

Factors associated with variation in the consultation rates of children aged under five years

JOHN K. DUNCAN

ROSS J. TAYLOR, MD, FRCGP

IAN THE D. FORDYCE

SUMMARY. *In a large urban practice, all families with a child aged under five years were identified and, after suitable exclusions, 294 (80%) of the 369 families approached cooperated in the study. For each child, the number of parent-initiated first consultations in a one-year period was extracted from general practice records, and mothers were asked to provide additional information by postal questionnaire, which included a test of the mother's reaction to a series of hypothetical child 'illness situations'.*

The most important factors found to be associated with higher rates of consultation were increased urgency of the mother's reaction to the test situations and attendance of the child at a pre-school group. Children with low consultation rates tended to be younger and more likely to come from larger families; their mothers generally spent less time in regular employment outside the home and were more likely to be single parents. The effect of family size was independent of maternal age and no socioeconomic gradient was found. There was also no evidence that differences in frequency of consultation were related to particular diagnostic categories. The mothers' sources of advice in the postulated event of their child becoming unwell are also described.

Introduction

IT is well established that the factors which influence individuals to seek medical help are complex and only partly dependent on the nature and severity of physical symptoms.¹ In the case of dependent children the decision to consult is yet further removed: the mother's decision, on behalf of the child, is likely to have even more complex origins.²

This study set out to examine whether or not consultation rates for pre-school children were influenced by the mother's experience of child care. The hypothesis was that, allowing for the age of the mother, consultation rates for the youngest child (aged under five years) in a family are inversely related to family size.

The study also examined the influence on consultation rates of the mother's own birth order, the size of her parents' family, whether she was employed outside the home, whether the child attended pre-school groups, what sources of advice the mother used and what her reactions were to a series of standardized childhood 'illness situations'.

John K. Duncan, Medical Student, University of Aberdeen; Ross J. Taylor, Senior Lecturer, Department of General Practice, University of Aberdeen; Ian the D. Fordyce, Research Officer, Department of Community Medicine, University of Aberdeen.

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Method

All children registered with a large urban practice who were born before 1 March 1983 and aged under five years at 28 February 1984 were identified using a recently revised age-sex index. For the period 1 March 1983 to 28 February 1984, the number and nature of all patient-initiated first consultations (excluding such contacts as return visits, immunizations and screening procedures) was extracted from well kept medical records.

Other members of each child's family (whether or not registered with the practice) were identified from a current family index. If there was more than one child aged under five years in a family, only the youngest child was included. Sixteen children were excluded because their families increased in size during the study period and 32 children suffering from known long-term illness, such as asthma, were excluded to avoid bias introduced by their higher consultation rates. Finally, because of possible major differences in cultural influences, 55 children with Asian surnames were also excluded.

Of the 422 children originally identified, 369 were included in the sample population and, from these families, 294 mothers (80%) returned a completed postal questionnaire. The questionnaire was designed to obtain information about: maternal family size and birth order of mother; employment of mother outside the home; husband or co-habitee's employment; whether or not the youngest (study group) child regularly attended a pre-school group (for example, nursery school or playgroup); what the mother's main source of advice was if the youngest child was unwell; and her response to a number of hypothetical illness situations in relation to the youngest child (Appendix 1).

The situations depicted in Appendix 1 were confirmed as realistic by a group of 10 general practitioners. The intention was not to classify responses as 'right' or 'wrong' but to compare different mothers' thresholds for seeking urgent medical advice, given the same stimulus. The situations chosen as stimuli were therefore deliberately indefinite and non-specific. For each situation, a score of 2 points was awarded for immediate contact with the doctor, 1 point for contact the next morning and 0 points for 'wait and see'. The mothers were divided, according to their total score, into those above ('high scorers') and those below ('low scorers') the mid-point of the distribution of total scores.

Apart from the calculation of chi-square values, Kendall's S test was used³ to compare the relative urgency with which mothers perceived the hypothetical illness situations with the actual frequency of consultations for their children, to assess whether or not high consultation frequency was associated with a low threshold for consultation and vice versa. A more complex multivariate analysis, using the canonical discriminant function technique,³ was also carried out to determine the relative value of the various factors that were measured as predictors of 'high' or 'low' consultation rates.

Results

Table 1 summarizes the number of consultations for one year in relation to family size and age of the mother. There were no significant effects of maternal age, although the lowest consultation frequencies occurred in the children of younger mothers with larger families.

Table 1. Mean number of consultations in one year for the youngest child aged under five years by family size and mother's age with number of children studied in parentheses.

| Age of mother (years) | Mean no. of consultations in family with: | | | |
|-----------------------|---|----------------------|------------------------|--------------|
| | One child | Two children | Three or more children | Any children |
| 20-24 | 5.0 (12) | 3.9 (7) ^a | — (0) | 4.4 (19) |
| 25-29 | 5.3 (32) | 5.2 (46) | 3.1 (8) | 5.0 (86) |
| 30-34 | 4.4 (31) | 4.3 (64) | 3.7 (23) | 4.2 (118) |
| 35+ | 4.4 (13) | 5.0 (30) | 4.5 (28) | 4.7 (71) |
| All | 4.8 (88) | 4.7 (147) | 4.0 (59) | 4.6 (294) |

^aIncludes one mother aged 18 years.

n = number of children studied.

Table 2. Mean number of consultations in one year for youngest child by mother's stated main source of advice about illness.

| Source of advice | No. (%) of mothers | Mean no. of consultations |
|------------------------|--------------------|---------------------------|
| Husband and/or GP only | 132 (45) | 4.4 |
| Own mother | 61 (21) | 4.6 |
| Other relative | 25 (9) | 6.2 |
| Health visitor | 22 (7) | 4.2 |
| Neighbour | 20 (7) | 4.1 |
| Pharmacist | 19 (6) | 4.2 |
| Friend | 15 (5) | 5.5 |
| Total | 294 (100) | |

Socioeconomic grouping also appeared to have no significant effect on consultation frequencies, although low consulters were more likely to come from single parent families, who are likely to be in reduced socioeconomic circumstances.

Of the total of 1346 consultations for youngest children aged under five years in the families, 552 were for the 112 children of mothers who were employed outside the home and 794 were for the 182 children of the remaining non-employed mothers. The mean numbers of consultations per child per annum were 4.9 and 4.4 respectively and this difference was greater than would be expected by chance ($\chi^2 = 5.05$; $P < 0.05$, two tailed).

Similarly, children who attended a pre-school nursery or playgroup had a higher number of consultations than children of the same age group who did not attend; the mean consultation rates per child per annum were 4.8 and 3.0 respectively ($\chi^2 = 13.72$; $P < 0.01$).

Forty-five per cent of mothers said that they would not usually consult anyone other than their spouse or a doctor for advice about illness in their youngest child (Table 2) and the mother's own mother was the next most common source of advice (21% of mothers). Health visitors were an infrequent source of advice (7% of mothers) but the children of this group of mothers had consulted their general practitioner less frequently than others, as had those whose mothers said that they might seek advice from a neighbour or a local pharmacist. The highest consultation rates were found in the children of mothers who said that they would seek advice from a relative other than their own mother, or from a friend. None of the differences were statistically significant.

The reaction of mothers (Table 3) to the hypothetical situations set out in Appendix 1 was assessed as described earlier. The children of mothers who reacted urgently ('high scorers') had also consulted their general practitioner more frequently during the study period (Kendall's S test; $P < 0.05$) than the children of mothers who had reacted with less urgency ('low scorers').

These preliminary analyses of all the study group children led to a more detailed discriminant function analysis of those 178 of the original 294 children who were old enough to be eligible for admission to local nursery schools and playgroups. This analysis showed that, on balance, children whose frequency of consultation was low were more likely to be younger, more likely to come from larger families, and less likely to be enrolled in a pre-school group than those with a high consultation frequency. Their mothers worked less outside the home, were more likely to be single parents and reacted less urgently (low scorers) to the hypothetical illness situations. The canonical discriminant function incorporating these variables correctly classified 75% of cases in distinguishing between low (two or less) and high (six or more) consultation frequencies (Figure 1) and Table 4 shows the relative contribution of each variable to the function. The score on Figure 1 is not the illness situation score referred to earlier. It is a composite score derived from the variables listed in Table 4 as part of the device of the statistical technique.³ Other variables which were considered but excluded as non-discriminatory were: maternal family size, maternal sibling order, maternal age and sex of the child.

The reasons for consultation were categorized into 11 groups. There was, however, no evidence that differences in consultation frequency were significantly related to particular diagnostic categories.

Table 3. Mother's scores for hypothetical illness situations (Appendix 1) and mean number of consultations in one year for youngest children of these mothers.

| Total score | No. of mothers | Mean no. of consultations |
|-------------|----------------|---------------------------|
| 0 | 1 | } 4.5 |
| 1 | 9 | |
| 2 | 24 | 3.9 |
| 3 | 47 | 4.3 |
| 4 | 72 | 3.9 |
| 5 | 66 | 5.0 |
| 6 | 42 | 5.2 |
| 7 | 20 | 6.0 |
| 8 | 10 | } 4.5 |
| 9 | 3 | |

^aThese categories were amalgamated for Kendall's S test.**Table 4.** Canonical discriminant function analysis of high versus low consulters for nursery-school age children (total number = 178) (see also Figure 1).

| Variables included in function | Relative contribution to function (%) |
|--------------------------------------|---------------------------------------|
| Play group attendance | 25.9 |
| Illness situation score (Appendix 1) | 18.0 |
| Hours worked by mother outside home | 16.2 |
| Marital status of mother | 16.0 |
| Age of child | 14.2 |
| Size of family | 9.9 |

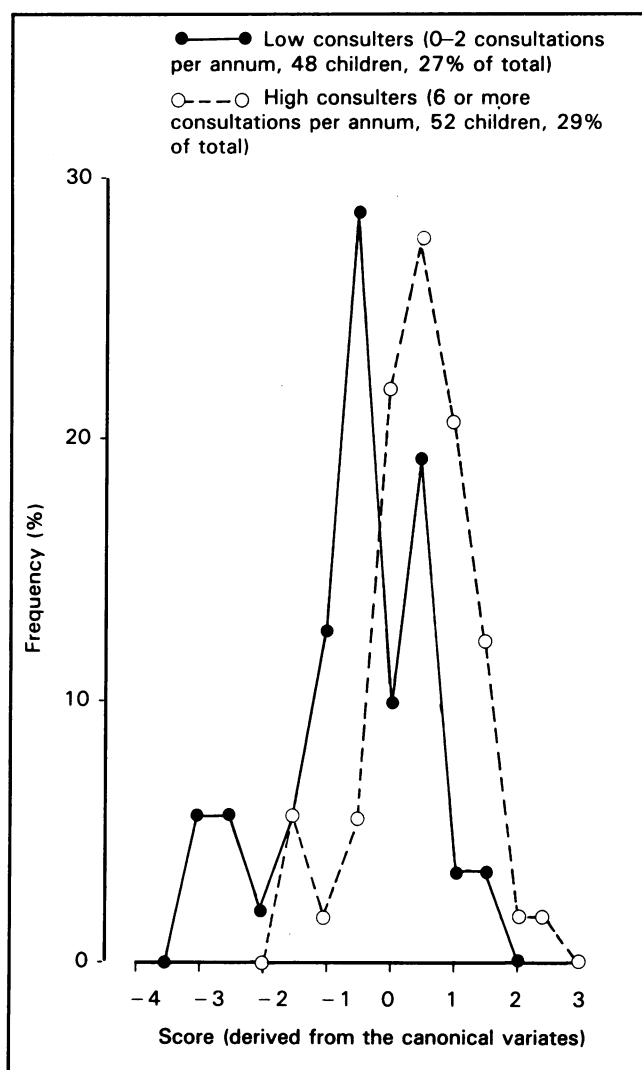


Figure 1. Canonical discriminant function analyses of high versus low consulters for nursery-school age children (total number = 178).

Discussion

The primary aim of the study was to look at the effect on consultation rates of factors which might reflect a mother's previous experience of dealing with young children. The evidence supported the hypothesis that for the youngest pre-school child in a family the frequency of consultation is inversely related to family size; but whether or not the mother herself came from a large family, and her sibling order in her maternal family (which might reflect her experience of dealing with younger siblings) appeared to have no effect on frequency of consultation. The effect of family size appeared to be independent of maternal age.

It is likely that our results can be extrapolated, at least crudely, to the general population, with the following caveats. The age profile of the mothers in our sample largely corresponds with expected figures calculated from national statistics^{4,5} although younger mothers were slightly under-represented and older mothers correspondingly over-represented. This may be partly because the less contemporary national figures do not take account of recent trends towards postponement of child-rearing, although it might also be due to bias in our sample toward higher socioeconomic groups. Although we have no detailed socioeconomic data for the practice (as opposed to the sample) population, the impression that the socioeconomic structure is

fairly typical is supported by the Jarman score⁶ for identification of underprivileged areas using census data, which shows the main practice area to be at the mid-point of his scale (-4 to +3), according to a recent report.⁷

The practice involved is a relatively young and progressive partnership, with practice-attached (as opposed to separately zoned) health visitors and district nurses, and a well developed team approach. It was therefore surprising that health visitors were relatively infrequently quoted as a source of advice about illness in young children. This may be partly because mothers were asked specifically about advice in relation to illness, as opposed to health maintenance, prevention and child-rearing generally and perhaps partly because health visitors (rightly) concentrate their efforts on a relatively small proportion of mothers who have particular difficulties. Although infrequently quoted, health visitors were still the most frequent source of professional advice next to the doctor.

It was surprising that two factors which had been included primarily to determine comparability of low and high consulters — attendance at pre-school groups and employment of the mother outside the home — emerged as the most powerful discriminants of low and high consulting frequency. Attendance at pre-school groups was associated with higher consultation rates and while it might be thought that attendance at nursery school would be associated with higher exposure to common infections, there was no evidence for this. Working mothers consulted general practitioners more frequently about their ill pre-school child and this may be to avoid having to stay off work to look after the child, but it is equally likely that they are less flexible in the time that they have available to consult the doctor. Although we cannot offer good explanations, we have identified the importance of these two factors for future studies of children in this age group.

Our study differs from that of Campion and Gabriel⁸ in a number of important respects. They studied all consultations (whether patient or doctor initiated) in 120 families with children aged 0-12 years. We studied a larger and more homogeneous group of children who were all aged under five years and the youngest child in their family. We also excluded children with long-term complaints and others on cultural grounds; and we confined our attention to first consultations initiated directly by the parent(s). Nevertheless, where comparisons can be made, our results accord broadly with those of Campion and Gabriel, except that we found no significant socioeconomic gradient in consultation rates of pre-school children. A most interesting parallel is that our independently produced measure of mothers' reactions to hypothetical illness situations corresponds closely with actual consulting frequencies in the same way as Campion and Gabriel's 'scenario action scores'. This suggests that reaction to simple standardized hypothetical situations is an easy and useful way of identifying mothers who might benefit from education about the assessment of children's symptoms and about appropriate use of medical services. This might apply as much to mothers with especially low scores, who may not be concerned enough about symptoms, as to high scorers who are overly anxious about their children.

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I want to get some idea of what sorts of situations would persuade you to call the doctor *urgently*.

Please suppose that your *youngest child* has not been quite himself today. He or she has been bad tempered, off his/her food and crying very easily. Please look at each of the following situations in turn and decide what you think you would be most likely to do if he or she woke up at night with each complaint.

Please tick *one box* for each situation.

Would you:

| | | |
|----------------------------|---|--|
| Contact at the time? | Contact the doctor next morning? | Wait and see how the child was next day? |
|----------------------------|---|--|

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| (a) Developed a cough which kept him/her awake but seemed otherwise fairly well | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| OR (b) Seemed to have a pain in the ear which kept waking him/her up | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| OR (c) Woke up and had a very loose and watery bowel motion (diarrhoea) but went back to sleep again afterwards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| OR (d) Became very hot and restless and kept crying a lot even when picked up | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| OR (e) Woke up with a very runny, blocked nose and bad cold and wouldn't go back to sleep | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| OR (f) Became wheezy with a 'chesty' cough and woke up seeming to have trouble getting breath | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Appendix 1. *Illness situation questionnaire which mothers completed.*

Acknowledgements

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Address for correspondence

Dr R.J. Taylor, University Department of General Practice, Foresterhill Health Centre, Westburn Road, Aberdeen AB9 2AY.

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- | | |
|-------------------|-------------------|
| 7-8 August 1987 | course number MAD |
| 21-22 August 1987 | course number MAE |
| 2-3 October 1987 | course number MAF |
| 6-7 November 1987 | course number MAG |

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