric morbidity	P value
Depression (7)	1.99 (1.43 to 2.79)	<0.001	1.37 (1.00 to 1.88)	0.05	1.90 (1.41 to 2.55)	<0.001
Parental separation or divorce (7)	2.31 (1.58 to 3.37)	<0.001	2.21 (1.58 to 3.08)	0.001	2.11 (1.50 to 2.97)	<0.001
Separation from mother for longer than 1 week ever (7)	1.32 (1.12 to 1.55)	0.001	1.21 (1.06 to 1.38)	0.005	1.22 (1.07 to 1.40)	0.004
Chronic maternal illness began aged <11 years (16)	1.50 (0.98 to 2.31)	0.06	1.28 (0.87 to 1.88)	0.20	1.78 (1.25 to 2.53)	0.001
Chronic paternal illness began aged <11 years (16)	1.34 (0.79 to 2.27)	0.28	1.76 (1.17 to 2.66)	0.007	1.31 (0.83 to 2.06)	0.25
Mental illness in family member (7)	1.86 (1.24 to 2.79)	0.003	1.52 (1.05 to 2.19)	0.03	1.88 (1.32 to 2.67)	<0.001

Table 3 Relation between headache in childhood and main outcomes at age 33. Values are odds ratios (95% confidence intervals) unless stated otherwise. Odds ratios refer to baseline group for each category of headache in childhood. Model 1 controls for sex and social class only, model 2 controls additionally for all variables in childhood, and model 3 controls additionally for all variables in childhood and psychiatric morbidity

	No of participants exposed	No (%) of cases	Model 1	Model 2	Model 3
Multiple physical symptoms					
No childhood headache	5631	456 (8.1)	1.00	1.00	1.00
Headache	1153	164 (14.2)	1.85 (1.52 to 2.24)	1.77 (1.46 to 2.14)	1.61 (1.31 to 1.99)
Recurrent headache	253	36 (14.2)	1.82 (1.26 to 2.63)	1.69 (1.17 to 2.45)	1.67 (1.12 to 2.49)
			$\chi^2=35.9$, $P<0.001$	$\chi^2=29.2$, $P<0.001$	$\chi^2=20.2$, $P<0.001$
Headache					
No childhood headache	5657	690 (12.2)	1.00	1.00	1.00
Headache	1163	247 (21.2)	1.92 (1.63 to 2.26)	1.87 (1.58 to 2.20)	1.79 (1.51 to 2.12)
Recurrent headache	253	61 (24.1)	2.30 (1.69 to 3.12)	2.22 (1.63 to 3.02)	2.22 (1.62 to 3.06)
			$\chi^2=69.4$, $P<0.001$	$\chi^2=62.9$, $P<0.001$	$\chi^2=54.6$, $P<0.001$
Psychiatric morbidity					
No childhood headache	5615	718 (12.8)	1.00	1.00	
Headache	1148	211 (18.4)	1.51 (1.27 to 1.79)	1.17 (1.00 to 1.37)	
Recurrent headache	252	43 (17.1)	1.38 (0.98 to 1.93)	1.24 (0.91 to 1.68)	Not applicable
			$\chi^2=18.2$, $P<0.001$	$\chi^2=13.6$, $P<0.001$	

Prospective data

At age 33, 9.3% (n=656) of participants had multiple somatic complaints, 14.1% (n=998) mentioned headaches, and 13.9% (n=972) had evidence of psychiatric morbidity. All three outcomes were more common in women and those from a manual social class. Table 2 shows the relations between other psychosocial variables in childhood and the outcomes in adulthood. Overall, these results show a clear relation between psychosocial adversity in childhood and the three outcomes in adulthood.

Table 3 shows the relation between headache in childhood and outcomes in adulthood derived from logistic regression. For all three outcomes there is a significant association with headache in childhood. Controlling for sex and social class, other variables in childhood and adult psychiatric morbidity made little difference to these results. Ordinal regression analysis revealed an overall odds ratio of 1.75 (95% confidence interval 1.46 to 2.10) for the association between headache in childhood and multiple physical symptoms and an odds ratio of 1.41 (1.20 to 1.66) for the association between headache in childhood and psychiatric morbidity.

What is already known on this topic

Common somatic symptoms in childhood are associated with psychosocial factors and may increase the risk of physical and psychiatric symptoms in adulthood

No study has yet examined at the general population level the outcome as an adult of headache, the commonest somatic complaint in childhood

What this study adds

Children who mention headache are more likely to experience psychosocial adversity and to grow up with an excess of both headache and other physical symptoms and psychiatric symptoms

Discussion

Children with frequent headache are at an increased risk of headache and multiple physical and psychiatric symptoms in adulthood. This is the first study using prospectively collected population based data, which confirms that children with headache do not simply “grow out” of their somatic complaint and may also “grow into” others. It is unsurprising that the strongest association was found for headache in adulthood. If common childhood somatic symptoms are regarded as signs of underlying psychosocial adversity and learned illness behaviour from parents, then the persistence of the same symptom into adulthood is plausible.

The pathway from psychosocial factors and somatic symptoms in childhood to somatic and psychiatric symptoms in adulthood remains unclear and needs further investigation. However, taken together, our findings of an association between both headache in childhood and psychosocial factors and headache in childhood and adult morbidity may have implications for the health of today's children and their future wellbeing. We suggest that the wide range of professionals to whom a child with headache may present (including teachers, school nurses and doctors, general practitioners, paediatricians, neurologists, and child psychiatrists) consider the possible role of underlying psychosocial factors in the child's symptoms. If such factors are present and amenable to change, it is possible that intervention may reduce the risk of the child developing symptoms as an adult. This may be even more relevant today than when these participants were children in the 1960s. Evidence shows that the prevalence of headache in childhood is increasing steadily in the developed world,¹⁹ and if this is so there may well be a corresponding increase in somatic and psychiatric symptoms as today's children become adults.

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Vitamin K policies and midwifery practice: questionnaire survey

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Abstract

Objectives To investigate policies on neonatal vitamin K and their implementation.

Design Two phase postal survey.

Setting United Kingdom.

Participants A 10% random sample of midwives registered with the United Kingdom Central Council for nursing, midwifery, and health visiting. Of 3191 midwives in the sample, 2515 (79%) responded to phase one and 2294 (72%) completed questionnaires on their current jobs (November 1998 to May 1999). In phase two, 853 (62%) of 1383 eligible midwives gave details on 2179 of their earliest jobs (start dates before 1990).

Results All the midwives in clinical practice at the time of the survey (2271, 99%) reported that they were working in areas with official policies on neonatal vitamin K. Seven distinct policies were described: intramuscular vitamin K for all babies (1159, 51.0%); intramuscular vitamin K for babies at "high risk," oral for others (470, 20.7%); oral vitamin K for all babies (323, 14.2%); parental choice for all (124, 5.5%); parental choice for all except babies at high risk, (119, 5.2%); intramuscular vitamin K for babies at high risk only (33, 1.5%); oral vitamin K for babies at high risk only (17, 0.7%); and a disparate group of policies including intravenous vitamin K for some babies (26, 1.1%). Previous policies were (and some may still be) open to individual interpretation and were not always followed.

Conclusions Hospital policy is not necessarily a good guide to individual practice. The primary purpose of clinical records is to document patient care, and recording practices reflect this. There is considerable variation in vitamin K policies and midwifery practice in the United Kingdom, and there is no clear

consensus on which babies should receive vitamin K intramuscularly.

Introduction

Concern over prophylactic administration of vitamin K to newborn babies has continued for almost a decade, following reports in the early 1990s of a statistically significant association between intramuscular vitamin K and childhood cancer.¹ Subsequent studies have, in general, failed to support this association.²⁻¹⁰ Inconsistencies in results from the United Kingdom in particular have, however, left lingering doubts about the safety of administering vitamin K by the intramuscular route.^{1 6-10}

Most British studies have had a case-control design, with exposure data collected retrospectively from maternity records.^{1 6 7 9 10} Details of vitamin K administration may be found in several places in maternity records,⁶ and all studies report that a written record confirming that it has (or has not) been given is often not found. Some research groups have attempted to impute a child's vitamin K status from the hospital policy in place at the time of the child's birth. Vitamin K is, however, unique among drugs given to newborn babies—although policies have customarily been decided by paediatricians, a midwife has usually made the final decision to give vitamin K to a healthy baby.

Three assumptions underpin imputation of vitamin K status: that previous policies are accurately recalled by current staff; that policies were followed rigidly; and that vitamin K was often given without a record being made. Anecdotal reports from midwives and paediatricians suggest, however, that official policies were not always followed. If true, this has serious implications for interpreting studies investigating neonatal vitamin K status. Furthermore, continuing