

Incidence of non-specific abdominal pain in children during school term: population survey based on discharge diagnoses

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Abdominal pain remains a common problem in childhood and often results in admission to hospital.¹ Of these children, however, only 30-40% will require surgical intervention.^{2,3} Most are discharged with a diagnosis of non-specific abdominal pain.⁴ To elucidate whether non-specific abdominal pain is more common during the school term compared with the school holiday we investigated the admission rates for non-specific abdominal pain and acute appendicitis throughout the school year.

Methods, analysis, and results

The one hospital in Leicester with provision for paediatric surgical care serves about 95% of Leicestershire's population of 173 000 children. Data were obtained from Leicestershire Health Authority for the 5 year period April 1992 to May 1997 in the form of finished consultant episodes for each year for children aged 5-15 years and analysed by weekly admissions for diagnoses and procedure codes. The dates of school term (41 weeks) and school holidays (11 weeks) were verified by Leicester County Council. Half term and bank holidays have been included with the school term and would therefore tend to underestimate any difference between term time and holidays. Rates of admissions per week were calculated for each main holiday period and each school term for each of the five academic years from 1992-3 to 1996-7. For each year rate ratios (95% confidence intervals) are reported to compare term time with holiday time. Poisson regression models were used to examine the strength of the association between the rates of admissions and academic year and each separate school holiday and term time with formal significance assessed by the likelihood ratio statistic.⁵

There were 4598 admissions, of which 889 were during the school holidays and 3709 were during the school term. In total 1832 children had non-specific abdominal pain, and 643 underwent appendicectomy for acute appendicitis. There was an increase in the total number of paediatric admissions from 2291 in 1992-3 to 3025 in 1996-7. The proportion of children with a discharge diagnosis of non-specific abdominal pain rose from 20.8% of all admissions in 1992-3 to 26.9% in 1996-7, whereas for acute appendicitis there was no discernible change.

The table shows the number of admissions and admission rates per week. Admission rates for acute appendicitis were similar during the school holidays and the school term (rate ratio 0.98) and did not change over the 5 year period. By contrast, admission rates for non-specific abdominal pain were significantly higher during the school term (rate ratio 1.42) compared with the school holidays and seem to be increasing over time during both school holidays and the school term.

Numbers of admissions (rate per week) for acute appendicitis and non-specific abdominal pain with rate ratios for children aged 5-16 years during school term and holiday time

| Year | Acute appendicitis | | | Non-specific abdominal pain | | |
|--------|--------------------|-----------|---------------------|-----------------------------|-----------|---------------------|
| | Term | Holiday | Rate ratio (95% CI) | Term | Holiday | Rate ratio (95% CI) |
| 1992-3 | 83 (2.0) | 28 (2.5) | 0.80 (0.51 to 1.23) | 268 (6.5) | 44 (4.0) | 1.63 (1.18 to 2.26) |
| 1993-4 | 110 (2.7) | 30 (2.7) | 0.98 (0.65 to 1.49) | 320 (7.8) | 48 (4.4) | 1.79 (1.31 to 2.44) |
| 1994-5 | 103 (2.5) | 26 (2.4) | 1.06 (0.69 to 1.65) | 285 (7.0) | 55 (5.0) | 1.39 (1.04 to 1.87) |
| 1995-6 | 94 (2.3) | 23 (2.1) | 1.10 (0.69 to 1.75) | 327 (8.0) | 81 (7.4) | 1.08 (0.85 to 1.39) |
| 1996-7 | 115 (2.8) | 31 (2.8) | 1.00 (0.66 to 1.49) | 341 (8.3) | 63 (5.7) | 1.45 (1.10 to 1.91) |
| Total | 505 (2.5) | 138 (2.5) | 0.98 (0.81 to 1.19) | 1541 (7.5) | 291 (5.3) | 1.42 (1.25 to 1.61) |

Comment

Our findings that admission rates for acute appendicitis were independent of school holidays and school term are not surprising. By contrast, however, there was a clear difference in admission rates during the school term and the school holidays for children with non-specific abdominal pain. In addition, admission rates for non-specific abdominal pain seemed to increase over the 5 year period. This observation could be explained by assuming that the population at risk is increasing. We have no evidence to support this and had it been the case we would have expected a similar increase in the admission rate for acute appendicitis, which was constant.

Of all children admitted with abdominal pain, non-specific abdominal pain remains the commonest discharge diagnosis. While the condition is poorly understood, it probably represents a heterogeneous group of conditions and is probably multifactorial in its aetiology. In this study children were much more likely to have abdominal pain during the school term, the rate ratio for admissions being 1.4 times greater than during the school holiday. This raises the possibility that psychological and behavioural factors may be involved in the genesis and presentation of the condition.

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