

Characteristics of children consulting for cough, sore throat, or earache

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ABSTRACT

Background

GPs are often consulted for respiratory tract symptoms in children.

Aim

To explore characteristics of children, their parents, and their GPs that are correlated with consulting a GP for cough, sore throat, or earache.

Design of study

Second Dutch National Survey of General Practice (DNSGP-2) with a health interview and an additional questionnaire.

Setting

Children aged 0–17 years registered with 122 GPs in Dutch general practice.

Method

Characteristics of patients and their GPs were derived from the DNSGP-2 health interview and a questionnaire, respectively. Characteristics of the illness symptoms and GP consultation were acquired by means of an additional questionnaire. Data were analysed using multivariate logistic regression.

Results

Of all children who completed the questionnaire, 550 reported cough, sore throat, or earache in the 2 weeks preceding the interview with 147 of them consulting their GP. Young children more frequently consulted the GP for respiratory symptoms, as did children with fever, longer duration of symptoms, those reporting their health to be 'poor to good', and living in an urban area. When parents were worried, and when a child or their parents were cued by someone else, the GP was also consulted more often. GP-related determinants were not associated with GP consultation by children.

Conclusion

This study emphasises the importance of establishing the reasons behind children with respiratory tract symptoms consulting their GP. When GPs are aware of possible determinants of the decision to consult a GP, more appropriate advice and reassurance can be given regarding these respiratory symptoms, which are generally self-limiting.

Keywords

children; consultation; family practice; respiratory tract infections.

INTRODUCTION

Respiratory tract symptoms such as cough, sore throat, and earache are common in children.¹ Most illnesses in children are resolved without involving the professional healthcare system. Children consult their GP in only 11% of all illness episodes,² while respiratory symptoms account for a quarter of the consultations by children in general practice.³

Respiratory tract symptoms generally have a viral cause and are self-limiting.^{4–7} Accordingly, the Dutch guidelines recommend that GPs should provide adequate information to parents and children.^{8–10} Children (and/or parents) and GPs seem to have different expectations for consulting a GP. Contrary to what many GPs believe, patients consult a GP primarily for information and reassurance rather than for a prescription for medication.^{11,12}

Patients (more than GPs) regard respiratory tract symptoms as serious, and generally believe consulting a health professional is necessary for these symptoms.¹³ Although inconsistent with the previous observation many adult patients believe that antibiotics are essential to treat respiratory infections, Van Duijn *et al* found that adult patients with respiratory symptoms for longer than 2 weeks

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more frequently visited their GP when they were cued by others. In addition, patients who perceived their symptoms as more serious, and those who were unaware of the self-limiting nature of respiratory symptoms more frequently visited their GP.¹⁴

Although these determinants have been studied in adults, it is unknown whether parents and their children have the same expectations regarding GP consultation for a child's respiratory tract symptoms.

Although van Duijn *et al* found no association between GP-related determinants and illness behaviour in cases of respiratory tract infection,¹⁴ other studies have reported that GP-related characteristics (such as GP's age and sex) correlate with consultation behaviour.¹⁵⁻¹⁷

Less is known about which GP-related determinants influence GP consultation for respiratory tract symptoms among children. This study explores determinants of a GP consultation with respect to children, their parents and their GP, with regard to consulting a GP for cough, sore throat, or earache.

METHOD

Design

The data used in this study were derived from the Second Dutch National Survey of General Practice (DNSGP-2), which was performed by the Netherlands Institute for Health Services Research (NIVEL) in 2001.¹⁸

To establish the factors that determine which children with respiratory symptoms are presented to their GP, the characteristics of children reporting their symptoms in a health interview and subsequently consulting their GP were compared with children who also reported these symptoms but did not consult their GP. GP characteristics for these two groups were also compared to determine whether or not they might be related to consultation behaviour.

Second Dutch National Survey of General Practice

During a 1-year study period, 195 GPs in 104 practices throughout the Netherlands participated in the data collection. In the Netherlands, general practices have a fixed patient list, all inhabitants are listed in a general practice, and GPs have a gate-keeping role for specialised care. The patients enlisted in the participating practices were comparable to the general Dutch population with respect to age, sex, and type of health insurance. Data also included all prescribed medication.

For the current analysis, data from 23 practices were excluded because data were incomplete, or linking additional child questionnaires (see 'Patients' paragraph) to GPs failed. Data were included from

How this fits in

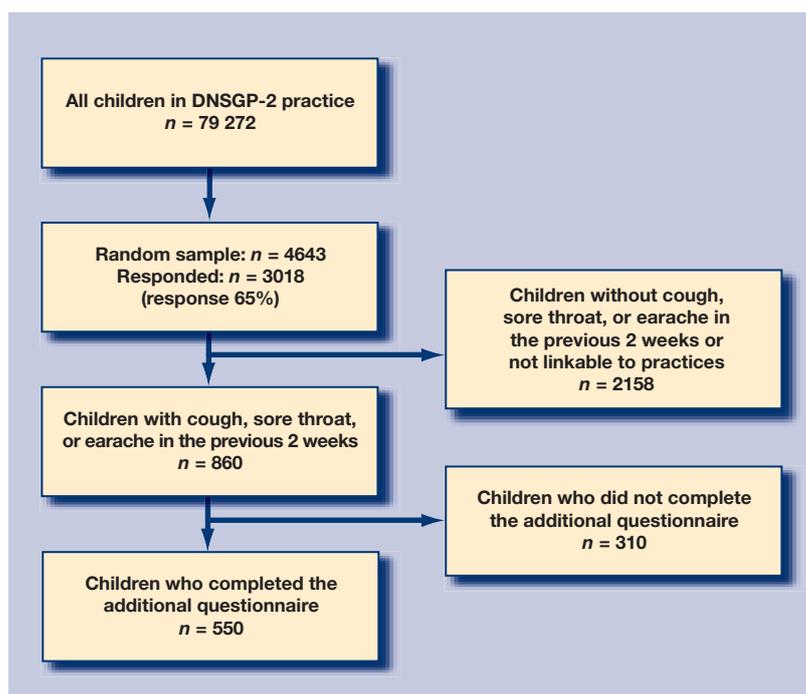
Respiratory tract symptoms are common in children. Adult studies show that older age, worry, and being cued by others correlate with the consulting of a GP for these symptoms; the present study revealed similar results for children. In addition, it was found that fever, longer duration of symptoms, and higher level of urbanisation play an important role in why patients consult their GP. There is a strong association between being cued by others and GP consultation, but GP-related determinants are not associated with the decision to consult the GP for respiratory tract symptoms.

the child patients of 81 practices with 122 GPs (Figure 1). When comparing these 122 GPs with all 7676 Dutch GPs no significant differences were found for sex, age, and degree of urbanisation. Single-handed GPs were relatively underrepresented (34% versus 43%, $P = 0.04$) among the participating GPs.

Health interview

An all-age random sample of approximately 150 listed patients per full-time equivalent GP was selected and approached to participate in a health interview:¹⁹ the response rate was 65%. The interviews were performed at the patient's home by trained interviewers, and the interviews were evenly distributed over four consecutive 3-month periods. A total of 3018 children (aged 0-17 years) participated in the health interview (Figure 1). The following personal characteristics were derived from these data: age; level of education of the parents (highest education of both parents, dichotomised into lower

Figure 1. Selection of the study population (aged 0-17 years) from the Second Dutch National Survey of General Practice (DNSGP-2).



secondary school or less versus more than secondary school); type of health insurance (public versus private); degree of urbanisation of the patient's residence (rural versus urban); ethnic origin (non-native versus native); self-reported health (poor, moderate or good versus very good or excellent); and if the child had ever been diagnosed as having asthma. For all children younger than 12 years, a proxy interview was carried out with a parent; children aged 12–17 years were interviewed personally.

For all people approached for the health interview, responders and non-responders did not differ with respect to age, sex, and health insurance.

Patients

Children who had recently (in the 2 weeks preceding the interview) had cough, sore throat, or earache (*n* = 860) were asked to complete an additional questionnaire (response rate *n* = 64%). They were asked about the duration of symptoms (more or less than 2 weeks); whether they consulted their GP (either by telephone, visit to the practice, or home visit) for these symptoms during the 2 weeks preceding the interview; presence of fever; whether they were cued by their partner (only for parents), by parents, or by others to consult the GP; if they had used over-the-counter medication; and whether the parents worried that their child had a serious illness.

GP characteristics

Characteristics of all 122 GPs were obtained via a mailed questionnaire. Assessed were: age; sex; average number of patient contacts per day; single-handed practice or not; self-reported use of national

GP guidelines (once a week or less versus more than once a week); seeing pharmaceutical representatives (an indicator of prescribing behaviour); reluctance to prescribe new drugs (entirely disagree, disagree versus hesitation, agree and entirely agree); and whether they were involved in GP training. Also calculated were the number of antibiotics prescribed by GPs for respiratory tract infections per 1000 patients of all ages during the 1-year study period.

Data analysis

Data of 550 children were included in the analysis. Because only children aged 12–17 years were personally interviewed, the two age groups (0–11 and 12–17 years) were also analysed separately. Patient characteristics were compared using the χ^2 test.

The main outcome measure was whether or not the child with respiratory tract symptoms consulted their GP. Patient and GP characteristics as independent variables, and consulting the GP for respiratory symptoms as a dependent variable, were first analysed bivariate. All above-mentioned patient and GP characteristics that were associated with GP consultation (with *P* < 0.20) were included in the multivariate logistic regression analysis. Multicollinearity tests were performed to identify unacceptably high (>0.80) correlations between the independent variables. For the multivariate analysis the significance level was *P* = 0.05. Analyses were conducted with the SPSS package, (version 11.0).

The multivariate analysis was repeated taking into account the multilevel structure of the data, with children clustered within practices, using the SAS package (version 8.2).

Table 1. Characteristics of all children interviewed, children with recent symptoms (cough, sore throat, or earache), children who consulted their GP for these symptoms, and children who did not consult.

| | All children interviewed (<i>n</i> = 3018) | Children with recent symptoms (<i>n</i> = 550) | Children with recent symptoms who consulted their GP (<i>n</i> = 147) | Children with recent symptoms who did not consult their GP (<i>n</i> = 403) |
|-----------------------------------------------|------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Age, years | | | | |
| 0–4 (%) | 768 (25.4) | 173 (31.5) | 53 (36.1) | 120 (29.8) |
| 5–11 (%) | 1327 (44.0) | 220 (40.0) | 65 (44.2) | 155 (38.5) |
| 12–17 (%) | 923 (30.6) | 157 (28.5) | 29 (19.7) | 128 (31.7) |
| Sex (% female) | 46.9 | 52.9 | 46.3 | 55.3 |
| Level of education parents (% low education) | 14.1 | 10.4 | 14.3 | 8.9 |
| Type of health insurance (% public insurance) | 57.6 | 56.7 | 61.2 | 55.1 |
| Urban (%) | 50.9 | 51.8 | 62.6 | 47.9 |
| Ethnicity (% native Dutch) | 90.8 | 89.5 | 87.1 | 90.3 |
| Self-reported health (% poor to good) | 40.1 | 47.3 | 63.9 | 41.6 |

RESULTS

Patient characteristics are presented in Table 1. Young children (aged 0–4 years) more frequently had respiratory symptoms (cough, sore throat, or earache) in the previous 2 weeks than older children ($P = 0.01$). Girls more often reported respiratory symptoms than boys ($P = 0.009$). Type of health insurance and degree of urbanisation did not differ between all children interviewed and those with recent respiratory symptoms. Children with respiratory symptoms more often reported their health to be 'poor to good' than 'very good' or 'excellent'.

About 27% of the children with recent respiratory symptoms consulted their GP. Children aged 0–4 years and their parents consulted the GP more often than older children ($P = 0.02$), and children who had public health insurance were more likely to consult the GP. Children living in an urban area were over represented in the group of children with recent symptoms who consulted their GP, and the latter group more often reported their health to be 'poor to good' ($P < 0.001$).

GP characteristics are presented in Table 2. The mean age of the GPs was 47 years, less than one-quarter were female, and the majority were practising in an urban area. The mean number of daily contacts was 30, and most of the GPs reported regular use of the national general practice guidelines. Almost 50% were GP trainers, a small majority saw pharmaceutical representatives, and most GPs were reluctant to prescribe new drugs.

Table 3 provides an overview of the patient factors related to GP consultation. Children who consulted their GP more often had symptoms that lasted longer than 2 weeks and more often reported having fever, than children who did not consult. When parents or children were cued by others to contact the GP they more frequently consulted their GP (34.7% versus 1.0%). As stated before, for children less than 12 years of age a proxy interview was carried out; all

Table 2. Characteristics of the participating GPs ($n = 122$).

| | |
|---------------------------------------------------------------------------|---------------|
| Mean age, years (SD) | 47.4 (6.1) |
| Sex (% female) | 21.3 |
| Single-handed practice (%) | 33.6 |
| Practice size, mean (SD) | 2330 (589) |
| Full-time equivalent, mean (SD) | 0.88 (0.17) |
| Number of daily contacts, mean (SD) | 29.7 (11.9) |
| Consulting general practice national guidelines more than once a week (%) | 54.9 |
| GP trainer (%) | 49.2 |
| Seeing pharmaceutical representatives (%) | 57.4 |
| Reluctant to prescribe new drugs (%) | 92.6 |
| Number of antibiotic prescriptions/1000 patients, mean (SD) | 265.8 (132.1) |

SD = standard deviation.

parents who felt cued to consult the GP were cued by their partner. For children older than 12 years the questionnaire was answered by the children themselves and this group were cued by their parents. Children of worried parents consulted their GP more frequently.

Determinants for consulting a GP

The results of the multivariate analyses are presented in Table 4 (all children together, and the two subgroups separately). Multicollinearity testing did not reveal any unacceptably high correlations between the independent variables. None of the correlations was above 0.30, and most were close to zero.

For all children, seven determinants for GP consultation emerged. Younger children from urban areas with upper respiratory symptoms consulted their GP more often. Children who reported their own health as 'poor to good' consulted their GP twice as often as children reporting their health as 'very good' or 'excellent'. Symptoms lasting more than 2 weeks and presence of fever yielded an increased chance of GP consultation (odds ratios: 2.1 and 3.5 respectively). Worried parents and those who were

Table 3. Percentages of children with recent symptoms (cough, sore throat, or earache) who consulted their GP for these symptoms and children who did not.

| | Children with recent symptoms who consulted their GP ($n = 147$), % | Children with recent symptoms who did not consult their GP ($n = 403$), % | P -value ^a |
|----------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------|
| Symptoms >2 weeks | 73.2 | 28.8 | <0.001 |
| Presence of fever during reported symptoms | 41.5 | 21.6 | <0.001 |
| Cued by others to consult GP | 34.7 | 1.0 | <0.001 |
| Over-the-counter medication | 60.5 | 59.3 | 0.790 |
| Worried child is suffering a serious illness | 42.1 | 9.3 | <0.001 |
| Self-reported diagnosis asthma | 25.2 | 11.2 | <0.001 |

χ^2 , degree of freedom = 1.

Table 4. Determinants for consulting a GP for recent cough, sore throat, or earache for all children who completed questionnaires, children aged 0–11 years and children aged 12–17 years.

| | All children (n = 550) | | Children 0–11 years (n = 393) | | Children 12–17 years (n = 157) | |
|-----------------------------------------------------------------------|-------------------------|---------|-------------------------------|---------|--------------------------------|---------|
| | Adjusted OR (95% CI) | P-value | Adjusted OR (95% CI) | P-value | Adjusted OR (95% CI) | P-value |
| Age | 0.91 (0.86 to 0.97) | 0.002 | 0.99 (0.89 to 1.10) | 0.900 | 1.05 (0.78 to 1.40) | 0.770 |
| Female sex | 0.91 (0.55 to 1.52) | 0.720 | 0.73 (0.42 to 1.27) | 0.260 | 1.22 (0.46 to 3.26) | 0.690 |
| Urban living | 2.01 (1.19 to 3.40) | 0.009 | 2.19 (1.25 to 3.83) | 0.006 | 1.31 (0.48 to 3.62) | 0.600 |
| Low education parents | 0.73 (0.41 to 1.32) | 0.300 | 0.70 (0.36 to 1.37) | 0.300 | 0.69 (0.26 to 1.81) | 0.450 |
| Reporting own health as poor to good | 2.23 (1.26 to 3.94) | 0.006 | 1.73 (0.90 to 3.33) | 0.100 | 4.00 (1.43 to 11.01) | 0.008 |
| Reporting presence of diagnosis asthma | 1.39 (0.71 to 2.69) | 0.340 | 1.52 (0.75 to 3.11) | 0.250 | 1.41 (0.41 to 4.89) | 0.590 |
| Duration of symptoms >2 weeks | 3.50 (1.98 to 6.19) | <0.001 | 3.80 (2.05 to 7.03) | <0.001 | 5.04 (1.69 to 14.99) | 0.004 |
| Fever | 2.11 (1.22 to 3.64) | 0.007 | 2.56 (1.42 to 4.61) | 0.002 | 2.38 (0.79 to 7.13) | 0.120 |
| Parents worried (or child if ≥12 years) | 4.95 (2.79 to 8.78) | <0.001 | 4.88 (2.61 to 9.12) | <0.001 | 2.77 (0.81 to 9.48) | 0.100 |
| Cued by others to visit GP | 47.72 (15.34 to 148.48) | <0.001 | 12.34 (3.86 to 39.51) | <0.001 | – ^a | – |
| GPs' age | 0.98 (0.94 to 1.03) | 0.400 | 0.98 (0.93 to 1.03) | 0.360 | 0.99 (0.91 to 1.07) | 0.780 |
| Consulting general practice national guidelines more than once a week | 0.67 (0.40 to 1.12) | 0.120 | 0.76 (0.44 to 1.31) | 0.320 | 0.40 (0.15 to 1.03) | 0.590 |

Multivariate logistic regression analysis. ^aNot included in analysis: every child that was cued consulted the GP. OR = odds ratio.

cued by other family members to consult a GP consulted their GP more often.

In the subgroup of children aged 0–11 years, fewer independent determinants were associated with GP consultation. Children who consulted a GP more frequently, more often had fever, respiratory symptoms lasting longer than 2 weeks, and more frequently lived in urban areas. Parents of these children were more frequently worried and cued to consult a GP with their child.

In the subgroup of children aged 12–17 years, the two independent determinants 'reporting own health as moderate to poor' and 'longer duration of respiratory symptoms' were related with GP consultation. This subgroup was analysed without the determinant 'cued to consult the GP' because every child in this age group who was cued did in fact consult the GP.

None of the GP characteristics were associated with the consulting pattern of the children and their parents. Multilevel analyses, taking clustering of children at practice level into account, yielded very similar results.

DISCUSSION

Summary of main findings

Younger children more often consulted their GP for respiratory symptoms than older ones. Children with fever and respiratory symptoms that lasted longer than 2 weeks, more often consulted their GP. GPs

were more frequently consulted when the parents were worried and when children and/or parents were cued by other family members. Children with respiratory symptoms living in urban areas consulted more often than children in rural areas. Fever and longer duration of respiratory symptoms were associated with consulting behaviour, whereas GP-related characteristics were not associated with parents' decision to consult.

Strengths and limitations of the study

This study uses data derived from the Second Dutch National Survey of General Practice (DNSGP-2). These unique data allowed for the assessment of the role of both child and parent factors, as well as GP characteristics, on consulting behaviour for respiratory tract symptoms.

Characteristics of the GP and patient sample are comparable with the general Dutch population.¹⁹ Only single-handed practices were relatively underrepresented; however, because this item was not related to the study outcome it is probably not a major limitation. The results therefore can be assumed to represent daily primary care and consultation behaviour in the Netherlands.

Although the children were separated into two age groups (driven by the different way of data collection in the health interview), within each age group differences may still exist.

In the additional questionnaire, parents and

children were asked whether or not they had consulted their GP. Self-reports are vulnerable to recall bias. Because the recall period was only 2 weeks, it can be assumed that this bias was relatively small.

Comparison with existing literature

A relationship between age and consultation rates was reported earlier by Holme.²⁰ Bruijnzeels *et al* found that younger children (aged 0–4 years old) were taken twice as often to their GP than older children (aged 10–14 years).² The current study yields similar results; with every yearly increase in age the risk for a child with respiratory symptoms to consult the GP decreases by 9%. In accordance with Hay *et al*, it was found that fever plays an important role in consultation.²¹ In contrast with the current study in which children from urban areas more frequently consulted their GP with cough, sore throat, and earache, Bruijnzeels *et al* found no relation with the degree of urbanisation.²

Van Duijn *et al* reported that age, longer duration of symptoms, and having respiratory comorbidity positively influences GP consultation among adults with upper respiratory tract symptoms.¹⁴ Adult patients who were worried about the seriousness of their respiratory symptoms consulted a GP earlier, and the same was found for those who were cued by others to visit a GP.^{14,22} This study showed similar findings for children aged 0–17 years old.

The literature is not conclusive concerning whether GP characteristics are associated with GP consultation by children and parents. In this study no GP-related determinants were found for GP consultation, as was reported earlier for adults.¹⁴ In another study, GP characteristics were associated with prescribing antibiotics for upper respiratory tract infections.²³ Others found the same association,^{24–26} which may be explained as follows: patients generally know the prescription pattern of their GP and this may, in turn, affect GP consultation rates. However, in contrast to these studies, the current study combined both patient viewpoints with respect to a specific respiratory tract infection and GP characteristics. Williamson *et al* reported that prescribing antibiotics for middle ear disease probably increased reattendance.²⁷

In this study no association was found between the number of antibiotics prescribed by GPs for respiratory tract infection per 1000 patients and GP consultation. This difference perhaps can be explained by the larger range of antibiotic prescriptions in the UK.

Being cued by a family member to consult the GP is a well-known phenomenon in daily practice. In this study parents cued each other, and older children

were cued by their parents. This strong association between ‘cueing by family members’ and GP consultation confirms the findings of Cardol *et al* which examined family influence on healthcare utilisation.²⁸

Implications for clinical practice

This study emphasises the importance of adequately exploring the reasons for consulting the GP. For example: are children and/or parents worried about the child’s respiratory symptoms? Are they cued by another family member? Is the fever or duration of symptoms the reason for consulting the GP? Most symptoms of cough, sore throat, and earache have a viral cause and a self-limiting character. When GPs pay more attention to the possible reasons for consultation, they will be able to give more appropriate advice and reassurance to children and parents about these specific symptoms.

In conclusion, this study shows that children with younger age, fever, longer duration of upper respiratory tract symptoms, those living in an urban area, along with parents and children who worry about symptoms reporting their own health as ‘poor to good’, and those who are cued by other family members consult their GP more frequently. Knowledge about these determinants will enable GPs to provide appropriate and timely advice and reassurance.

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Competing interests

The authors have stated that there are none

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