

**PAEDIATRIC OUTPATIENT CARE:**  
SOCIO-DEMOGRAPHICS AND HEALTHPROBLEMS

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**PAEDIATRIC OUTPATIENT CARE:  
SOCIO-DEMOGRAPHICS AND HEALTHPROBLEMS**

Poliklinische Zorg in de Kindergeneeskunde:  
Sociaal Demografische Gegevens en Gezondheidsproblemen

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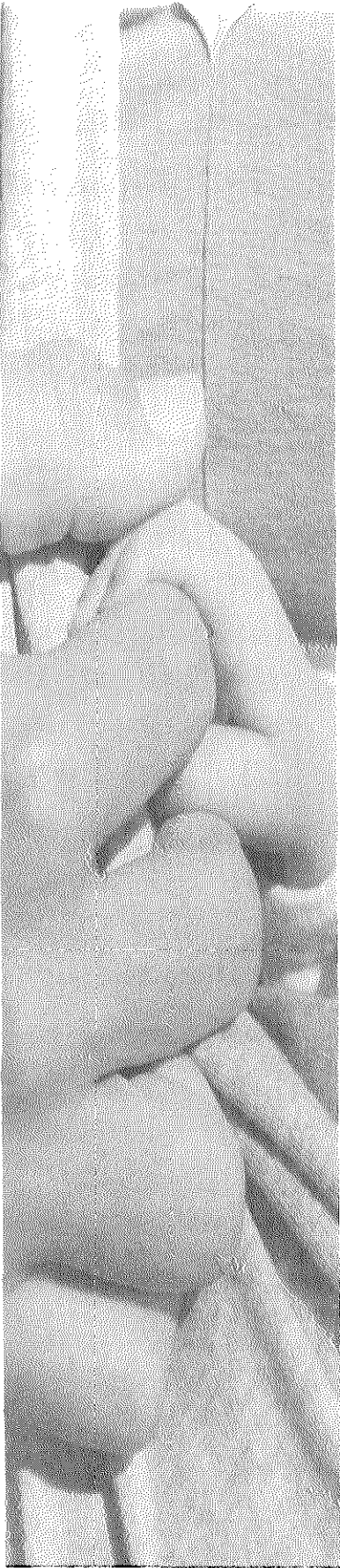
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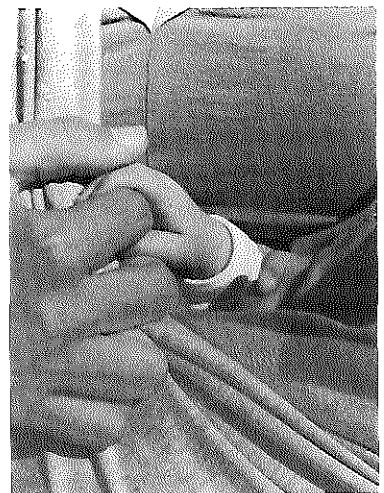
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## **CHAPTER 1**

### **INTRODUCTION**







# **CHAPTER 1.1**

**GENERAL INTRODUCTION  
&  
STUDY AIMS**

## GENERAL INTRODUCTION

Yearly, children make well over 300.000 initial visits to a paediatrician at an outpatient paediatric department in the Netherlands (1). Approximately 80% of the complaints of children experienced by the parents are managed at home, outside the formal healthcare system (2) (3). This implicates that about 20% of all recognised healthproblems are presented to the healthcare system. The healthcare system in the Netherlands is based on referral, which means that the general practitioner acts as a gatekeeper to specialists (4). Of all children who contacted the general practitioner, approximately 9% is referred to a specialist (5). Fifteen percent of these referrals concerns acute medical problems and about the same percentage concerns referrals to paediatricians (5).

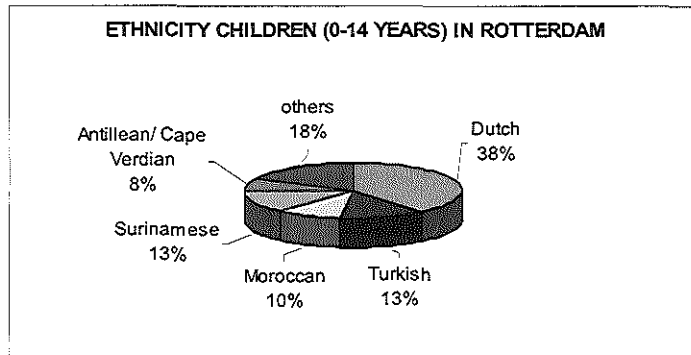
Each year 8.000 consultations are made at the outpatient department of general paediatrics of the Sophia children's Hospital, of which approximately 1700 are new referrals. The paediatric emergency department (PED) of the Sophia Children's Hospital is yearly visited by 4500 patients (excluding surgical problems). The general paediatric problems mainly (90%) includes basic specialistic care, meaning that these problems are comparable to paediatric problems presented to other (non University) outpatient care departments. In this thesis a number of aspects of outpatient care are scrutinised. Some aspects in paediatric outpatient care seem to be changing and require further analyses: changes in the population and changes in the use of care. Questions regarding these aspects are for example: What kinds of healthproblems are presented to the outpatient and emergency department of paediatrics? Who presents these healthproblems and why? What is the prevalence of non-urgent visits and second opinions in paediatric care?

### *Presenting problems and socio-demographics*

General paediatric healthproblems presented to emergency departments are mainly infectious problems, like fever, cough and cold, respiratory problems, like asthma exacerbations, and gastro-intestinal problems (6-8). At the outpatient department, non-acute problems concern mainly problems of the respiratory tract (asthmatic complaints), infectious related complaints like recurrent upper airway infections and urinary tract infections, constipation or abdominal pain, fits, headaches and cardiac murmurs (8-10). Next to this diversity of healthproblems there is also a diversity of patients that present these problems.

The Netherlands is a multicultural society. At the end of the 1940's, people from Indonesia immigrated to the Netherlands. Since the 1960s migrants from the Mediterranean, e.g. Turkey and Morocco immigrated to the Netherlands (11,12). This was followed by immigration from the people from our former colony Suriname and from the Netherlands Antilles. At present, the major groups of immigrants are the Surinamese, Turkish, Moroccan and Antillean people. The percentage of children in these groups is large and will even increase in the future. In Rotterdam the percentage of ethnic minority children in the age-group of 0-14 years is now 60% (13% Turkish, 10% Moroccan, 13% Surinamese, 8% Antillean or Cape Verdean and 18% others) (figure 1)(13). As a consequence, the healthcare system - preventive, general

practitioner as well as paediatric care- are experiencing an increase of children from ethnic minorities.



**Figure 1** Ethnic background of children (0-14 years) in Rotterdam in 1999 (13)

Paediatric care for children from ethnic minorities entails several aspects. First, ethnicity is an important determinant of health. From available literature is known that ethnic minorities, especially Moroccans, have higher mortality rates, due to higher incidences of infectious diseases, genetic disorders, metabolic diseases and accidents (14-17). Next to these differences in mortality rates also differences in morbidity have been described. Especially, respiratory problems (asthma) and enuresis were frequently illuminated in relation to ethnicity (18-25). Ethnic minorities more frequently have diabetes, thalassemia, sickle-cell anaemia, iron deficiency anaemia and infections (12,26). In general practice, differences in reason for consultations have been shown (27-31). Moreover, communication problems, including language barriers and cultural differences between physicians and patients, have been experienced and described (28,32-38).

Explanations for differences in healthproblems and use of healthcare in relation to ethnicity have been hypothesised, but only a few studies have studied them empirically and adequately (27,37,39-41). Besides most studies are based on adults. Stronks developed a conceptual model in which all the determinants and underlying mechanisms influencing the relation between ethnicity and health outcomes are included (41).

A part of the associations between ethnicity and health outcomes are due to differences in socio-economic status (SES) (40-42). SES is, next to ethnicity, an important determinant of health and healthcare use. In the Netherlands, the difference in socio-economic levels maybe not that large as in other countries such as the United States. However, social inequalities in health of adults and children do exist in several European countries. Prevalences of healthproblems, such as, asthma, obesity, intellectual disabilities and psychosocial problems are higher in low SES groups compared to higher SES groups of children (43-48). Furthermore, patients from lower socio-economic groups more frequently visit general practitioners and outpatient departments (30, 49).

The healthcare system in the Netherlands is still not sufficiently equipped and adapted to the multi-cultural and multi-socio-economic society (50). Socio-demographic factors, such as ethnicity and socio-economic status, have received little attention in the field of general paediatric care as compared to the attention by general practitioners and physicians in the preventive care. The question arises whether Turkish, Moroccan and Surinamese children consult emergency and outpatient departments with specific healthproblems more often compared to Dutch children. And, what is the role of social-economic status in presented healthproblems? Furthermore, clinicians have experienced that several patients, especially ethnic minorities, use the emergency department inappropriately. Some patients with acute problems consult the PED (too) late, while others frequent present the PED with non-urgent problems. Empirical data however is lacking. Is it necessary to adapt paediatric care for these children and their parents? Insight into healthproblems, helpseeking behaviour and possible explanations for observed differences is needed.

### ***Use of paediatric outpatient care***

In general, the use of healthcare is dependent on 1) medical need, 2) predisposing factors, like knowledge, locus of control, coping and socio-demographic factors, and 3) enabling factors, like practical support, cultural barriers and language barriers (51). Whether patients seek help and where they seek help is influenced by all these factors.

In children, parents recognise symptoms, make an assessment (of the severity) of the problem and make decisions to take action: do nothing, apply self-care or seek care from physicians or other care-givers (2). Factors such as patient's age, gender, birth order, race, ethnicity, maternal age, maternal educational level, culture, family size and the influence of family and friends all play a role in this process (2,3,52-54). Only 20% of all healthproblems in children are presented to the formal healthcare system, of which a part (15%) is presented to the paediatricians.

Since several years, patients are more aware of their right to be well informed about their health. Furthermore, media sources, like Internet, have given people more access to gather information regarding health, illnesses and diseases. Besides, patients have become more assertive in their attitude towards physicians and other healthcare workers and initiate more frequently visits to a specialist. Two specific aspects of healthcare use might be influenced by these changes: non-urgent visits to emergency departments and second opinion visits at outpatient departments.

Recent studies have shown an increase of non-urgent visits to the emergency departments. Not only in adults (40- 50%) but also large percentages -ranging from 29% to 72%- of paediatric visits seem to be non-urgent (55-62). Most of the studies on non-urgent visits have been performed in the United States and are therefore not applicable to some European countries. In several European countries, like the Netherlands, England and the Nordic countries, the general practitioner acts as a gatekeeper to the specialist (4). Despite this system, clinicians experience a high number of non-urgent visits. Especially patients who bypass the general practitioner cause this high number. Unfortunately, numbers of non-urgent visits at the emergency departments in the Netherlands are unavailable. Several non-European

studies showed that some socio-demographic factors influence non-urgent visits to emergency departments (59, 60, 62). The question rises whether these factors also play a role in a healthcare system based on referral?

Several different definitions for a second opinion visit have been used. In general a second opinion means that patients seek a new opinion for their health problems for which they consulted another physician with the same expertise level before. The frequency of second opinions varies largely. In adult patients percentages from 5 to 40% are mentioned, depending on the definition of second opinion, population and healthcare care system (63-65). In paediatrics lacks data on second opinions, but based on the concern of parents towards their children one would expect an even higher number of second opinions in children. Interesting is to see whether factors, such as type and duration of health complaint, and socio-demographic factors, play a role in second opinion visits in children (63, 64).

## STUDY AIMS

The general paediatric outpatient care in the university hospitals in the Netherlands provides secondary and tertiary care to children aged from 0 to 16 years. Since several years, the patient population and the use of healthcare appears to be changing and these developments require further analyses. Outpatient departments as well as emergency departments are visited by children with different ethnic and socio-economic backgrounds with a diversity of healthproblems.

The **first aim** of this thesis was to obtain insights into patient characteristics, especially ethnicity and socio-economic status, and medical problems presented to the emergency department and the outpatient department of a university paediatric hospital.

Clinicians suggest changes in healthcare use by parents and patients. They perceive an increase of non-urgent visits to emergency departments and an increase of second opinion visits at outpatient departments. Therefore, the **second aim** was to evaluate non-urgent visits and second opinion visits in paediatric outpatient care.

The **third aim** was to obtain and delineate possible explanations for differences in health and helpseeking behaviour between ethnic minorities

Insight into these aspects of paediatric outpatient care (healthproblems, healthcare use and patient characteristics), can be helpful in the development of strategies that might optimise and fine tune the care for groups of children with different backgrounds and healthproblems.

The specific questions of this thesis were:

- Can differences be identified in presenting medical problems at the paediatric emergency department between different ethnic groups?
- Is there a relation between ethnicity and the clinical presentation and disease severity of "meningeal sings" at the paediatric emergency department?
- What is the influence of ethnicity and socio-economic status on healthproblems as presented at a paediatric outpatient department?
- Which factors are related to non-urgent visits at the paediatric emergency department?
- How often do second opinions in paediatric outpatient care occur and which patient characteristics and healthproblems are associated with second opinions?
- Can differences in the presentation of acute medical problems and their difference in help-seeking behaviour between Dutch, Turkish and Moroccan parents be explained?
- How valid is the use of surnames to identify children's ethnicity in large routine databases?

## REFERENCES

1. Prismant. Landelijke ziekenhuis registratie 2000. Utrecht: Prismant; 2000.
2. Bruijnzeels MA. Illness in children and parental response. Rotterdam: Erasmus University Rotterdam; thesis 1996.
3. Kleinman A, Eisenberg L, Good B. Culture, illness, and care: clinical lessons from anthropologic and cross-cultural research. *Ann Intern Med* 1978;88(2):251-8.
4. Kulu-Glasgow I, Delnoij D, de Bakker D. Self-referral in a gatekeeping system: patients' reasons for skipping the general-practitioner. *Health Policy* 1998;45(3):221-38.
5. Suijlekom van-Smit LWA, Crone-Kraaijeveld E. Illness in childhood, general practitioner's and pediatrician's concern [in Dutch]. Rotterdam: Erasmus University Rotterdam; thesis 1994.
6. Bowling A, Isaacs D, Armston J, Roberts JE, Elliott EJ. Patient use of a paediatric hospital casualty department in the east end of London. *Fam Pract* 1987;4(2):85-90.
7. Bedford HE, Jenkins SM, Shore C, Kenny PA. Use of an East End children's accident and emergency department for infants: a failure of primary healthcare? *Quality in healthcare* 1992;1:29-33.
8. Steensel van-Moll HA, Jongkind CJ, Aarsen RSR, De Goede-bolder A, Dekker A, Suijlekom van-Smit LWA, et al. Een probleemgeoriënteerd patientenclassificatiesysteem voor de algemene kindergeneeskunde II. *Tijdschr Kindergeneeskd* 1996;64, nr3:99-104.
9. Dawson KP, Ford RP. Who comes to a paediatric medical outpatient clinic? *N Z Med J* 1988;101(841):111-2.
10. MacFaul R, Long R. Paediatric outpatient utilisation in a district general hospital. *Arch Dis Child* 1992;67(9):1068-72.
11. Schulpen TWJ. Internationale en interculturele aspecten van kindergeneeskunde en jeugdgezondheidszorg. In: *Ned Tijdschr Geneeskd*; 1994. p. 367-370.
12. Schulpen TWJ. Migration and child health: the Dutch experience. *Eur J Pediatr* 1996;155(5):351-6.
13. Centrum voor Onderzoek en Statistiek (COS). Demografische gegevens Rotterdam 1999. 1999.
14. Enk van A, Buitendijk E, K.M. Pvd, Enk van WJJ, Schulpen TWJ. Perinatal death in ethnic minorities in the Netherlands. *J Epidemiol Community Health* 1998;52:735-739.
15. Schulpen TWJ, van Enk A. Mortaliteit naar etniciteit bij kinderen in Nederland. *Ned Tijdschr Geneeskd* 1996;140(50):2489-92.
16. Driel vHF, Steenbergen vJE, Gosissen WHM, Schulpen TWJ. Etnische en sociaal-economische verschillen in perinatale en zuigelingensterfte in de stad Utrecht. een analyse. *TIJDSCHR SOC GENEESKD* 1999;77(4):208-216.
17. Schulpen TWJ, Steenbergen van JE, Driel van HF. Influences of ethnicity on perinatal and child mortality in the Netherlands. *Arch Dis Child* 2001;84:222-6.
18. Gorissen WHM, Brussaard-Scholtman GCA, Schulpen TWJ. Luchtwegklachten bij schoolkinderen in Utrecht: de invloed van etniciteit en de woning. *Tijdschrift voor Jeugdgezondheidszorg* 1999;31(2):17-21.
19. Wal van der MF, Rijcken B. Astmatische klachten bij autochtone en allochtone kinderen van 2-11 jaar in Amsterdam. *TIJDSCHR SOC GENEESKD* 1995;73:42-50.
20. Gorissen WHM, Brussaard-Schotman GCA. Cara bij schoolkinderen in Utrecht., Utrecht: GGenGD Utrecht, afdeling jeugdgezondheidszorg; 1996.
21. Wal van der M. Etnische ongelijkheid in gezondheid bij kinderen. Utrecht: Academic University Utrecht; 1997.
22. Spee- Wekke van der J, Hirasing RA, Meulmeester JF, Radder JJ. Childhood nocturnal enuresis in the Netherlands. *Urology* 1998;51(6):1022-26.
23. Wal van der MF, Pauw-Plomp H, Schulpen TWJ. Bedplassen bij Nederlandse, Surinaamse, Marokkaanse en Turkse kinderen van 3-4, 5-6 en 11-12 jaar. *Ned Tijdschr Geneeskd* 1996;140:2410-14.
24. Most van der- van Spijk MW, Hopstaken NSM, Visser AEM, Schulpen TWJ. Behandeling van hardnekkige enuresis nocturna bij kinderen van Turkse en Marokkaanse migranten vraagt extra aandacht voor het gezin. *Ned Tijdschr Geneeskd* 1994;138:1369-73.
25. Schulpen TWJ, Hirasing RA, Jong de TPVM, Heyden van der AJ, Dijkstra RH, Sukhai RN, et al. Going Dutch in nocturnal enuresis. *Acta paediatr* 1996;85:199-203.

26. Vos C, Reeser HM, Hirasig RA, Bruining GJ. Confirmation of high incidence of type 1 (insulin-dependent) diabetes mellitus in Moroccan children in The Netherlands. *Diabet Med* 1997;14(5):397-400.
27. Weide MG, Foets M. [Migrants in family practice: their symptoms and diagnoses differ from the Dutch] in Dutch. *Ned Tijdschr Geneesk* 1998;142(38):2105-9.
28. Bruijnzeels MA, Hoop de T, Swart W, Voorham AJJ. Etnische herkomst van patienten en werkbelasting van de huisarts. *Huisarts en wetenschap* 1999;42(6):254-258.
29. Versluis-van Winkel SY, Bruijnzeels MA, Lo Fo Wong SH, van Suijlekom-Smit LWA, van der Wouden JC. Geen verschil in frequentie van huisartsbezoek door Turkse, Surinaamse en Marokkaanse kinderen van 0-14 jaar en door Nederlandse, maar wel in contactredenen. *Ned Tijdschr Geneesk* 1996;140, nr18:980-984.
30. Bruijnzeels MA, Wouden van der JC, Foets M. General practice consultation in childhood in the Netherlands: sociodemographic variation. *J Epidemiol Community Health* 1995;49:532-533.
31. Gillam SJ, Jarman B, White P, Law R. Ethnic differences in consultation rates in urban general practice. *BMJ* 1989;299(6705):953-7.
32. Gerits YC, Uitenbroek DG, Dijkshoorn H, Verhoeff AP. De communicatie tussen huisarts en Turkse en Marokkaanse patienten nader bekeken. *TIJDSCHR SOC GENEESKD* 2001;79(1):16-20.
33. Harmsen JAM, Bruijnzeels MA, Van der Wouden JC, Bohnen AM. Allochtone kinderen op het spreekuur; communicatie tussen huisarts en allochtone ouders. *Huisarts en wetenschap* 1999;42(5).
34. Hampers LC, Cha S, Gurglass DJ, H.J. B. Language barriers and resource utilization in a pediatric emergency department. *Pediatrics* 1999;103(6 pt 1):1253-1256.
35. Hornberger JC, Gibson CD, Jr., Wood W, Dequeldre C, Corso I, Palla B, et al. Eliminating language barriers for non-English-speaking patients. *Medical Care* 1996;34(8):845-56.
36. Hornberger J, Itakura H, Wilson SR. Bridging language and cultural barriers between physicians and patients. *Public Health Reports* 1997;112(5):410-7.
37. Kijlstra M, Wieringen van JCM, Schulpen TWJ. Cultuur en communicatie. *Tijdschr Kindergeneesk* 2001;69(5):159-162.
38. Sarver J, Baker DW. Effect of language barriers on follow-up appointments after an emergency department visit. *Journal of General Internal Medicine* 2000;15(4):256-64.
39. Schilder CM. Kwalitatieve analyse van sterfteverschillen. Utrecht: GGD utrecht; 1996.
40. Reijneveld SA. Reported health, lifestyles, and use of healthcare of first generation immigrants in The Netherlands: do socioeconomic factors explain their adverse position? *J Epidemiol Community Health* 1998;52(5):298-304.
41. Stronks K, Uniken Venema P, Dahhan N, Gunning-Schepers LJ. Allochtoon, dus ongezond? Mogelijke verklaringen voor de samenhang tussen etniciteit en gezondheid geïntegreerd in een conceptueel model. *TIJDSCHR SOC GENEESKD* 1999;77(2):33-49.
42. Dijkshoorn H, Diepenmaat ACM, Buster MCA, Uitenbroek D, Reijneveld SA. Sociaal-economische status als verklaring van verschillen in gezondheid tussen Marokkanen en Nederlanders. *Tijdschr Soc Geneesk* 2000;78:217-22.
43. Gissler M, Rahkonen O, Jarvelin MR, Hemminki E. Social class differences in health until the age of seven years among the Finnish 1987 birth cohort. *Soc Sci Med* 1998;46(12):1543-52.
44. Halldorsson M, Kunst AE, Kohler L, Mackenbach JP. Socioeconomic inequalities in the health of children and adolescents. *Eur J Public Health* 2000;10:281-88.
45. Hjerm A, Haglund B, Rosen M. Socioeconomic differences in use of medical care and antibiotics among schoolchildren in Sweden. *Eur J Public Health* 2001;11(3):280-3.
46. Lucht van der F. Sociale ongelijkheid en gezondheid bij kinderen. Den Haag: CIP (thesis) 1992.
47. West P. Inequalities? Social class differentials in health in British youth. *Soc. Sci. Med.* Vol. 1988;27(4):291-296.
48. West P. Health inequalities in the early years: is there equalisation in youth? *Soc Sci Med* 1997;44(6):833-58.
49. Saxena S, Majeed A, Jones M. Socioeconomic differences in childhood consultation rates in general practice in England and Wales: prospective cohort study. *BMJ* 1999;318(7184):642-6.
50. Raad voor de Volksgezondheid (RVZ). Interculturalisatie van de gezondheidszorg. Zoetermeer: Raad voor de volksgezondheid en zorg (RVZ); 2000.



51. Andersen RM. Revisiting the behavioural model and access to medical care: Does it matter? *J Health Social Behaviour* 1995;36:1-10.
52. Osman LM, Dunt D. Factors influencing mothers' decisions to consult a general practitioner about their children's illnesses. *Br J Gen Pract* 1995;45(395):310-2.
53. Edwards A, Pill R. Patterns of help-seeking behaviour for toddlers from two contrasting socio-economic groups: new evidence on a neglected topic. *Fam Pract* 1996;13(4):377-81.
54. Pachter LM. Culture and clinical care. Folk illness beliefs and behaviours and their implications for healthcare delivery. *Jama* 1994;271(9):690-4.
55. Dale J, Green J, F. R, Glucksman E. Primary care in accident and emergency department: Prospective identification of patients. *BMJ* 1995;311:423-426.
56. Hunt RC, DeHart KL, Allison EJ, Jr., Whitley TW. Patient and physician perception of need for emergency medical care: a prospective and retrospective analysis. *Am J Emerg Med* 1996;14(7):635-9.
57. Kooiman CG, Wetering van de BJM, Mast van der RC. Clinical and demographic characteristics of Emergency Department patients in the Netherlands: a review of the literature and a preliminary study. *Am. J. Emergency Medicine* 1989;7 (6):632-638.
58. Liu T, Sayre MR, Carleton SC. Emergency medical care: types, trends, and factors related to non-urgent visits. *Acad Emerg Med* 1999;6(11):1147-52.
59. Sharma V, Simon SD, Bakewell JM, Ellerbeck EF, Fox MH, Wallace DD. Factors influencing infant visits to emergency departments. *Pediatrics* 2000;106(5):1031-9.
60. Fong C. The influence of insurance status on non-urgent pediatric visits to the emergency department. *Acad Emerg Med* 1988;6 (7):744-748.
61. Isaacman DJ, Davis HW. Pediatric emergency medicine: state of the art. *Pediatrics* 1993;91(3):587-90.
62. Phelps K, Taylor C, Kimmel S, Nagel R, Klein W, Puczynski S. Factors associated with emergency department utilization for nonurgent pediatric problems. *Arch Fam Med* 2000;9(10):1086-92.
63. Sato T, Takeichi M, Hara T, Koizumi S. Second opinion behaviour among Japanese primary care patients. *Br J Gen Pract* 1999;49(444):546-50.
64. Sutherland LR, Verhoef MJ. Patients who seek a second opinion: are they different from the typical referral? *J Clin Gastroenterol* 1989;11(3):308-13.
65. Mellink WAM, Henzen-Logmans SC, Bongaerts AHJ, Pruyn JFA, Geel van AN, Wiggers T. De tweedemeningspolikliniek Chirurgische oncologie in de Daniel den Hoed Kliniek: analyse van de eerste 245 patienten. *Ned Tijdschr Geneeskde* 1999;143(49):2471-2475.



## **CHAPTER 1.2**

### **OUTLINE AND STUDY POPULATIONS**

## OUTLINE OF THIS THESIS

**Chapter 2** describes the relation between ethnicity, socio-economic status and healthproblems presented to the emergency department and the outpatient department of general paediatrics of the Sophia Children's Hospital in Rotterdam. In Chapter 2.1 focuses on acute medical problems presented to the emergency department in a 10-year period. Longer existing healthproblems presented to the outpatient department in relation to the children's ethnicity will be discussed in chapter 2.2. In chapter 2.3 the clinical presentation and disease severity of children with meningeal signs are compared between Dutch children and children from ethnic minority groups. In chapter 2.4, the association between socio-economic status and healthproblems at the outpatient department of general paediatrics is evaluated.

**Chapter 3** focuses on two aspects of the use of outpatient care in the Sophia Children's Hospital. Non-urgent visits at the emergency department (chapter 3.1) and second opinion visits at the outpatient department are analysed (chapter 3.2).

In **chapter 4**, possible explanations on potential ethnic differences in helpseeking behaviour are described. Based on the results of the studies described in chapter 2, we designed two explanatory studies. In the first study, group-interviews with Turkish and Moroccan women were held in order to get insight into their knowledge, fears and ideas about fever and their helpseeking behaviour in case of a feverish child (chapter 4.1). In chapter 4.2, we describe determinants of helpseeking in general, the relation between ethnicity and helpseeking behaviour and give an example of ethnic differences in helpseeking behaviour in paediatrics. In this study determinants of helpseeking behaviour between Turkish, Moroccan and Dutch parents with a feverish child are studied.

**Chapter 5** elaborates on a methodological aspect. In a part of the study, the children's ethnicity was defined by the surname. The validation of this method is determined in chapter 5.1.

In **chapter 6** results from performed studies are summarised and some recommendations for future studies are suggested.

## STUDY POPULATIONS OF THIS THESIS

### Problem oriented patient classification system

The Sophia Children's University Hospital is a referral hospital, providing general paediatric outpatient care and sub-specialistic care. General paediatric outpatient care includes diagnostic and treatment services on a scheduled basis at the outpatient department and acute medical care at the emergency department. Yearly, nearly 12.500 consultations are made to the general outpatient care. To gain more information about the broad spectrum of presented medical problems, a problem oriented patient classification system is applied at the outpatient department and the emergency department of general paediatrics of the Sophia Children's University Hospital (since 1988) (1-2). All new-presented problems are prospectively registered and coded according to this system by one of the paediatricians from the outpatient care department.

This problem oriented patient classification system is based on three items (1-2):

- The medical problem at referral (the reason for encounter)
- The final diagnosis based on the International Classification of Diseases (ICD-9)
- The level of care

The medical problem presented at the initial visit is labelled. The problem list is developed as a matrix, in which every medical problem is characterised in two ways: The medical problem is classified by an internal organ system or disease entity (A -R) and by a complaint or symptom (X) or an abnormal laboratory result (Y) or presumed diagnosis by the general practitioner (Z) (table 1). Each cell in the matrix is characterised by two letters (AX- RZ). Within each cell the specific problems are classified hierarchically. If a patient presents with two problems, which are related, the main problem according to the hierarchy is coded (see appendix 1).

The problem list consists of 144 items grouped into 14 internal organ systems or disease entities. Very rare paediatric problems are not specified and coded as 'other problems'. Each child can have a maximum of 5 problems. Children with complex pathology with can not be summarised into five specific problems will be coded as problem child (QX2).

The content of the problem list is based on frequently presenting problems and discussed with several general (university) paediatricians.

To every medical problem at first referral, a final diagnosis is linked. The diagnoses are coded according to the international classification of diseases (ICD-9). To indicate the level of care a three level classification model is used: A-level concerns basic paediatric care. B-level concerns top clinical care, which involves specific trained personal or specific medical equipment. Second opinions and referrals by paediatricians are registered in this category. C-level concerns top academic care, which requires the knowledge, techniques, equipment or treatment that are only available in University Hospitals. This category also includes children who need multidisciplinary consultation and treatment. Patients participating in research can be specifically labelled.

The 3 items in the patient classification system can easily be linked to hospital data as is saved in the hospital information system (HIS). The HIS includes 1. Personal background characteristics such as name, date of birth, gender, health insurance and general practitioner, 2. Visit characteristics (date, initial visit or follow-up appointment), and 3. Diagnostic procedures including laboratory tests, X-ray diagnostics and their results.

In contrast to diagnosis-oriented systems, a problem-oriented system, makes it possible to identify a specific group of patients with a similar problem and compare the diagnostic work-up, which eventually leads to the diagnosis and treatment (3-10). With this system, the patient population selection corresponds to clinical practise: the physician is faced with a presented problem and needs to make choices for diagnostic tests and treatment based on the clinical presentation. This problem oriented patient classification system has been used to select the different study populations of this thesis.

### **Populations**

The study described in chapter 2.1 compromised all children who visited the emergency department with an initial referral for a new medical problem. These problems are linked to personal data, diagnostics and follow-up data, and diagnosis (ICD-9) obtained from the hospital information system. We collected these data from all children visiting the emergency department for the first time in a 10-year period from 1988 to 1997. In chapter 2.2 data were collected from patients who were initially referred to the outpatient department for a new paediatric problem in the same time period. In these studies we have restricted us to the patient living in the city of Rotterdam.

Children who attended the emergency department of the Sophia Children's Hospital with a general acute paediatric problem between September 1999 and December 1999 formed the population for the studies described in chapter 3.1 and 5.1. General characteristics and the presenting problem were derived from the hospital information system and the urgency of the visit was classified by data from the medical records. A questionnaire was administered to the parents of these children to collect data regarding socio-demographics. In chapter 3.1 we defined determinants of non-urgent visits. In chapter 5.1 we compared the classification of ethnicity based on names with the classification based on parent's country of birth.

In the period February 2000 to February 2001, data were collected from patients who visited the outpatient department with a new referral for a general paediatric medical problem. A questionnaire was administered to define patient's socio-demographics and to define a second opinion visit. In chapter 3.2 patient characteristics and healthproblems related to second opinion visits were studied. In chapter 2.4, we described differences between socio-economic factors and presenting healthproblems.

To get insight into fears, ideas, knowledge and helpseeking behaviour of Turkish and Moroccan parents, we performed two group interviews in February 2001 (chapter 4.1). For these interviews, Turkish and Moroccan mothers from 2 women groups were included. Both groups were situated in two areas in Rotterdam, with a high percentage of ethnic minorities.

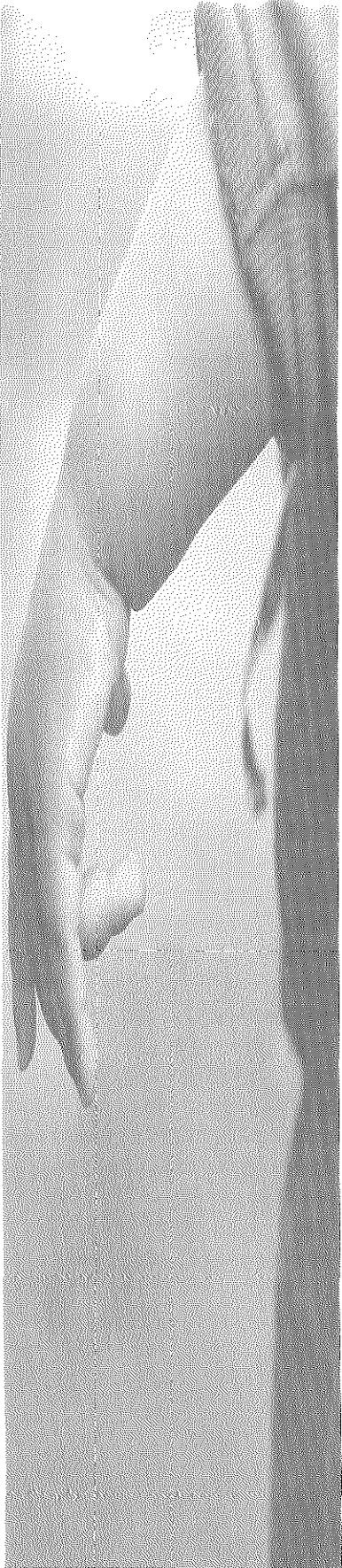
Patients who visited the emergency department with fever, with or without combination of other symptoms in the period February-April 2002, were selected for the study presented in chapter 4.2. These problems are coded as the group of infectious diseases (AX1-9) or febrile seizures (KX1) by the problem oriented patient classification system. Children with chronic diseases as asthma, cystic fibrosis, metabolic, oncologic or immunologic diseases, and children with several complex problems were excluded. An interview at home was administered to parents of children in order to get insight into helpseeking behaviour and 'fever phobia'.

## REFERENCES

1. Derksen- Lubsen G, Jongkind CJ, Kraayenoord S, Aarsen RSR, De Goede- bolder A, Suijlekom-Smit van LWA, et al. Een probleemorienterend patientenclassificatiesysteem voor de algemene kindergeneeskunde I. Tijdschr kindergeneeskunde 1996;64:93-98.
2. Steensel van-Moll HA, Jongkind CJ, Aarsen RSR, De Goede-bolder A, Dekkker A, Suijlekom van-Smit LWA, et al. Een probleemgeoriënteerd patientenclassificatiesysteem voor de algemene kindergeneeskunde II. Tijdschr Kindergeneeskunde 1996;64, nr3:99-104
3. SIG. International classification of diseases, ninth revision, clinical modification. Utrecht: SIG; 1986.
4. Crawshaw P. The new BPA classification. Arch Dis Child 1995;73(6):563-7.
5. Hand R, Garg M, Dajani KF. Patient mix in the primary ambulatory care clinics of an academic medical center. Acad Med 1993;68(10):803-5.
6. Schneeweiss R, Rosenblatt RA, Cherkin DC, Kirkwood CR, Hart G. Diagnosis clusters: a new tool for analyzing the content of ambulatory medical care. Med Care 1983;21(1):105-22.
7. Williams BC, Philbrick JT, Becker DM, McDermott A, Davis RC, Buncher PC. A patient-based system for describing ambulatory medicine practices using diagnosis clusters. J Gen Intern Med 1991;6(1):57-63.
8. Wilton R, Pennisi AJ. Insurance coverage and residents' experience in a pediatric teaching clinic. Am J Dis Child 1993;147(3):284-9.
9. Flint SS, Bergeson PS. Diagnosis-related group and other prospective payment systems: problems and prospects. J Pediatr 1986;108(5 Pt 1):710-2.
10. Hofmans-Okkes IM, Lamberts H. The International Classification of Primary Care (ICPC): new applications in research and computer-based patient records in family practice. Fam Pract 1996;13(3):294-302.







## **CHAPTER 2**

### **ETHNIC AND SOCIO- ECONOMIC STATUS**

RELATED TO  
HEALTH PROBLEMS AT A  
PAEDIATRIC OUTPATIENT  
CLINIC





# **CHAPTER 2.1**

## **GERINGE ETNISCHE VERSCHILLEN IN SPOEDEISENDE PROBLEMEN BIJ KINDEREN: 10 JAAR ACUTE HULP IN HET SOPHIA KINDERZIEKENHUIS TE ROTTERDAM**

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## ABSTRACT

**Aim:** To evaluate whether there are differences in acute general paediatric problems and their severity between children with different ethnic backgrounds. **Methods:** the following information was registered for patients who visited the Paediatric Emergency Department of the Sophia Children's Hospital in Rotterdam, the Netherlands (1988 through to 1997): demographics, reason for encounter, diagnoses, diagnostics performed and follow-up. Ethnicity was determined by patient's surname. Analyses were performed with chi-square test, non-parametric Kruskal-Wallis test and multiple logistic regression. **Results:** Fifty-one percent of all patients belonged to one of the ethnic minority groups. Infection-related problems were seen more often in Turkish (45%) and Moroccan (46%) children than in Dutch (41%) children. Of those children with infection-related problems, the Turkish children were less likely to need X-rays (OR 0.73), laboratory diagnostics (OR 0.72), an outpatient follow-up (OR 0.79) or hospital admission (OR 0.74). On the other hand, Moroccan paediatric patients were admitted slightly more frequently (to the intensive care department) and were more likely to have a lower respiratory tract infection (OR 1.65). **Conclusions:** There were some differences between Dutch children and ethnic minorities in terms of the reasons for encounter and the severity of the problem. Compared with Dutch children, Turkish children presented with less severe infection-related problems, while Moroccan had more severe infection problems.

## SAMENVATTING

**Doel:** Inzicht verkrijgen in acute algemeen kindergeneeskundige problemen en hun ernst bij kinderen van verschillende etnische afkomst. **Methode:** Van patiënten die de acute hulp van het Sophia Kinderziekenhuis Rotterdam bezochten (1988 t/m 1997), werden geregistreerd: demografische gegevens, reden van komst, diagnoses, verrichte diagnostiek en follow-up. Etniciteit werd bepaald aan de hand van de achternaam. Analyse vond plaats met de Chi-kwadraat toets, de Kruskal-Wallis toets en multiële logistische regressie. **Resultaten:** Van alle patiënten was 51% allochtoon. Infectieproblemen werden vaker gepresenteerd door Marokkaanse (46%) en Turkse (45%) kinderen dan door de Nederlandse (41%) kinderen. Van deze kinderen met infectieproblemen kregen Turkse kinderen het minst frequent röntgendiagnostiek (OR 0.73), laboratoriumdiagnostiek (OR 0.72) en een poliklinische vervolgspraak (OR 0.79). Tevens werden zij het minst vaak opgenomen (OR 0.74). Daarentegen werden Marokkaanse kinderen iets vaker (op de IC) opgenomen en hadden zij vaker een lagere luchtweginfectie (OR 1.65). **Conclusies:** Er waren enkele verschillen tussen autochtone en allochtone kinderen in redenen van komst naar de afdeling Acute Hulp. Turkse kinderen bezochten de acute hulp met minder ernstige en Marokkaanse juist met ernstigere infectieproblemen dan de Nederlandse kinderen.

## **INLEIDING**

In Nederland krijgt men binnen de gezondheidszorg in toenemende mate te maken met patiënten van verschillende etnische afkomst. Verschillen in gezondheid tussen autochtone en allochtone kinderen worden beschreven: Turkse en Marokkaanse kinderen zouden vaker (luchtweg)infecties en klachten van bedplassen hebben (1-2). Turkse kinderen bezoeken de huisarts vaker voor gastro-intestinale en respiratoire klachten dan de andere kinderen (3). Over verschillen in problematiek op een pediatrische acute hulp afdeling is nog weinig bekend. Allochtone kinderen zouden zich vaker met gastro-intestinale klachten presenteren en astma hebben (4-5).

In het Sophia Kinderziekenhuis is een groot deel van de kinderen van allochtone afkomst. De indruk bestaat dat een deel van deze kinderen die de afdeling Acute Hulp bezoekt, ernstig ziek is en intensieve behandeling behoeft, terwijl ook een deel onnodig gebruik maakt van deze voorziening. Wij onderzochten de reden van komst op een afdeling Acute Hulp en de ernst van de problemen bij kinderen van verschillende etnische afkomst.

## **METHODE**

### ***Patiënten***

De afdeling Acute Hulp van het Sophia Kinderziekenhuis verleent zowel basisspecialistische zorg (90%) als topklinische zorg (6). Wij verzamelden gegevens van patiënten in de leeftijd van 0-14 jaar, wonende in Rotterdam, die voor de eerste keer in de periode 1988-1997 de afdeling Acute Hulp van het Sophia Kinderziekenhuis te Rotterdam bezochten voor een algemeen kindergeneeskundig probleem.

De reden van komst (het gepresenteerde probleem) werd geregistreerd met een prospectief probleemgeoriënteerd patiëntenclassificatiesysteem dat sinds 1988 in gebruik is in het Sophia Kinderziekenhuis (6-7). In dit systeem wordt de reden van komst geclassificeerd naar een klacht of symptoom, een reeds vastgestelde laboratoriumafwijking of een vermoedde diagnose. Dit leidt tot 140 verschillende code-items, die zijn onderverdeeld naar orgaansysteem of ziekte-entiteit. De einddiagnosen zijn geclassificeerd op basis van de codes van de 'International classification of diseases' (ICD9). Binnen de groep infectieproblemen werden de diagnosen onderverdeeld in 4 categorieën naar meest voorkomende diagnosen: bovenste luchtweginfecties (ICD9 codering 460-465), otitis media (382), bronchiolitis/pneumonie (480-486) en enteritis (008-009).

Demografische gegevens (geslacht, geboortedatum, regio, postcode, verzekeringsvorm), diagnostiek (laboratorium, röntgendiagnostiek) en follow-up (opname, ic-opname, poliklinische vervolgspraak) werden verkregen via het ziekenhuisinformatie systeem (ZIS). Hierbij werden het type diagnostiek en de aard van de follow-up als maat voor ziekte-ernst gebruikt.

### **Definities**

De etniciteit werd bepaald aan de hand van de achternamen van patiënten, waarbij we werden geadviseerd door medisch studenten van Turkse, Marokkaanse en Surinaamse (Creools en Hindoestaans) afkomst. Nederlandse, Turkse, Marokkaanse, Surinaamse (Creools en Hindoestaans) namen werden onderling van elkaar onderscheiden, waarbij een groep van diverse namen als restgroep overbleef. De sociaal-economische status (SES) werd bepaald met het gemiddeld besteedbaar inkomen per persoon per jaar gerelateerd aan het postcodegebied van de patiënt (8).

### **Analyses**

Verschillen in reden van komst, demografische gegevens en ziekte-ernst tussen de etnische groepen kinderen werden geanalyseerd met behulp van de Chi-kwadraat toets en de non-parametrische Kruskal-Wallis toets ( $p < 0.05$ ). De verbanden tussen etniciteit en ziekte-ernst en etniciteit en infectieziekten (ICD9) zijn geanalyseerd door middel van logistische regressie (weergegeven als oddsratio (OR) met 95% betrouwbaarheidsinterval), waarbij werd gecorrigeerd voor SES, verzekeringsvorm, leeftijd en geslacht. Etniciteit werd als 3 'dummy'-variabelen geïncludeerd (Turks, Marokkaans, Surinaams) met de Nederlandse groep als referentiegroep.

## **RESULTATEN**

In de periode van 1988-1997 bezochten in totaal 8789 kinderen uit Rotterdam de afdeling Acute Hulp voor de eerste maal met een kindergeneeskundig probleem. Van dezen was 49% (4283) van Nederlandse, 14% (1262) van Turkse, 11% (992) van Marokkaanse, 8% (726) van Surinaamse afkomst en 17% (1526) behoorde tot de restgroep. De man-vrouw ratio was 1:0.8 met een mediane leeftijd van 1.7 jaar (25°-75° percentiel: 0.6-4.0).

De meest voorkomende problemen op de acutehulpafdeling waren infectieproblemen, zoals 'koorts zonder focus' (13%), 'acuut braken/ diarree' (11%), 'hoesten en koorts' (11%), 'bovenste luchtweginfecties' (4%) en 'koortsconvulsies' (4%). Andere veel geregistreerde problemen waren 'intoxicaties' (9%), 'dyspneu/ piepen' (4%) en 'buikpijn' (4%). Infectieproblemen werden vaker gezien bij Turkse (45%) en Marokkaanse (46%) kinderen vergeleken met de Nederlandse (41%) en Surinaamse (42%) kinderen (tabel 1). Bij de gastro-intestinale problemen (8%), luchtwegproblemen (10%) en intoxicaties (10%) waren geen verschillen aantoonbaar.

In tabel 2 zijn de verschillen in ziekte-ernst beschreven. Marokkaanse kinderen werden het frequentst en Surinaamse het minst frequent opgenomen. Marokkaanse kinderen werden vaker op de intensive care opgenomen, echter de oddsratio (ongecorrigeerde OR 2.01, 95%BI 1.15-3.53) was na correctie voor verstoringe variabelen niet statistisch significant (OR 1.55, 95%BI 0.84-2.87). Bij de Turkse kinderen werd ook na correctie minder vaak röntgendiagnostiek verricht (OR 0.87, 95%BI 0.75-1.01) en een poliklinische vervolgspraak (OR 0.87, 95%BI 0.76-0.99) gemaakt in vergelijking met de Nederlandse kinderen.

**Tabel 1:** De meest voorkomende problemen bij 7263 kinderen op de afdeling Acute Hulp van het Sophia Kinderziekenhuis Rotterdam (1988-1997), naar ziekte-ernst/orgaansysteem en etniciteit (tussen haakjes percentages)

| ziekte-entiteit/ orgaansysteem                   | Etniciteit             |       |                   |       |                       |       |                      |       |
|--------------------------------------------------|------------------------|-------|-------------------|-------|-----------------------|-------|----------------------|-------|
|                                                  | Nederlands<br>n = 4283 |       | Turks<br>n = 1262 |       | Marokkaans<br>n = 992 |       | Surinaams<br>n = 726 |       |
| infectie*                                        | 1758                   | (41)  | 574               | (45)  | 459                   | (46)  | 306                  | (42)  |
| maag-darmkanaal                                  | 429                    | (10)  | 138               | (11)  | 96                    | (10)  | 89                   | (12)  |
| luchtwegen                                       | 362                    | (9)   | 92                | (7)   | 86                    | (9)   | 55                   | (8)   |
| intoxicaties                                     | 451                    | (11)  | 116               | (9)   | 90                    | (9)   | 68                   | (9)   |
| neurologische aandoening*                        | 308                    | (7)   | 67                | (5)   | 57                    | (6)   | 54                   | (7)   |
| huid en slijmvlies                               | 257                    | (6)   | 66                | (5)   | 61                    | (6)   | 28                   | (4)   |
| urinerwegen                                      | 38                     | (0.9) | 8                 | (0.6) | 12                    | (1.2) | 3                    | (0.4) |
| hart en vaten                                    | 38                     | (0.9) | 14                | (1.1) | 6                     | (0.6) | 7                    | (1)   |
| ziekten van de pasgeborene                       | 68                     | (1.6) | 17                | (1.3) | 8                     | (0.8) | 13                   | (1.8) |
| endocrien/ metabool/<br>immunologisch afwijking* | 31                     | (0.7) | 6                 | (0.5) | 21                    | (2.1) | 9                    | (1.2) |
| algemeen/ psychosociaal<br>probleem*             | 294                    | (7)   | 94                | (7)   | 42                    | (4)   | 47                   | (6)   |
| hematologische/oncologische<br>aandoening        | 149                    | (4)   | 42                | (3)   | 39                    | (4)   | 34                   | (5)   |
| bewegingsapparaat                                | 89                     | (2)   | 18                | (1.4) | 13                    | (1.3) | 7                    | (1)   |

\* Statistisch significant verschil tussen de etniciteiten ( $p < 0,05$ )

**Tabel 2:** Demografische gegevens en ziekte-ernst bij kinderen op de afdeling Acute Hulp van het Sophia Kinderziekenhuis Rotterdam (1988-1997) (tussen haakjes bij de dichotome variabelen percentages, bij de continue variabelen mediaan (25°-75° percentiel))

|                               | Etniciteit             |                   |                       |                      |
|-------------------------------|------------------------|-------------------|-----------------------|----------------------|
|                               | Nederlands<br>n = 4283 | Turks<br>n = 1262 | Marokkaans<br>N = 992 | Surinaams<br>n = 726 |
| <i>Demografische maat</i>     |                        |                   |                       |                      |
| gemiddelde leeftijd           | 1.7 (0.6-3.9)          | 1.4 (0.5-3.5)     | 1.6 (0.6-4.0)         | 1.9 (0.7-4.5)        |
| aantal meisjes*               | 1922 (45)              | 517 (41)          | 451 (46)              | 349 (48)             |
| particuliere verzekering *    | 1509 (35)              | 110 (9)           | 88 (9)                | 102 (14)             |
| gemiddeld inkomen *#          | 18.4 (15.2-20.8)       | 14.4 (13.6-15.6)  | 14.1 (13.6-16.6)      | 14.8 (13.8-18.0)     |
| <i>maat voor ziekte-ernst</i> |                        |                   |                       |                      |
| opname*                       | 1179 (28)              | 355 (27)          | 302 (30)              | 174 (24)             |
| intensive-careopname          | 39 (0.9)               | 13 (1)            | 18 (1.8)              | 7 (1)                |
| vervolgafpraak                | 2244 (52)              | 617 (49)          | 518 (52)              | 384 (53)             |
| röntgendiagnostiek*           | 1327 (31)              | 341 (27)          | 338 (34)              | 229 (32)             |
| laboratoriumonderzoek         | 2987 (70)              | 876 (69)          | 727 (73)              | 516 (71)             |

\* Statistisch significant verschil tussen de etniciteiten ( $p \leq 0,05$ )

# Gemiddeld besteedbaar inkomen (\*1000) per jaar en per 4-cijferig postcodegebied

### Infectieproblemen

Het verschil in percentage infectieproblemen was het grootst bij kinderen jonger dan een jaar: voor 56% van de Marokkaanse, 50% van de Turkse en 45% van de Nederlandse kinderen was de reden van komst een infectieprobleem ( $p = 0.001$ ).

Marokkaanse kinderen werden frequenter met een infectieprobleem op de intensive-care afdeling opgenomen (ongecorrigeerde OR 2.77, 95%BI 1.22-6.29) (tabel 3). Echter na correctie voor versturende variabelen was dit verband niet significant (OR 1.7, 95%BI 0.69-4.23). De Turkse kinderen werden daarentegen minder vaak opgenomen (OR 0.74, 95%BI 0.59-0.94), kregen minder vaak een poliklinische vervolgspraak (OR 0.79, 95%BI 0.64-0.97), röntgendiagnostiek (OR 0.73, 95%BI 0.58-0.91) en laboratorium diagnostiek (OR 0.72, 95%BI 0.56-0.94) in vergelijking met de Nederlandse kinderen. Bij Marokkaanse kinderen bleek het infectieprobleem veelal een lagere luchtweginfectie (OR 1.65, 95%BI 1.18-2.31) (tabel 4). Bij Turkse kinderen werd de diagnose 'otitis media' (OR 2.33, 95%BI 1.55-3.51) en bij Surinaamse kinderen de diagnose 'gastroenteritis' (OR 1.56, 95%BI 1.17-2.08) vaker gesteld dan bij de Nederlands kinderen.

**Tabel 3:** Verbanden tussen ziekte-ernst en etniciteit bij 3097 kinderen met infectieproblemen op de afdeling Acute Hulp van het Sophia Kinderziekenhuis Rotterdam (1988 t/m 1997)

|                              | Oddsratios (95%-BI) |                  |
|------------------------------|---------------------|------------------|
|                              | Ruwe                | Gecorrigeerde*   |
| <i>Opname</i>                |                     |                  |
| Nederlanders                 | 1                   | 1                |
| Turken                       | 0.80 (0.64-0.99)    | 0.74 (0.59-0.94) |
| Marokkanen                   | 1.03 (0.82-1.29)    | 0.96 (0.75-1.22) |
| Surinamers                   | 0.89 (0.68-1.17)    | 0.86 (0.65-1.14) |
| <i>Intensive-care opname</i> |                     |                  |
| Nederlanders                 | 1                   | 1                |
| Turken                       | 0.87 (0.29-2.67)    | 0.55 (0.17-1.80) |
| Marokkanen                   | 2.77 (1.22-6.29)    | 1.70 (0.69-4.23) |
| Surinamers                   | 1.65 (0.54-5.05)    | 1.29 (0.41-4.08) |

\* gecorrigeerd voor SES, verzekering, leeftijd en geslacht



**Tabel 4:** Verbanden tussen einddiagnosen (ICD9 codering) en etniciteit bij 3097 kinderen met infectieproblemen op de afdeling Acute Hulp van het Sophia Kinderziekenhuis Rotterdam (1988-1997)

| Diagnose                         | Oddsratios (95%-BI) |                  |
|----------------------------------|---------------------|------------------|
|                                  | Ruwe                | gecorrigeerde*   |
| <i>Bronchiolitis/pneumonie</i>   |                     |                  |
| Nederlanders                     | 1                   | 1                |
| Turken                           | 0.77 (0.55-1.08)    | 0.84 (0.56-1.21) |
| Marokkanen                       | 1.54 (1.13-2.09)    | 1.65 (1.18-2.31) |
| Surinamers                       | 0.93 (0.61-1.41)    | 0.94 (0.61-1.45) |
| <i>Enteritis</i>                 |                     |                  |
| Nederlanders                     | 1                   | 1                |
| Turken                           | 1.01 (0.80-1.28)    | 0.93 (0.72-1.21) |
| Marokkanen                       | 1.11 (0.87-1.43)    | 1.00 (0.76-1.32) |
| Surinamers                       | 1.64 (1.25-2.17)    | 1.56 (1.17-2.08) |
| <i>Otitis media</i>              |                     |                  |
| Nederlanders                     | 1                   | 1                |
| Turken                           | 2.23 (1.57-3.18)    | 2.33 (1.55-3.51) |
| Marokkanen                       | 1.08 (0.67-1.73)    | 1.20 (0.72-2.00) |
| Surinamers                       | 0.84 (0.45-1.56)    | 0.91 (0.48-1.71) |
| <i>Bovenste luchtweginfectie</i> |                     |                  |
| Nederlanders                     | 1                   | 1                |
| Turken                           | 0.97 (0.78-1.20)    | 1.02 (0.81-1.28) |
| Marokkanen                       | 0.89 (0.71-1.13)    | 0.95 (0.74-1.23) |
| Surinamers                       | 0.94 (0.71-1.24)    | 0.99 (0.75-1.32) |

\* gecorrigeerd voor leeftijd, verzekering, geslacht en SES

## BESCHOUWING

Op de beschreven pediatrie acutehulpafdeling bestonden enige verschillen in reden van komst en in de ernst van de problemen tussen verschillende etnische patiëntengroepen. Turkse en Marokkaanse kinderen kwamen vaker wegens een infectieprobleem dan de Nederlandse en Surinaamse kinderen. Bij andere problemen naar orgaansysteem/ ziekte-entiteit werden in tegenstelling tot eerder onderzoek geen verschillen gevonden (4). Wat betreft infectieproblemen waren er verschillen ten aanzien van de presenterende klacht, de ernst van de klinische presentatie en de uiteindelijke diagnosen, met name tussen de Turkse en Marokkaanse kinderen.

Verklaringen kunnen velerlei zijn. Dat allochtone kinderen vaker met een infectieprobleem de afdeling Spoedeisende Hulp bezoeken, kan op basis van een verhoogde incidentie zijn. De verhoogde sterfte bij allochtone kinderen wordt deels toegeschreven aan infectieziekten (9). Behalve dat koorts in de huisartsen praktijk minder vaak bij allochtone kinderen wordt gezien, geeft de literatuur geen incidentiecijfers. Ons onderzoek werd alleen getoetst binnen de acutehulpafdeling, zonder dat het verwijzingspatroon daarbij werd betrokken. Hierdoor kunnen wij geen uitspraken over de algemene bevolking doen. Meer inzicht in de incidentie van

infectieziekten binnen de verschillende etnische bevolkingsgroepen en de verschillen in determinanten daarvan is nodig.

In dit onderzoek is gecorrigeerd voor de SES, daar deze als een belangrijke determinant voor verschillen in gezondheid wordt genoemd (10-11). Behalve bij de intensive-care opnamen blijkt de SES geen grote rol te spelen. Deze conclusie moet met voorzichtigheid worden getrokken, daar de definitie van de SES in dit onderzoek globaal was; omdat de persoonsgebonden SES niet bekend was is gebruik gemaakt van een wijkgemiddelde.

Ook verschillen in gedrag van ouders bij een kind met koorts kunnen een rol spelen. Opvallend zijn de tegengestelde uitkomsten tussen de Turkse en Marokkaanse kinderen. Mogelijk onderliggende verklaringen voor deze etnische factor zijn: een combinatie van verschillen in verwijspatroon, levensstijl, cultuur, Nederlandse taalbeheersing, verblijfsduur in Nederland, hulpzoekgedrag, informatie, kennis, cognities, angsten en ongerustheid van ouders, omgevingsfactoren en genetische factoren (12-13). Het is bekend dat ideeën over diagnosen en therapieën en omgang met gezondheidsproblemen gedeeltelijk cultureel en sociaal bepaald zijn (12). De indruk bestaat dat Turkse ouders eerder ongerust zijn en dat de drempel om naar een acutehulpafdeling te gaan voor hen lager is dan ouders van andere etniciteiten. Toekomstige onderzoeken zullen zich moeten richten op mogelijke verklaringen. Indien zorgverleners (kinderartsen, huisartsen en consultatiebureau artsen) beter inzicht hebben in eventuele verschillen in incidentie van infectieproblemen, zorggebruik en ziektegedrag van Turkse en Marokkaanse ouders, kan de zorg ten aanzien van deze groepen geoptimaliseerd worden.

Dat de gevonden verschillen betreffende de ziekte-ernst berusten op ongelijkheid in behandeling lijkt onwaarschijnlijk. Wij verwachten niet dat de Marokkaanse slechter en de Turkse kinderen beter, maar dat beide gelijk werden behandeld. Een verklaring zou kunnen zijn dat Marokkaanse ouders in vergelijking met de Turkse slechter de Nederlandse taal beheersen en daarom meer diagnostiek krijgen. (Intensive-care-) opname was een objectieve maat en slechts afhankelijk van klinische factoren.

Wij menen dat de resultaten mogen worden geëxtrapoleerd naar andere ziekenhuizen lijkt reëel, daar wij ons bij de analyses hebben beperkt tot de basisspecialistische problemen en in andere grote steden ook hoge percentages allochtone kinderen wonen.

In dit onderzoek werd de etniciteit bepaald aan de hand van de achternaam van de patiënten. De voorkeur gaat uit naar het gebruik van geboorteland van de respondent en de ouders (14-15). Tevens kan er om zelfidentificatie worden gevraagd (11,15,16). Deze gegevens waren in ons onderzoek echter niet beschikbaar. Achternamen zijn vaker gebruikt en de validiteit van deze methode is tevens beschreven (17). Door middel van deze methode werden derdegeneratie kinderen ook in dit onderzoek betrokken. Verbetering van de naamsmethode zou tot stand gebracht kunnen worden door gebruik te maken van andere beoordelaars of door meerdere beoordelaars per etniciteitsgroep. In ons onderzoek is de Creoolse groep ondervertegenwoordigd daar deze namen sterk lijken op de Nederlandse namen.

Concluderend: Er werden geen grote verschillen gevonden in pediatrische problemen op een acutehulpafdeling tussen kinderen van verschillende etnische bevolkingsgroepen. Wel presenteren Turkse en Marokkaanse kinderen zich vaker met een infectieprobleem. Turkse

kinderen leken minder ernstig ziek terwijl Marokkaanse kinderen vaker ernstigere infecties hadden en vaker werden opgenomen. Surinaamse kinderen waren in deze opzichten vergelijkbaar met de Nederlandse kinderen.

## REFERENTIES

1. Schulpen TWJ. Het allochtone kind in de medische zorgverlening. *Bijblijven* 1995;11:25-35
2. Wal van der MF, Rijcken B. Astmatische klachten bij autochtone en allochtone kinderen van 2-11 jaar in Amsterdam. *Tijdschr Soc Geneesk* 1995;73:42-50
3. Versluis-van Winkel SY, Bruijnzeels MA, Lo Fo Wong SH, van Suijlekom-Smit LWA, van der Wouden JC. Geen verschil in frequentie van huisartsbezoek door Turkse, Surinaamse en Marokkaanse kinderen van 0-14 jaar en door Nederlandse, maar wel in contactredenen. *Ned Tijdschr Geneesk* 1996;140:980-4
4. Wolf BH, Schade E. Ethnicity and paediatric referral in Amsterdam [letter]. *Br J Gen Pract* 1997;47:466
5. Wolf BH. Gebruik van een spoedeisende hulp kindergeneeskunde in multicultureel Amsterdam-West. *Tijdschr Kindergeneesk* 1998;66:190-4
6. Steensel van-Moll HA, Jongkind CJ, Aarsen RSR, De Goede-Bolder A, Dekker A, Suijlekom van-Smit LWA, et al. Een probleemgeoriënteerd patiëntenclassificatiesysteem voor de algemene kindergeneeskunde II. *Tijdschr Kindergeneesk* 1996;64:99-104
7. Derksen-Lubsen G, Jongkind CJ, Kraayenoord S, Aarsen RSR, De Goede-Bolder A, Suijlekom-Smit van LWA, et al. Een probleemgeoriënteerd patiëntenclassificatiesysteem voor de algemene kindergeneeskunde I. *Tijdschr Kindergeneesk* 1996;64:93-8
8. Centraal Bureau voor de Statistiek (CBS). Kerncijfers vierpostcodegebieden. Heerlen: CBS, 1995
9. Schulpen TW, van Enk A. Mortaliteit naar etniciteit bij kinderen in Nederland. *Ned Tijdschr Geneesk* 1996;140:2489-92
10. Mackenbach JP. Socio-economic health differences in the Netherlands: a review of empirical findings. In: *Socio-economic health differences. Proceedings of a symposium*; 1991; Rijswijk: ministerie van WVC; 1991:15-40
11. McKenzie K, Crowcroft NS. Describing race, ethnicity and culture in medical research. *Br Med J* 1996;312:1054
12. Dijkman P, Haan de M. Cultureel bepaalde ziektebeleving en geneeswijzen. *Huisarts en wetenschap* 1999;42:205-10
13. Gelauff-Hanzon CW. Hulpzoeken; een onderzoek naar het hulpzoekgedrag van Turkse, Marokkaanse en Nederlandse ouders ten behoeve van hun 0 t/m 12 jarige kinderen. Den Haag: Nederlands instituut voor kinderstudies; 1985
14. Verweij AO. Vaststelling van etnische herkomst in Nederland. Rotterdam: Instituut voor Sociologisch-Economisch Onderzoek (ISEO); 1997
15. Bruijnzeels MA. Het meten van etnische herkomst. Amsterdam: Zorgonderzoek Nederland; 1999
16. McKenny NR, Bennet CE. Issues regarding data on race and ethnicity: The census Bureau Experience. *Public Health Reports* 1994;109:16-25
17. Nicoll A, Bassett K, Ulijaszek SJ. What's in a name? Accuracy of using surnames and forenames in ascribing Asian ethnic identity in English populations. *J Epidemiol Community Health* 1986;40:364-8



## **CHAPTER 2.2**

**Etniciteit en medische problemen bij  
kinderen: 10 jaar poliklinische  
algemene kindergeneeskunde in het  
Sophia kinderziekenhuis te  
Rotterdam**

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## SUMMARY

**Aim:** Evaluate whether there are differences in health problems between Dutch and ethnic minority children at the paediatric outpatient department. **Methods:** Data were collected from children visiting the paediatric outpatient department of the Sophia Children's Hospital Rotterdam in the period 1988-1998: background characteristics, reason for encounter (problem oriented patient classification system), diagnostic work-up, follow-up and final diagnosis. Ethnicity was determined by the patients' family name. **Results:** The outpatient department was visited by in total 11.998 patients, of whom 38% lived in the city of Rotterdam. From these 3913 patients, 15% was Turkish, 9% Moroccan and 9% Surinamese. Turkish children presented more often with gastro-intestinal symptoms (OR 1.57, 95%CI 1.14-2.16) and between the ages of 5 and 15 years with urinary-tract symptoms (OR 2.0, 95%CI 1.13-3.54), compared to the Dutch children. Constipation and enuresis mainly caused these symptoms. Moroccan children of 5-15 years had more often urinary tract symptoms (OR 2.39, 95%CI 1.34-4.25) and symptoms of the airways (OR 2.31, 95%CI 1.37-3.87). Asthma was in these children more often diagnosed compared to the Dutch children (OR 2.31, 95%CI 1.37-3.87). In Surinamese children, asthma was more often diagnosed in both age groups (OR 2.30, 95%CI 1.22-4.33 and 1.92, 95%CI 1.09-3.37, respectively). **Conclusions:** There are differences in health problems presented at a paediatric outpatient department in relation to ethnicity. In future, one should focus on health problems that occur more in ethnic minorities (gastro-intestinal symptoms and enuresis-symptoms in Turkish, enuresis and asthma in Moroccan, and asthma in Surinamese children), in order to optimise cure and care can be optimised in these children.

## SAMENVATTING

**Doel:** Het verkrijgen van een inzicht in de reden van komst van kinderen op een polikliniek algemene kindergeneeskunde en in de mogelijke verschillen met betrekking tot de etnische achtergrond. **Methode:** Van patiënten die in de periode 1988-1998 de polikliniek algemene kindergeneeskunde bezochten werden de volgende gegevens verzameld: achtergrondkenmerken, reden van komst (probleem georiënteerd patiënten classificatiesysteem), verrichte diagnostiek, follow-up en definitieve diagnose (ICD-9 codering). Etniciteit werd met behulp van de achternaam geclassificeerd. **Resultaten:** In totaal bezochten 11.998 kinderen de polikliniek, van wie 38% uit de stad Rotterdam. Van deze 3913 patiënten was 45% van allochtone afkomst (15% Turks, 9% Marokkaans en 9% Surinaams). Turkse kinderen bezochten de polikliniek vaker met gastro-intestinale klachten (OR 1.57, 95%BI 1.14-2.16) en op de leeftijd van 5-15 jaar ook met klachten van de urinewegen (OR 2.0, 95%BI 1.13-3.54). Obstipatie en enuresis waren de meest voorkomende oorzaken. Marokkaanse kinderen presenteerden zich vaker met urinewegklachten (OR 2.39, 95%BI 1.34-4.25) en luchtwegklachten (OR 2.31, 95%BI 1.37-3.87). Bij hen werd de diagnose astma significant vaker gesteld (OR 2.31, 95%BI 1.37-3.87) dan bij de Nederlandse kinderen. Bij Surinaamse kinderen werd in beide leeftijdsgroepen de diagnose astma vaker gesteld (OR respectievelijk 2.30, 95%BI 1.22-4.33 en 1.92, 95%BI 1.09-3.37). **Conclusie:** Er bestaan duidelijke verschillen in reden van komst samenhangend met de etniciteit van de kinderen op een polikliniek algemene kindergeneeskunde. In de toekomst

moeten we ons richten op de problemen die vaker bij allochtone kinderen voorkomen (gastro-intestinale problemen en enuresisklachten bij Turkse kinderen, luchtwegklachten, astma en enuresisklachten bij Marokkaanse kinderen en luchtwegklachten en astma bij Surinaamse kinderen), teneinde de zorg voor deze groepen te optimaliseren.

## **INLEIDING**

Een toenemend deel van de Nederlandse bevolking is van allochtone afkomst. Het aantal allochtone kinderen is de laatste jaren toegenomen. In de grote steden ligt het percentage allochtone kinderen rond de 60%. Bekend is dat perinatale en zuigelingensterfte bij allochtone kinderen hoger zijn dan bij de Nederlandse kinderen (1-3). Dit laatste zou vooral veroorzaakt worden door verhoogde incidenties van aangeboren afwijkingen, infecties en metabole afwijkingen (1). Ook de sterfte bij oudere allochtone kinderen is verhoogd (1). Studies op het gebied van morbiditeit laten eveneens verschillen zien: allochtone kinderen hebben minder vaak astma, en vaker klachten van bedplassen (4-5). Tevens bezoeken zij de huisarts met andere klachten dan de Nederlandse kinderen (6). Allochtone kinderen verdienen dan ook speciale aandacht binnen onze gezondheidszorg.

Weinig is bekend over de gezondheidsproblemen van allochtone kinderen die gepresenteerd worden bij de kinderarts (7-8). Het doel van deze studie was het verkrijgen van inzicht in de medische problemen en hun verschillen tussen groepen kinderen met een verschillende etnische achtergrond op een polikliniek kindergeneeskunde in een grote stad.

## **METHODE**

### ***Patiënten***

De polikliniek algemene kindergeneeskunde van het Sophia Kinderziekenhuis te Rotterdam levert zowel basisspecialistische (90%) als topklinische zorg. Sinds 1988 wordt de reden van komst op de polikliniek algemene kindergeneeskunde geclassificeerd naar een klacht of symptoom, een afwijkende laboratoriumuitslag of een vermoedde diagnose (9-10). In dit probleem georiënteerd patiënten classificatiesysteem zijn de specifieke code-items (totaal 144) ingedeeld in 18 groepen van orgaansystemen of ziekte-entiteiten, zoals infectieproblemen, gastrointestinale problemen en luchtwegproblemen.

Met behulp van het probleemgeoriënteerd patiëntenclassificatiesysteem en het ziekenhuis-informatiesysteem (ZIS) zijn gegevens van patiënten in de leeftijd van 0 tot 15 jaar verzameld, die de polikliniek algemene kindergeneeskunde voor de eerste maal bezochten in de periode van 1988 tot en met 1997: demografische gegevens (naam, postcode, geslacht, leeftijd op bezoekdatum en verzekeringsvorm), reden van komst (probleemcodering) en de uiteindelijke diagnose (ICD-9 codering) bij eerste bezoek.

De etniciteit van de patiënten werd bepaald aan de hand van de achternaam. Met de hulp van een Turkse, een Marokkaanse, een creools-Surinaamse en een Hindoeistaans-Surinaamse geneeskundestudent werden de Nederlandse, Turkse, Marokkaanse en Surinaamse namen van elkaar onderscheiden. Een groep van in een van de bovengenoemde etniciteitsgroepen te

classificeren namen, werd als restgroep aangeduid en bij de analyses omtrent de gepresenteerde gezondheidsproblemen buiten beschouwing gelaten. Voor de sociaal-economische status (SES) is het gemiddeld besteedbaar inkomen per persoon per jaar bepaald op basis van het postcode gebied van de patiënt (11). Het niveau van zorg is onderverdeeld naar algemene basisspecialistische zorg en topklinische zorg of topreferentiezorg (9).

### **Statistische analyses**

Verschillen in redenen van komst, achtergrondvariabelen, verrichte diagnostiek en follow-up tussen de etniciteitsgroepen werden geanalyseerd met behulp van de chi-kwadraat toets voor de dichotome variabelen en de non-parametrische Kruskal-Wallis test voor de niet normaal verdeelde continue variabelen. Als verschillen tussen de 4 etnische groepen een significant verschil kon worden aangetoond ( $\#$ :  $p < 0.05$ ), werden de 3 allochtone groepen separaat vergeleken met de Nederlandse kinderen (\*:  $p < 0.05$ ). Het verband tussen etniciteit en reden van komst naar orgaansysteem/ ziekte-entiteit, en etniciteit en definitieve diagnose, werd met behulp van logistische regressie geanalyseerd (oddsratio (OR) met 95% betrouwbaarheidsinterval) waarbij werd gecorrigeerd voor de achtergrondvariabelen, geslacht, verzekeringsvorm en SES. De meest voorkomende problemen naar orgaansysteem/ ziekte-entiteit en enkele diagnoses zijn geanalyseerd, waarbij de oddsratios worden gepresenteerd in 2 leeftijds-categorieën. Etniciteit is als 3 dummy variabelen (Turks, Marokkaans en Surinaams) gebruikt, waarbij de Nederlandse groep als referentiegroep fungeerde.

## **RESULTATEN**

In de periode van 1988-1997 bezochten in totaal 11.998 kinderen de polikliniek algemene kindergeneeskunde van het Sophia Kinderziekenhuis te Rotterdam voor de eerste keer. Van hen was 54% van het mannelijk geslacht; de gemiddelde leeftijd was 4.5 jaar. Van de totale groep patiënten was 77% van Nederlandse, 6% van Turkse, 4% van Marokkaanse en 5% van Surinaamse afkomst. Een groot deel (38%) van de patiënten populatie was woonachtig in Rotterdam, waarvan een kwart binnen het adherentiegebied van het ziekenhuis. Van de 3913 patiënten wonende in Rotterdam was 45% van allochtone afkomst: 15% Turks, 9% Marokkaans, 9% Surinaams. De gemiddelde leeftijd van de patiënten in deze groepen was vergelijkbaar (tabel 1). Zowel het percentage particulier verzekerden als het gemiddeld inkomen was bij de allochtone groepen beduidend lager. Bij alle allochtone groepen kinderen werd vaker laboratoriumdiagnostiek verricht (62-64%) dan bij de Nederlandse kinderen (57%). Marokkaanse kinderen werden ook vaker opgenomen in vergelijking met de Nederlandse kinderen. Geen duidelijke verschillen werden aangetoond in röntgendiagnostiek, niveau van zorg en poliklinische follow-up.

Tabel 2 geeft de top-10 redenen van komst per etniciteitsgroep, waarbij is uitgegaan van de top-10 van de Nederlandse kinderen. 'Buikpijn of obstipatie' was het meest voorkomende probleem, het werd vaker gepresenteerd door Turkse kinderen (15%) dan door Nederlandse, Marokkaanse en Surinaamse kinderen (10-12%). Het tweede probleem uit de top-10, 'koorts met hoesten of bovenste luchtweginfectie', werd bij alle groepen even vaak gezien. Klachten



van 'dyspnoe en/of hoesten en/of piepen' was twee maal zo vaak de reden van komst voor de Marokkaanse kinderen (6%) dan voor de Nederlandse kinderen (3%). Marokkaanse en Turkse kinderen bezochten de polikliniek vaker voor incontinentieklachten. 'Algehele malaise of excessief huilen' werd minder vaak gepresenteerd door Surinaamse kinderen. 'Gedrag- en gezinsproblemen' bleken bij niet-Nederlandse kinderen zelden een presenterende klacht.

De samenhang tussen etniciteit en reden van komst naar leeftijdscategorie, ingedeeld naar ziekte-entiteit of orgaansysteem, wordt gepresenteerd in tabel 3. Hierbij is gecorrigeerd voor geslacht, SES en verzekeringsvorm. In de leeftijdscategorie 0-5 jaar ( $n=2135$ ) viel op dat er enige verschillen zijn (tabel 3a). Turkse kinderen presenteerden zich significant vaker met gastro-intestinale klachten (OR 1.57, 95%BI 1.14-2.16) en minder vaak met neurologische verschijnselen (OR 0.56, 95%BI 0.33-0.94). Verschillen in de eerstgenoemde probleemcategorie worden vooral veroorzaakt door een verhoogd percentage Turkse kinderen met klachten van 'buikpijn', 'obstipatie' en 'chronisch braken'. Geen verschil werd aangetoond bij infectieproblemen, endocriene problemen, luchtwegproblemen en urinewegproblemen.

In de groep kinderen ouder dan 5 jaar bezochten Marokkaanse kinderen de polikliniek algemene kindergeneeskunde vaker met urinewegproblemen (OR 2.39, 95%BI 1.34-4.25) en luchtwegproblemen (OR 2.31, 95%BI 1.37-3.87) en minder vaak met endocrinologische klachten (OR 0.66, 95%BI 0.43-1.00) dan de Nederlandse kinderen (tabel 3b). Ook bij Turkse kinderen waren urinewegproblemen vaker een reden om de polikliniek te bezoeken (OR 2.0, 95%BI 1.13-3.54). De urinewegproblemen berustten vooral op enuresis diurna en nocturna (91%). In de groep endocrinologische klachten was 'kleine lengte' de meest voorkomende presentatie bij Turkse en Marokkaanse kinderen, terwijl 'grote lengte' juist vaker bij Nederlandse kinderen voorkwam. Ook was adipositas binnen de endocriene klachtencategorie voor Turkse kinderen (26%) vaker een reden van komst op de polikliniek dan voor Nederlandse kinderen (13%).

De top-5 van de uiteindelijk gestelde diagnoses zag er als volgt uit: obstipatie (11%), astma (8%), bovenste luchtweginfecties (6%), constitutionele kleine lengte (2%) en voedingsproblematiek (2%). In 11% van de gevallen kon geen specifieke diagnose gesteld worden volgens de ICD-9 codering. Obstipatie werd in de leeftijdscategorie 5-15 jaar vaker, maar niet significant, gediagnostiseerd bij Turkse kinderen (OR 1.49, 95%BI 0.99-2.22) en minder vaak bij Marokkaanse kinderen (OR 0.36, 95%BI 0.36-1.05) dan bij Nederlandse kinderen (tabel 4). De diagnose astma werd bij zowel Marokkaanse als Surinaamse kinderen significant vaker gesteld in de leeftijdsgroep van 5-15 jaar dan bij Nederlandse kinderen (oddsratios respectievelijk 2.64 (95%BI 1.52-4.57) en 1.92 (95%BI 1.09-2.37)). Bovenste luchtweginfecties leverde geen verschillen op tussen de etniciteiten. De andere diagnoses waren te klein in aantal om zinvolle analyses te maken.

**Tabel 1:** Achtergrondvariabelen, diagnostiek en follow-up van alle patiënten uit Rotterdam op de polikliniek algemene kindergeneeskunde naar etniciteit

| <i>Etniciteit</i>               | Nederland     |             | Turkije      |              | Marokko      |              | Suriname     |              |
|---------------------------------|---------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <i>N=3913</i>                   | <i>N=2522</i> | <i>%</i>    | <i>N=552</i> | <i>%</i>     | <i>N=414</i> | <i>%</i>     | <i>N=425</i> | <i>%</i>     |
| <i>Achtergrondvariabelen</i>    |               |             |              |              |              |              |              |              |
| Gemiddelde leeftijd†            | 4.5           | (1.4-8.5)   | 3.8          | (0.8-7.5)    | 4.0          | (1.0-8.6)    | 4.6          | (1.5-8.4)    |
| Geslacht (mannelijk)#           | 1326          | (53%)       | 333          | (60%)*       | 224          | (54%)        | 229          | (54%)        |
| Particuliere verzekering#       | 943           | (37%)       | 34           | (6%)*        | 29           | (7%)*        | 59           | (14%)*       |
| Gemiddeld inkomen *1000 gulden  | 19.1          | (15.6-20.8) | 14.6         | (13.8-16.7)* | 14.6         | (13.8-17.1)* | 15.5         | (13.8-18.2)* |
| <i>per jaar †#</i>              |               |             |              |              |              |              |              |              |
| <i>Diagnostiek en follow-up</i> |               |             |              |              |              |              |              |              |
| Basisspecialistische zorg       | 2333          | (93%)       | 519          | (94%)        | 391          | (94%)        | 410          | (97%)        |
| Topklinisch/toppreferentie zorg | 189           | (7%)        | 33           | (6%)         | 23           | (6%)         | 15           | (3%)         |
| Laboratoriumdiagnostiek#        | 1428          | (57%)       | 354          | (64%)*       | 255          | (62%)*       | 264          | (62%)*       |
| Rontgendiagnostiek              | 950           | (38%)       | 195          | (35%)        | 155          | (37%)        | 169          | (40%)        |
| Opname#                         | 387           | (15%)       | 88           | (16%)        | 88           | (21%)*       | 37           | (16%)        |
| Poliklinische follow-up         | 2008          | (80%)       | 448          | (81%)        | 340          | (82%)        | 337          | (79%)        |

# p&lt;0.05

\* p&lt;0.05 allochtone groepen afzonderlijk vergeleken met de Nederlandse groep

† Mediaan (25-75 percentiel)

**Tabel 2:** Top 10 van reden van komst op de polikliniek algemene kindergeneeskunde periode 1988-1997 van alle kinderen uit Rotterdam naar etniciteit

| <i>N=3913</i>              | <i>Nederland</i> |            | <i>Turkije</i> |            | <i>Marokko</i> |            | <i>Suriname</i> |            |
|----------------------------|------------------|------------|----------------|------------|----------------|------------|-----------------|------------|
|                            | <i>N=2522</i>    | <i>(%)</i> | <i>N=552</i>   | <i>(%)</i> | <i>N=414</i>   | <i>(%)</i> | <i>N=425</i>    | <i>(%)</i> |
| Buikpijn/obstipatie#       | 303              | (12%)      | 84             | (15%)*     | 39             | (10%)      | 49              | (11%)      |
| Koorts met hoesten/blwi‡   | 303              | (12%)      | 62             | (11%)      | 57             | (13%)      | 49              | (11%)      |
| Grote lengte#              | 104              | (4%)       | 5              | (1%)*      | 1              | (0.2%)*    | 5               | (1%)       |
| Kleine lengte              | 97               | (4%)       | 29             | (5%)       | 20             | (5%)       | 21              | (5%)       |
| Malaise/ excessief huilen# | 93               | (4%)       | 20             | (4%)       | 8              | (2%)       | 4               | (1%)       |
| Dyspnoe/hoesten/piepen#    | 80               | (3%)       | 18             | (3%)       | 26             | (6%)*      | 19              | (4%)       |
| Ontwikkelingsachterstand#  | 75               | (3%)       | 8              | (2%)*      | 15             | (4%)       | 23              | (5%)       |
| Mictieklachten met koorts  | 62               | (2%)       | 9              | (2%)       | 12             | (3%)       | 9               | (2%)       |
| Chronisch hoesten          | 57               | (2%)       | 14             | (3%)       | 11             | (3%)       | 9               | (2%)       |
| Incontinentie#             | 50               | (2%)       | 23             | (4%)*      | 20             | (5%)*      | 13              | (3%)       |

#  $P < 0.05$

\*  $p < 0.05$  allochtone groepen afzonderlijk vergeleken met de Nederlandse groep

‡ blwi = bovenste luchtweginfecties

**Tabel 3a:** Samenhang tussen reden van komst naar orgaansysteem/ ziekte-entiteit en etniciteit van patiënten die de polikliniek algemene kindergeneeskunde bezochten in de periode 1988-1997 voor de eerste maal in de leeftijdscategorie 0-5 jaar, gecorrigeerd voor geslacht, verzekeringsvorm en SES (n=2135).

| Leeftijd 0-5 jaar |                  | Oddsratio (95% betrouwbaarheidsinterval) |                  |                  |  |
|-------------------|------------------|------------------------------------------|------------------|------------------|--|
| Etniciteit        | Infecties        | Gastro-intestinaal                       | Endocrien        | Luchtwegen       |  |
| Nederland         | 1                | 1                                        | 1                | 1                |  |
| Turkije           | 0.83 (0.61-1.12) | 1.57 (1.14-2.16)                         | 1.37 (0.75-2.50) | 0.90 (0.53-1.54) |  |
| Marokko           | 1.23 (0.89-1.69) | 1.03 (0.70-1.52)                         | 0.74 (0.32-1.69) | 1.46 (0.87-2.45) |  |
| Suriname          | 0.91 (0.65-1.27) | 1.40 (0.98-2.01)                         | 1.44 (0.75-2.77) | 1.20 (0.69-2.08) |  |
|                   | Neurologie       | Urinewegen                               | Bloed            |                  |  |
| Nederland         | 1                | 1                                        | 1                |                  |  |
| Turkije           | 0.56 (0.33-0.94) | 0.89 (0.28-2.90)                         | 0.96 (0.57-1.62) |                  |  |
| Marokko           | 1.08 (0.67-1.74) | 0.60 (0.13-2.76)                         | 1.26 (0.74-2.15) |                  |  |
| Suriname          | 1.17 (0.73-1.87) | 0.65 (0.14-2.96)                         | 1.10 (0.63-1.94) |                  |  |

**Tabel 3b:** Samenhang tussen reden van komst naar orgaansysteem/ ziekte-entiteit en etniciteit van patiënten die de polikliniek algemene kindergeneeskunde bezochten in de periode 1988-1997 voor de eerste maal in de leeftijdscategorie 5-15 jaar, gecorrigeerd voor geslacht, verzekeringsvorm en SES (n=1778).

| Leeftijd 5-15 jaar |                  | Oddsratio (95% betrouwbaarheidsinterval) |                  |                  |  |
|--------------------|------------------|------------------------------------------|------------------|------------------|--|
| Etniciteit         | Infecties        | Gastro-intestinaal                       | Endocrien        | Luchtwegen       |  |
| Nederland          | 1                | 1                                        | 1                | 1                |  |
| Turkije            | 1.02 (0.65-1.66) | 1.32 (0.92-1.89)                         | 0.88 (0.61-1.29) | 1.05 (0.57-1.91) |  |
| Marokko            | 1.23 (0.75-2.02) | 0.85 (0.56-1.30)                         | 0.66 (0.43-1.00) | 2.31 (1.37-3.87) |  |
| Suriname           | 1.37 (0.86-2.16) | 0.80 (0.53-1.19)                         | 1.06 (0.74-1.51) | 1.25 (0.7-2.24)  |  |
|                    | Neurologie       | Urinewegen                               | Bloed            |                  |  |
| Nederland          | 1                | 1                                        | 1                |                  |  |
| Turkije            | 0.56 (0.30-1.05) | 2.00 (1.13-3.54)                         | 0.39 (0.13-1.12) |                  |  |
| Marokko            | 0.78 (0.42-1.42) | 2.39 (1.34-4.25)                         | 0.84 (0.36-1.97) |                  |  |
| Suriname           | 0.94 (0.55-1.61) | 1.13 (0.57-2.23)                         | 0.78 (0.34-1.79) |                  |  |

**Tabel 4:** Samenhang tussen diagnose (ICD9 codering) en etniciteit van patiënten die de polikliniek algemene kindergeneeskunde bezochten in de periode 1988-1997 voor de eerste maal, gecorrigeerd voor geslacht, verzekeringsvorm en SES.

| <i>Leeftijd 0-5 jaar (n=2135)</i>               |                   |                  |                                       |
|-------------------------------------------------|-------------------|------------------|---------------------------------------|
| <i>Oddsratio (95% betrouwbaarheidsinterval)</i> |                   |                  |                                       |
| <i>Etniciteit</i>                               | <i>Obstipatie</i> | <i>Astma</i>     | <i>Bovenste<br/>luchtweginfecties</i> |
| Nederland                                       | 1                 | 1                | 1                                     |
| Turkije                                         | 1.22 (0.78-1.90)  | 1.07 (0.51-2.26) | 0.77 (0.47-1.26)                      |
| Marokko                                         | 0.57 (0.30-1.07)  | 1.49 (0.71-3.12) | 1.28 (0.80-2.06)                      |
| Suriname                                        | 0.94 (0.55-1.61)  | 2.30 (1.22-4.33) | 0.52 (0.27-0.99)                      |
| <i>Leeftijd 5-15 jaar (n=1778)</i>              |                   |                  |                                       |
|                                                 | <i>Obstipatie</i> | <i>Astma</i>     | <i>Bovenste<br/>luchtweginfecties</i> |
| Nederland                                       | 1                 | 1                | 1                                     |
| Turkije                                         | 1.49 (0.99-2.22)  | 1.12 (0.59-2.13) | 1.11 (0.42-2.92)                      |
| Marokko                                         | 0.62 (0.36-1.05)  | 2.64 (1.52-4.57) | 1.14 (0.41-3.18)                      |
| Suriname                                        | 0.83 (0.52-1.33)  | 1.92 (1.09-3.37) | 0.84 (0.28-2.50)                      |

## DISCUSSIE

Deze studie beschrijft verschillen in reden van komst op een polikliniek algemene kindergeneeskunde tussen kinderen met verschillende etnische achtergronden. Op de polikliniek algemene kindergeneeskunde is 45% van de populatie afkomstig uit Rotterdam van allochtone afkomst: 15% Turks, 9% Marokkaans en 9% Surinaams. Deze percentages komen overeen met de percentages allochtone kinderen van 0-14 jaar in Rotterdam (12). Er blijken daarentegen tussen de etniciteitsgroepen duidelijke verschillen te bestaan in medische problemen gepresenteerd op de polikliniek algemene kindergeneeskunde van het Sophia Kinderziekenhuis in Rotterdam.

Klachten van buikpijn en obstipatie zijn de meest voorkomende redenen van verwijzing naar de polikliniek algemene kindergeneeskunde (gemiddeld 12%). Turkse kinderen hebben in vergelijking met de Nederlandse vaker klachten van buikpijn of obstipatie. Van de kinderen met deze klachten krijgt in alle etniciteitsgroepen het merendeel ook de diagnose 'obstipatie'. Ook bij de huisarts melden Turkse kinderen zich vaker met gastro-intestinale klachten dan de Nederlandse kinderen (6). Of dit duidt op verhoogde prevalentie van obstipatie of op verschillen in melding van en omgang met deze klachten, is niet duidelijk. Obstipatie is een functionele klacht, waarbij voedingsgewoonten en gedrag een belangrijke rol. Het hulpzoekgedrag van Turkse ouders ten behoeve van hun kinderen blijkt wel degelijk verschillend te zijn ten opzichte van Nederlandse ouders (13). Turkse ouders gaan frequenter rechtstreeks naar een acute hulp dan de andere ouders (13-14). Factoren als kennis van klachten en ziekten, angst dienaangaande, cognities van ouders, communicatieproblemen en onbekendheid met het systeem, kunnen hierbij mogelijk een rol spelen.

In de leeftijd van 5-15 jaar is de prevalentie van luchtwegproblemen bij Marokkaanse kinderen hoger (OR 2.31, 95%BI 1.37-3.87). Astma kwam als definitieve diagnose bij Marokkaanse en Surinaamse kinderen twee maal zo vaak voor. Ook in onderzoek in Amsterdam-West werd vastgesteld dat bij allochtone kinderen, in het bijzonder Marokkaanse kinderen, de diagnose astma vaker werd gesteld (7). De prevalentie van astmatische klachten en luchtwegklachten bij allochtone schoolkinderen, inclusief Marokkaanse, is zowel in Amsterdam als in Utrecht lager dan bij Nederlandse kinderen (4,15). Tevens wordt de huisarts niet veel vaker door Marokkaanse en Surinaamse kinderen geconsulteerd voor luchtwegproblemen (6). Het lijkt erop dat astma bij Marokkaanse en Surinaamse kinderen meer klachten veroorzaakt die verwijzing naar een kinderarts nodig maken. Verschillende factoren kunnen hierbij een rol spelen. Zowel uitlokkende factoren, zoals verhoogde expositie aan allergenen, als onvoldoende begrip van en informatie over de preventie van benauwdheidsaanvallen en medicatie gebruik kunnen hierbij aan de orde zijn. Communicatie problemen en culturele aspecten kunnen met name bij Marokkaanse kinderen een groot deel verklaren. Het is immers bekend dat ideeën over ziekten en behandeling van ziekten cultureel en sociaal bepaald zijn (16). Uit het onderzoek van Versluis komt naar voren dat het aantal herhalingsrecepten voor respiratoire klachten minder vaak worden verstrekt aan Marokkaanse kinderen (6). Hieruit kan men afleiden dat ofwel de huisarts dit niet nodig acht, of de ouders niet om een nieuw recept komen vragen.

Er zijn kleine aanwijzingen dat het zorgsysteem voor Turkse en Marokkaanse kinderen met astma minder adequaat is dan voor Nederlandse kinderen (17). In de Verenigde Staten werd bij kinderen met astma een relatie gevonden tussen kwaliteit van zorg en etniciteit: Spaanse kinderen hadden minder vaak inhalatietherapie voordat ze werden opgenomen voor een exacerbatie astma (18). Ook bij ontslag uit het ziekenhuis kregen zij minder vaak inhalatietherapie mee naar huis. In hoeverre dit in Nederland een rol speelt, moet toekomstig onderzoek uitwijzen. Om de zorg voor Marokkaanse kinderen met astma te verbeteren zouden speciaal opgeleide migrantenvoorlichtsters de ouders en het kind in de eigen taal kunnen informeren.

Opvallend in dit onderzoek is dat zowel Marokkaanse als Turkse kinderen in de leeftijd van 5-15 jaar vaker de polikliniek bezochten met problemen van de urinewegen, voornamelijk berustend op enuresisklachten. Eerdere studies vinden in deze groepen schoolkinderen een verhoogde prevalentie van enuresis nocturna (5,19). Gesuggereerd werd dat de verschillen kunnen berusten op culturele verschillen betreffende de zindelijkheidstraining en de attitude van ouders jegens hun bedplassende kinderen. Dit verhoogde polikliniekbezoek duidt niet alleen op het meer voorkomen van enuresis bij Marokkaanse en Turkse kinderen, maar ook op het feit dat deze ouders enuresis als een probleem beschouwen waarvoor zij een kinderarts willen raadplegen. Uit onderzoek in het Wilhelmina Kinderziekenhuis kreeg men de indruk dat de belasting van bedplassen voor allochtone gezinnen groter is dan voor de Nederlandse door factoren als gezinsgrootte, andere gezinsproblematiek en attitude (20). Behandeling van bedplassen bij allochtone kinderen versist extra (thuis)begeleiding en opvoedkundige ondersteuning.

De resultaten van deze studie kunnen geëxtrapoleerd worden naar poliklinieken van andere grote steden in Nederland, waar een groot deel van de patiënten van allochtone

afkomst is. In Amsterdam, Utrecht en Den Haag zijn de percentages Marokkanen, Turken en Surinamers ook hoog en vergelijkbaar met Rotterdam.

Het bepalen van de etniciteiten is in dit onderzoek verricht op basis van de achternaam van de patiënt. Etniciteit wordt bij kinderen wordt het beste gedefinieerd aan de hand van het geboorteland van de ouders en eventueel de grootouders (21). In de Verenigde Staten en Engeland wordt ook wel 'self-identity' gebruikt (21-23). Zowel uit de literatuur als uit eigen onderzoek blijkt deze methode een goed alternatief te zijn als gegevens met betrekking tot geboorteland van de ouder ontbreken (14,24-25). De groep Surinaamse patiënten is het moeilijkst te onderscheiden en waarschijnlijk mede daarom in deze studie ondervertegenwoordigd. Op basis hiervan zouden eventuele kleine verschillen onderschat worden.

**Conclusie:** Er werden tussen kinderen met verschillende etnische afkomst duidelijke verschillen gevonden in medische problemen gepresenteerd op een algemene polikliniek kindergeneeskunde. Bij Turkse kinderen moet extra aandacht uit gaan naar gastro-intestinale problematiek. Bij oudere kinderen geldt dit zowel voor de Turkse als Marokkaanse kinderen met betrekking tot enuresis. Preventie via bestaande instellingen lijkt gewenst. De hogere prevalentie van astma onder Marokkaanse en Surinaamse kinderen op de polikliniek kindergeneeskunde, verdient extra aandacht. Omdat luchtwegklachten bij hen niet vaker in de populatie optreden, is voorlichting een belangrijk onderdeel van de behandeling van astma, zodat de zorg geoptimaliseerd kan worden.

## Referenties:

1. Schulp TWJ, van Enk A. Mortaliteit naar etniciteit bij kinderen in Nederland. Ned Tijdschr Geneeskd 1996;140(50):2489-92.
2. Enk van A, Buitendijk E, Pal van der KM, et al. Perinatal death in ethnic minorities in the Netherlands. J Epidemiol Community Health 1998;52:735-9.
3. Driel van HF, Steenbergen van JE, Gosissen WHM, Schulp TWJ. Etnische en sociaal-economische verschillen in perinatale en zuigelingensterfte in de stad Utrecht; een analyse. TSG 1999;77(4):208-16.
4. Wal van der MF, Rijcken B. Astmatische klachten bij autochtone en allochtone kinderen van 2-11 jaar in Amsterdam. TSG 1995;73:42-50.
5. Spee- Wekke van der J, Hirasig RA, Meulmeester JF, Radder JJ. Childhood nocturnal enuresis in the Netherlands. Urology 1998;51(6):1022-6.
6. Versluis-van Winkel SY, Bruijnzeels MA, Lo Fo Wong SH, et al. Geen verschil in frequentie van huisartsbezoek door Turkse, Surinaamse en Marokkaanse kinderen van 0-14 jaar en door Nederlandse, maar wel in contactredenen. Ned Tijdschr Geneeskd 1996;140(18):980-4.
7. Wolf BHM, Bottema BJAM. Etniciteit en verwijzing voor astma naar de kinderarts in Amsterdam West. Tijdschrift Kindergeneeskunde 1997;65(4):150-3.
8. Wolf B. Gebruik van een spoedeisende hulp kindergeneeskunde in multicultureel Amsterdam-West. Tijdschr Kindergeneeskunde 1998;66(5):190-4.
9. Derksen- Lubben G, Jongkind CJ, Kraayenoord S, et al. Een probleem oriënterend patiënten classificatiesysteem voor de algemene kindergeneeskunde I. Ned Tijdschr Geneeskd 1996;64:93-8.
10. Steensel van-Moll HA, Jongkind CJ, Aarsen RSR, et al. Een probleem georiënteerd patiënten classificatiesysteem voor de algemene kindergeneeskunde II. Tijdschr Kindergeneeskunde 1996;64(3):99-104.
11. Centraal Bureau voor de Statistiek (CBS). Kerncijfers vierpostcodegebieden. Heerlen; CBS; 1995

12. Centrum voor Onderzoek en Statistiek (COS). Demografische gegevens Rotterdam 1999. Rotterdam: COS; 1999
13. Gelauff-Hanzon CW. Hulpzoeken; een onderzoek naar het hulpzoekgedrag van Turkse, Marokkaanse en Nederlandse ouders ten behoeve van hun 0 t/m 12 jarige kinderen. Den Haag: Nederlands Instituut voor Kinderstudies; 1985.
14. Bouwhuis CB, Kromhout MM, Twijnstra MJ, et al. Spoedeisende problemen bij kinderen van verschillende etnische afkomst: 10 jaar acute hulp van het Sophia Kinderziekenhuis Rotterdam. Ned Tijdschr Geneesk 2001;145:1847-51
15. Gorissen WHM, Brussaard-Scholman GCA, Schulpen TWJ. Luchtwegklachten bij schoolkinderen in Utrecht: de invloed van etniciteit en de woning. Tijdschrift voor jeugdgezondheidszorg 1999;31(2):17-21.
16. Dijkman P, Haan de M. Cultureel bepaalde ziektebeleving en geneeswijzen. Huisarts en wetenschap 1999;42 (5):205-10.
17. Gorissen WHM, Brussaard-Scholman GCA. Cara bij schoolkinderen in Utrecht. GG&GD Utrecht, afdeling jeugdgezondheidszorg; 1996.
18. Finkelstein JA, Brown RW, Schneider LC, et al. Quality of care for preschool children with asthma: the role of social factors and practice setting. Pediatrics 1995;95(3):389-94.
19. Wal van der MF, Pauw-Plomp H, Schulpen TWJ. Bedplassen bij Nederlandse, Surinaamse, Marokkaanse en Turkse kinderen van 3-4, 5-6 en 11-12 jaar. Ned Tijdschr Geneesk 1996;140:2410-4.
20. Most-van Spijk MW van der, Hopstaken NSM, Visser AEM, et al. Behandeling van hardnekkige enuresis nocturna bij kinderen van Turkse en Marokkaanse migranten vraagt extra aandacht voor het gezin. Ned Tijdschr Geneesk 1994;138:1396-73.
21. Bruijnzeels M. Het meten van etnische herkomst. Amsterdam: Zorgonderzoek Nederland; 1999.
22. McKenny NR, Bennet CE. Issues regarding data on race and ethnicity: The census Bureau Experience. Public health reports 1994;109(1):16-25.
23. McKenzie K, Crowcroft NS. Describing race, ethnicity and culture in medical research. BMJ 1996;312:1054.
24. Nicoll A, Bassett K, Ulijaszek SJ. What's in a name? Accuracy of using surnames and forenames in ascribing Asian ethnic identity in English populations. J Epidemiol Community Health 1986;40(4):364-8.
25. Bouwhuis CB, Moll HA. Determination of ethnicity in children: 2 methods compared. (submitted 2001).



## **CHAPTER 2.3**

**Differences between ethnic groups  
in clinical presentation and disease  
severity of children with meningeal  
signs at a paediatric emergency  
department**

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submitted

## ABSTRACT

**Aim:** Evaluate the clinical presentation, disease severity and final diagnosis of children from different ethnic groups, who visit a paediatric emergency department with meningeal signs.

**Methods:** Data were collected from patients who attended the paediatric emergency department of the Sophia Children's Hospital Rotterdam with meningeal signs between 1988 and 2000. These data included demographics, clinical presentation, disease severity and final diagnosis.

**Results:** In total 432 patients were included. Fifty-eight percent was Dutch, 7% Turkish, 10% Moroccan, 10% Surinamese, and 15% others. No differences in clinical presentation and hospital admissions were observed. Turkish children had more often a self-limiting disease (OR 2.2, 95%CI 0.9-5.5). In contrast, Moroccan children had more often a serious infection (OR 2.5, 95%CI 1.2-5.3).

**Conclusions:** With respect to diagnoses, more self-limiting diseases were present in Turkish and more serious infections were present in Moroccan children compared to Dutch children.

## **INTRODUCTION**

The health care system is dealing with an increasing number of patients from different ethnic backgrounds. In The Netherlands, 20% of the children between 0-14 years belong to one of the ethnic minority groups. These groups mainly come from Turkey, Morocco, Suriname and the Netherlands Antilles (1). In the larger cities in the Netherlands, approximately 60% of all children belong to one of these ethnic groups (2).

Several studies regarding health problems in relation to ethnicity have been conducted. Asthma, for example, is less frequently present among ethnic minorities, whereas perinatal death and infectious diseases are more often present (3-5). Despite the amount of ethnic minority children attending paediatric emergency departments in larger European cities, little is known about differences in paediatric emergency problems between these ethnic groups (6,7). It has been suggested that part of the visits to paediatric emergency departments (PED) are inappropriately. Some patients with acute problems consult emergency departments (too) late, while others attend emergency departments with non-urgent problems (7-12). Ethnicity has been mentioned as a determinant of non-urgent visits (13). Moreover, differences in disease severity of infectious problems presented to a PED have been described (14).

Acute infections are the most common problems (40-70%) presented at a PED. Meningeal signs account for approximately 5% of these infectious problems (7,10,14). Of all patients with meningeal signs, in 30% a bacterial meningitis, in 13% a viral or septic meningitis and in 46% a self-limiting disease has been diagnosed (15,16).

The aim of this study was to evaluate the clinical presentation and disease severity of children with different ethnic backgrounds, who attend the PED with meningeal signs.

## **MATERIALS EN METHODS**

### ***Patients***

Data were used from a diagnostic study on the presence or absence of bacterial meningitis in children presenting the PED with meningeal signs (15,16). In brief, patients between 1 month and 15 years, who attended the PED of the Sophia Children's Hospital between 1988 and 2000 with meningeal signs, were included. The Sophia Children's Hospital is a University hospital with 24 hours consultancy service. It is situated in an urban setting of which a large part of the population belongs to one of the ethnic minorities groups.

Since 1988, a problem-oriented patient classification system has been applied at the outpatient department and emergency department of the Sophia Children's Hospital. Every presenting medical problem is characterised in a matrix by an internal organ system or disease entity, and by a complaint or symptom, abnormal laboratory result, or presumed diagnosis (17). For each patient the main medical problem is prospectively coded and eventually linked to a final diagnosis according to the international classification of diseases (ICD9). The medical problem 'meningeal signs' was applied to children referred by a general practitioner for (suspected) signs of meningeal irritation or to (self-referred) children who had neckstiffness in the anamnesis or in whom the paediatrician assessed signs of meningeal irritation (for further details see Oostenbrink et al. (16)).

### ***Data and definitions***

The following data were obtained from standardised medical records: demographics (i.e. gender, age, social-economic status (SES), type of insurance and referred by general practitioner or not), clinical presentation (symptoms from patient's history and signs from physical examination), final diagnosis and hospitalisation. Documented symptoms from patient history were presence of fever (defined as a body-temperature  $>39^{\circ}\text{C}$ ), duration of fever and duration of the main problem. Physical examination included presence of fever ( $39^{\circ}\text{C}$ ), sick clinical impression by the paediatrician, signs of a lower respiratory tract infection (crepitations, dyspnoe) and state of consciousness (alert- reaction to voice- reaction to pain- no reaction)

The final diagnoses according to the ICD-9, were categorised into self-limiting diseases and serious infections. Self-limiting diseases were defined as upper respiratory tract infections, non-specified viral infections and myalgia. Serious infections included bacterial meningitis, viral or aseptic meningitis, pneumonia and other bacterial infections (e.g. septicaemia and urinary tract infection). For further details reference is made to previous publications (15,16).

Ethnicity was determined by using the patient's surname. A Turkish, Moroccan, Hindu Surinamese and Creole Surinamese medical student and the Dutch researcher classified the names into Turkish, Arabic (Moroccan), Surinamese and Dutch. A group of undefined names were excluded from the analyses. SES was defined by the mean income after tax per year per citizen, using a pre-existing governmental index in which the ZIP-code area of a person corresponds with a mean income and the type of insurance (private/sick funds) (1).

### **Analyses**

Demographics, clinical presentation, hospitalisation and the final diagnosis were compared between Dutch children and children from ethnic minority groups. Subsequently, differences between the Dutch group and each ethnic minority group separately (Turkish, Moroccan, Surinamese) were analysed. For both purposes, the chi-square test was used for categorical variables, and the student's T-test or the Kruskal-Wallis-test for continuous variables with a normal or non-normal distribution, respectively. A p-value of < 0.05 was considered to be statistically significant. Additionally, the associations between ethnicity and hospital admission and ethnicity and serious infection were evaluated. The crude odds ratio (OR) was estimated by using univariable logistic regression with a 95% confidence interval (95% CI) between ethnicity and both outcomes. Multivariable logistic regression analysis was applied to adjust for confounding factors (age, gender, SES and referral status). Ethnicity was included as three indicator variables (Turkish, Moroccan, and Surinamese) with the Dutch as the reference group.

### **RESULTS**

Four hundred and thirty two patients visited the PED of the Sophia Children's hospital with meningeal signs. The median age was 2.4 years (interquartile range 0.7 - 5.3 years) and 273 (63%) were males. Two hundred and forty nine (58%) were Dutch and 183 (42%) belonged to one of the ethnic minority groups: 31 (7%) Turkish, 44 (10%) Moroccan, 43 (10%) Surinamese and 65 (15%) others/non-defined. The latter group was excluded from further analyses.

Table 1 presents data on demographics and clinical presentation according to ethnicity. The median age ranged from 0.6 years in the Turkish group and 2.9 years in the Dutch group. No differences in referral status were observed. Children from ethnic minority groups more frequently had parents with a low SES compared to the Dutch children. There were no differences in clinical presentation between the Dutch children and the ethnic minority children.

Table 2 showed no major differences in the number of hospitalisations between the groups, whereas differences in frequencies of serious infections were statistically significant. Moroccan children had more serious infections, compared to the Dutch. This is mainly explained by more pneumonia in the group of Moroccan children (21% versus 6%). Turkish children had more frequently a self-limiting disease. The crude OR for a serious infection was for the Turkish 0.43 (95%CI 0.19-0.98); after adjustment for confounding factors this was 0.46 (95%CI 0.19-1.08) (table 3). Moroccan children had more frequently a serious infection (OR 2.27, 95%CI 1.14-4.48) compared to the Dutch children, even after adjustment for confounding factors (OR 2.68, 95%CI 1.25-5.74).

**Table 1:** Demographics and clinical presentation according to ethnicity in children with meningeal signs at a paediatric emergency department (n=367).

|                              | Dutch |           | Ethnic minorities (all) |           | Turkish        | Moroccan      | Surinamese    |
|------------------------------|-------|-----------|-------------------------|-----------|----------------|---------------|---------------|
|                              | %     | (n=249)   | %                       | (n=118)   | % (n=31)       | % (n=44)      | % (n=43)      |
| <b>Patient demographics</b>  |       |           |                         |           |                |               |               |
| age                          | 2.9   | (0.8-5.7) | 1.3                     | (0.6-4.5) | 0.6 (0.3-2.8)* | 1.2 (0.6-3.5) | 2.3 (0.8-5.9) |
| gender (male)                | 64%   | (160)     | 64%                     | (76)      | 55% (17)       | 66% (29)      | 70% (30)      |
| Referred                     | 89%   | (209)     | 86%                     | (96)      | 80% (24)       | 86% (37)      | 89% (35)      |
| SES Private insurance        | 50%   | (125)     | 13%                     | (15)*     | 19% (6)*       | 9% (4)*       | 12% (5)*      |
| Income (€ / person / year)   |       |           |                         |           |                |               |               |
| low                          | 14%   | (34)      | 60%                     | (110)     | 68% (21)       | 75% (33)      | 65% (28)      |
| Medium                       | 41%   | (102)     | 24%                     | (43)      | 23% (7)        | 18% (8)       | 21% (9)       |
| High                         | 45%   | (112)     | 16%                     | (30)      | 19% (3)        | 7% (3)        | 14% (6)       |
| <b>Patient's history:</b>    |       |           |                         |           |                |               |               |
| fever ( $\geq 39^{\circ}$ C) | 69%   | (165)     | 67%                     | (75)      | 52% (15)*      | 71% (30)      | 73% (30)      |
| duration fever (days)        | 1     | (1-1)     | 1                       | (1-1)     | 1 (1-1)        | 1 (1-1)       | 1 (0-1)       |
| duration main problem (days) | 1     | (1-2)     | 1                       | (1-2.25)  | 1 (0.5-2)      | 1 (1-3)       | 1 (1-2)       |
| <b>Physical examination:</b> |       |           |                         |           |                |               |               |
| sick clinical impression     | 71%   | (154)     | 80%                     | (114)     | 73% (19)       | 77% (26)      | 92% (33)*     |
| disturbed consciousness      | 26%   | (51)      | 22%                     | (26)      | 10% (3)        | 23% (10)      | 30% (13)      |
| fever ( $\geq 39^{\circ}$ C) | 48%   | (120)     | 65%                     | (75)*     | 68% (21)*      | 66% (29)*     | 63% (27)      |

Proportional variables are represented in percentages with actual number between parentheses.

Continuous variables are presented by median with 25%-75% range between parentheses.

SES - socio-economic status

\*p-value  $\leq 0.05$  ethnicity group compared to the Dutch

# based on patients period 1988-1998

**Table 2:** Disease severity and final diagnosis according to ethnicity in children with meningelial signs at a Paediatric Emergency Department (n=367)

|                            | Dutch     | Ethnic minorities<br>(all) | Turkish  | Moroccan  | Surinamese |
|----------------------------|-----------|----------------------------|----------|-----------|------------|
|                            | % (249)   | % (118)                    | % (31)   | % (44)    | % (43)     |
| <b>Hospitalisation</b>     | 57% (143) | 64% (75)                   | 48% (15) | 68% (30)  | 70% (30)   |
| <b>Final diagnosis:</b>    |           |                            |          |           |            |
| serious infection          | 49% (121) | 53% (62)                   | 29% (8)* | 68% (30)* | 54% (23)   |
| bacterial meningitis       | 25% (62)  | 22% (26)                   | 10% (3)  | 21% (9)   | 33% (14)   |
| viral meningitis           | 16% (40)  | 15% (18)                   | 13% (4)  | 18% (8)   | 14% (6)    |
| pneumonia                  | 6% (14)   | 11% (13)                   | 7% (2)   | 21% (9)*  | 5% (2)     |
| other bacterial infection. | 2% (5)    | 4% (5)                     | 0        | 9% (4)*   | 2% (1)     |
| self limiting disease      | 51% (128) | 47% (56)                   | 71% (22) | 32% (14)  | 48% (20)   |

Proportional variables are represented in percentages with actual number between parentheses.

\* p-value <0.05 ethnicity group compared to the Dutch

**Table 3:** Crude and adjusted Odds Ratio's (OR) for hospital admission and serious infections (n=367)

|            | Hospital Admission  |                         | Final diagnosis<br>Serious infections |                      |
|------------|---------------------|-------------------------|---------------------------------------|----------------------|
|            | Crude OR<br>(95%CI) | Adjusted OR<br>(95%CI)* | Crude OR<br>(95%CI)                   | Adjusted<br>(95%CI)* |
| Dutch      | 1.0                 | 1.0                     | 1.0                                   | 1.0                  |
| Turkish    | 0.70 (0.30-1.47)    | 0.77 (0.34-1.74)        | 0.43 (0.19-0.98)                      | 0.46 (0.19-1.08)     |
| Moroccan   | 1.60 (0.80-3.14)    | 1.77 (0.83-3.78)        | 2.27 (1.14-4.48)                      | 2.52 (1.19-5.33)     |
| Surinamese | 1.70 (0.85-3.44)    | 0.93 (0.88-4.25)        | 1.22 (0.64-2.33)                      | 1.15 (0.56-1.43)     |

\*Adjusted for socio-economic status, age, gender, type of referral.

## DISCUSSION

In this study we aimed to evaluate the clinical presentation and disease severity of meningeal signs in different ethnic groups of children. We showed that clinical presentation and frequency of hospital admission between the Dutch children and children of ethnic minority groups presenting with meningeal signs did not differ. Interestingly, the final diagnosis of these groups showed some contrasting results: Turkish children had more often a self-limiting disease and Moroccan more often a serious infection, like pneumonia.

Differences in the final diagnosis are probably due to other presenting symptoms that make an admission necessary. Also the younger age of the Turkish children can be an explanation. In younger children, signs of meningitis are less specific and therefore less discriminative between a milder infection and a serious infection. Moroccan children had more frequently pneumonia compared to Dutch children. Pneumonia can easily mimic meningeal signs by pleural irritation.

In contrast to our findings, differences in clinical presentation could have been expected. Ethnicity is mentioned as a determinant of non-urgent visits to emergency departments (13). Moreover, differences in disease severity of infectious problems presented to the PED between ethnic minorities and Dutch children have been described, suggesting differences in helpseeking behaviour (14). However, this study includes children with a very specific presenting symptom. Most children (80-89%) were referred by a general practitioner, leading to a selection of patients.

Several studies suggest that language barriers play an important role in access to healthcare and health-outcomes (18-20). Language barriers between patients and physicians can lead to a higher rate of resource utilisation for diagnostics, increased visit time at an emergency department and unsatisfactory consultations due to misunderstanding (21-24). Therefore, we could expect general practitioners to refer non-Dutch children in an earlier phase to a paediatrician than Dutch children, due to communication problems. However, the results of this study do not support this hypothesis.

To appreciate the results, some limitations need to be discussed. Since the numbers of patients of ethnic minorities are rather small, conclusions should be drawn with caution. Although we used the most relevant clinical data (symptoms and signs), the number of different data was rather small. It could be that other clinical symptoms, which were not studied in this paper, could explain the difference in the number of hospital admissions. Another limitation is the determination of ethnicity. The best way to determine ethnicity is by native country of a child and both parents and by 'self identity' (25,26). These data, however, were not available in our study. The method of using family names where native countries are not available, is suggested as a good alternative (27-29). Finally, SES was defined by the mean income per zip-code area of the patients and the insurance status. We recognise that the real income and SES of the patients is not exactly the mean income defined by postal code area. Parental mean income, educational level and professional status are mostly used (30). However, if detailed information is lacking, this is a good alternative method. Finally, other residual confounding factors, like crowding, exposition to pathogens, housing and prenatal factors were not taken into account in this study, and may have played a role.



In conclusion, we did not find differences in clinical presentation between children of different ethnic groups who attended a PED with meningeal signs. However, Moroccan children more often had a serious infection compared to Dutch children and Turkish more often a self-limiting disease.

## REFERENCES

1. Central Bureau for Statistics (CBS). Monthstatistics of the Population 1999; 1999.
2. Centre for Research and Statistics [Centrum voor onderzoek en Statistiek (COS)]. Demographic data Rotterdam 1999. 1999.
3. Enk van A, Buitendijk E, K.M. Pvd, Enk van WJJ, Schulpens TWJ. Perinatal death in ethnic minorities in the Netherlands. *J Epidemiol Community Health* 1998;52:735-739.
4. Weitzman M, Gortmaker S, Sobol A. Racial, Social, and environmental risks for childhood asthma. *AJDC* 1990;144:1189-1194.
5. Schulpens TW. Migration and child health: the Dutch experience. *Eur J Pediatr* 1996;155(5):351-6.
6. Wolf BH, Schade E. Ethnicity and paediatric referral in Amsterdam [letter]. *Br J Gen Pract* 1997;47(420):466.
7. Bedford HE, Jenkins SM, Shore C, Kenny PA. Use of an east end children's accident and emergency department for infants: a failure of primary health care? *Quality in health care* 1992;1:29-33.
8. Bowling A, Isaacs D, Armston J, Roberts JE, Elliott EJ. Patient use of a paediatric hospital casualty department in the east end of London. *Fam Pract* 1987;4(2):85-90.
9. Watson E. Health of infants and use of health services by mothers of different ethnic groups in East London. *Comm. Med.* 1984;6:127-135.
10. Chande VT, Krug SE, Warm EF. Pediatric emergency department utilization habits: a consumer survey. *Pediatr Emerg Care* 1996;12(1):27-30.
11. Halfon N, Newacheck PW, Wood DL, St Peter RF. Routine emergency department use for sick care by children in the United States. *Pediatrics* 1996;98(1):28-34.
12. Prince M, Worth C. A study of 'inappropriate' attendances to a paediatric Accident and Emergency Department. *J Public Health Med* 1992;14 (2):177-182.
13. Sharma V, Simon SD, Bakewell JM, Ellerbeck EF, Fox MH, Wallace DD. Factors influencing infant visits to emergency departments. *Pediatrics* 2000;106(5):1031-9.
14. Bouwhuis CB, Kromhout MM, Twijnstra MJ, Buller HA, Moll HA. [Few ethnic differences in acute paediatric problems: 10 years of acute care in the Sophia Children's Hospital in Rotterdam]. *Ned Tijdschr Geneesk* 2001;145(38):1847-51.
15. Oostenbrink R, Moons KG, Donders AR, Grobbee DE, Moll HA. Prediction of bacterial meningitis in children with meningeal signs: reduction of lumbar punctures. *Acta Paediatr* 2001;90(6):611-7.
16. Oostenbrink R, Moons KG, Theunissen CC, Derksen-Lubsen G, Grobbee DE, Moll HA. Signs of meningeal irritation at the emergency department: how often bacterial meningitis? *Pediatr Emerg Care* 2001;17(3):161-4.
17. Moll HA, Jonkind CJ, Aarsen RSR, Goede-Bolder Ad, Suijlekom-Smit LWAv, Kraayenoord S, et al. The Development and Applicability of a Problem Oriented Classification System in a Pediatrics Outpatient Clinic. In: *ESPID*; 1998; Bled, Slovenia; 1998. p. 85.
18. Manson A. Language concordance as a determinant of patient compliance and emergency room use in patients with asthma. *Medical care* 1988;26(11):1119-28.
19. Kravitz RL, Helms LJ, Azari R, Antonius D, Melnikow J. Comparing the use of physician time and health care resources among patients speaking English, Spanish, and Russian. *Medical Care* 2000;38(7):728-38.
20. Perez-Stable EJ, Napoles-Springer A, Miramontes JM. The effects of ethnicity and language on medical outcomes of patients with hypertension or diabetes. *Medical Care* 1997;35(12):1212-9.
21. Hampers LC, Cha S, Gurglass DJ, H.J. B. Language barriers and resource utilization in a pediatric emergency department. *Pediatrics* 1999;103 (6 pt 1):1253-1256.

22. Sarver J, Baker DW. Effect of language barriers on follow-up appointments after an emergency department visit. *Journal of General Internal Medicine* 2000;15(4):256-64.
23. Harmsen JAM, Bernsen RMD, Bruijnzeels MA. Ethnic minority patients in general practice. In: *European Public Health Association*; 2001; Brussels; 2001.
24. Wieringen van JCM, Harmsen JAM, Bruijnzeels MA. Intercultural communication in general practice. *Eur J Public Health* 2002;12:63-68.
25. McKenny NR, Bennet CE. Issues regarding data on race and ethnicity: The census Bureau Experience. *Public health reports* 1994;109(1):16-25.
26. McKenzie K, Crowcroft NS. Describing race, ethnicity and culture in medical research. *BMJ* 1996;312:1054.
27. Nicoli A, Bassett K, Ulijaszek SJ. What's in a name? Accuracy of using surnames and forenames in ascribing Asian ethnic identity in English populations. *J Epidemiol Community Health* 1986;40(4):364-8.
28. Bouwhuis CB, Moll HA. Determination of ethnicity in children: 2 methods compared. Submitted 2001.
29. Coldman AJ, Braun T, Gallagher RP. The classification of ethnic status using name information. *J epidemiol Comm Health* 1988;42:390-395.
30. Kunst AE, Mackenbach JP. *Measuring socioeconomic inequalities in health*. Copenhagen: WHO; 1995.

## **CHAPTER 2.4**

### **Socio-economic differences in medical problems presented by children at a paediatric outpatient department**

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submitted

## SUMMARY

**Aim:** Describe the relation between socio-economic status and healthproblems presented at a paediatric outpatient department of a University hospital. **Methods:** Patients, aged 0-15 years presenting the outpatient department of the Sophia Children's Hospital in Rotterdam, with a new paediatric medical problem were included. A questionnaire was administered to obtain background characteristics. Multivariable logistic regression analyses were performed to assess the relation between socio-economic status and the presented medical problems. Educational level of the mother and the mean family income were used as socio-economic indicators. Odds ratios were adjusted for age, sex and ethnicity. **Results:** A larger part of the children from families with low socio-economic status presented with gastro-intestinal problems. Children from families with low income level less frequently presented endocrine problems compared to children from families with a high income level (OR 0.55, 95%CI 0.33-0.87). Patients with mothers with a low educational level were more likely to present with respiratory problems (OR 2.4, 95%CI 1.02-5.8). **Conclusion:** This study showed small socio-economic differences in presented healthproblems at a paediatric outpatient department. Information on gastro-intestinal and respiratory problems for parents with low socio-economic status might optimise the care for these children.

## **INTRODUCTION**

Socio-economic differences in children regarding mortality as well as morbidity data have been described and in most countries these differences seem to persist rather than diminish (1-5). A large study performed in the Nordic countries found more reported ill health by parents of children and adolescents in the lower socio-economic groups (1). Higher prevalences of psychosocial problems, obesity, epilepsy and intellectual disabilities have been observed in groups of children of families with low levels of socio-economic status (3). Most recent published studies showed that asthma is more prevalent in children from lower socio-economic backgrounds (6-9). The prevalence of severe asthma and the frequency of hospital admissions for asthma are significantly higher in the low socio-economic groups compared to the higher groups (6-8,10).

Studies on the association between socio-economic status and the use of healthcare show some conflicting results. Where Cooper et al did not find any differences, several other studies described differences in use of medication, antibiotics, general practitioner consultations, outpatient visits and the duration of hospitalisation days (2-4,11-14). Children from lower socio-economic groups consult general practitioners more frequently, especially for infections, asthma and injuries (12,15). This study aims to describe the relation between socio-economic status and healthproblems presented at a paediatric outpatient department of a University Medical Centre.

## **PATIENTS AND METHODS**

The study was conducted at the outpatient department of general paediatrics of the Sophia Children's University Hospital in Rotterdam. This hospital is located in the inner city of Rotterdam, a large city in the Netherlands. Of all patients visiting the outpatient department, 40% lives in the city of Rotterdam (16). Rotterdam consists of a multicultural and multi-socio-economic population.

The outpatient department of general paediatrics provides especially secondary care. The healthcare system is based on a referral system where the general practitioner acts as a gatekeeper. General practitioners or other specialists refer patients to the outpatient department. Consultations are during office hours and made by appointment.

Consecutive patients aged from 0 to 15 years, visiting the outpatient department between February 2000 and February 2001 with a new paediatric problem were eligible for this study. After informed consent, a standardised questionnaire was administered to the parents by a researcher prior or after seeing the paediatric residents. The questionnaire was also translated in English, French, Turkish and Arabic and filled in by parents in case of language barriers. The Institutional Review Board of the University Hospital Rotterdam approved this study.

### **Data collection**

Background characteristics, performed initial diagnostic tests and follow-up appointments were obtained from the Hospital Information System. Background characteristics included age and gender of the child and type of health insurance (Dutch National Health Insurance Fund or private insurance). The presented healthproblem was classified according to a problem oriented patient classification system (17). In this system, medical problems presented at the outpatient department are coded and characterised in a matrix by an internal organ system or disease entity, and by either a complaint or symptom, abnormal laboratory result or (presumed) diagnosis.

The standardised questionnaire included information on family background socio-demographics, duration of the medical complaint, the child's health as perceived by the parents (bad, moderate, fair, or good) and the use of alternative medication. Family background characteristics were number of household members, the net household income, educational level of the mother and country of birth of both parents.

### **Definitions**

The household equivalent income and the educational level of the mother were used as indicators of socio-economic status. The household equivalent income was derived by the net income of both parents divided by the number of household members to the power 0.36 ( $n^{0.36}$ ) (18). Subsequently, the household equivalent income was divided into three categories (low, middle and high-income level) with an approximately equal number of patients in each category.

Educational level was measured as the highest level of completed education of the mother. We distinguished 4 categories: primary school or less, secondary school at a low level, secondary school at a high level, and post-secondary level (college/ university).

Ethnicity of the child was defined by the parents' country of birth. If one of the parents was born outside the Netherlands, the ethnicity was classified according to this country. In case both parents were born outside the Netherlands but not in the same country, mother's country of birth was chosen.

The presented problems were classified according to the problem oriented patient classification-system. The 6 most frequently presented disease-entities or organ systems at the outpatient department, including infectious problems, gastro-intestinal problems, endocrine problems, respiratory problems, neurological problems and complaints of pain, were analysed.

### **Analyses**

Differences in background characteristics, initial diagnostic tests and follow-up data between the different levels of both socio-economic indicators were analysed by the chi-square test and student's t-test. A p-value of 0.05 or less was considered as statistically significant. Multivariable logistic regression analyses were performed to study the association between both categorical socio-economic indicators (educational level of the mother and income level) and the presented problems at the outpatient department according to disease-entity or organ system. The six most frequently presented organ systems or disease-entities were used as the outcome variables. These variables were dichotomised into the presence and the absence of

the presented problem by disease-entity or organs system. We also evaluated the association between both socio-economic indicators and the healthstatus of the child perceived by the parents (bad/moderate vs. fair/ good). The highest income level and educational level were used as reference groups. In all analyses, we adjusted for age, gender, and ethnicity of the child.

Some of the following data were missing: educational level of the mother, child's healthstatus as perceived by the parents (less than 2%) and mean income (6%). To complete these data we used a single imputation technique as implemented in SPSS version 8.0 (missing value analyses). Imputation techniques were used to reduce bias and aimed to increase statistical efficiency (19).

## **RESULTS**

Of all eligible patients (1281), 1103 parents filled in the questionnaire. There were no differences in background characteristics, like age, gender and type of insurance between the participants and non-participants. The median age of the participating children (25th-75th percentile) was 4.9 years (1.6-8.8) and 47% were males. Of all these children, 42% lived in Rotterdam. Of all mothers, 10% had completed no education or only primary school, 35% secondary school at low level, 35% secondary school at high level and 20% post secondary school.

The median age of the children decreased with higher levels of both socio-economic indicators (table 1). Children from families with the lowest levels of socio-economic status lived more in the city of Rotterdam and belonged more often to one of the ethnic minority groups (non-Dutch). Parents with lower income levels reported more frequently to qualify their child's health as moderate to bad (14% versus 8%) and to use less frequently alternative medicine compared to parents with a higher income (32% versus 48%). There were no differences in the frequency and type of initial diagnostic tests and number of follow-up appointments between the high and lower levels of both socio-economic indicators.

Table 2 shows the results of the multivariable logistic regression analyses. Children of parents with a low and medium income level were more likely to visit with a gastro-intestinal problem compared to children with a high income level (OR 1.6, 95%CI 1.04-2.5 and OR 1.7, 95%CI 1.1-2.6, respectively). A larger part of the children with a low educated mother presented with gastro-intestinal problems, although not significant (OR 2.0, 95%CI 1.0-4.1). Endocrine problems, like short and tall stature, were less frequently presented by patients with a low income level (OR 0.55, 95%CI 0.33-0.91) and a medium income level (OR 0.54, 95%CI 0.33-0.87) compared to all other problems. Among the lowest educated mothers, a larger part of the patients presented with respiratory complaints (OR 2.4, 95%CI 1.02-5.8) compared to the group with the highest educational level. Complaints of pain were associated with lower income levels but not with lower educational levels. Infection related problems and neurological problems showed no association with the socio-economic indicators.

Parents with a low and medium income level were significantly more likely to perceive their child's health as moderate to bad compared to parents with a high-income level (OR 1.89, 95% 1.1-3.1 and OR 1.79, 95%CI 1.1-2.9, respectively). There was no clear association between perceived health and educational level.

**Table 1:** Frequencies of background characteristics and follow-up data per educational level of the mother and per income level of children visiting the outpatient department between Feb. 2000 and 2001 (percentages and numbers between brackets unless stated otherwise <sup>a</sup>) (n=1103)

| <i>Background characteristics</i>  | <i>Gender<br/>Male<sup>†</sup></i>                | <i>Median age<br/>(years)<sup>a</sup></i>    | <i>Non-Dutch<sup>‡</sup></i>                  |
|------------------------------------|---------------------------------------------------|----------------------------------------------|-----------------------------------------------|
| <i>SES indicators (n)</i>          | <i>% (n)</i>                                      |                                              | <i>% (n)</i>                                  |
| <i>Educational level mother</i>    |                                                   |                                              |                                               |
| post secondary level (222)         | 57 (127)                                          | 3.8 (1-8.2)                                  | 27 (60)                                       |
| secondary school high (391)        | 48 (189)                                          | 5.1 (1.7-8.8)                                | 32 (125)                                      |
| secondary school low (380)         | 53 (200)                                          | 5.1 (2-9)                                    | 34 (129)                                      |
| primary school or less (109)       | 60 (65)                                           | 5.7 (2.2-9)                                  | 89 (97)                                       |
| <i>Household equivalent income</i> |                                                   |                                              |                                               |
| high (377)                         | 49 (185)                                          | 4.2 (1-8.8)                                  | 25 (94)                                       |
| medium (361)                       | 49 (178)                                          | 5.1 (2.3-8.8)                                | 27 (97)                                       |
| low (365)                          | 44 (159)                                          | 5.5 (2-8.8)                                  | 61 (223)                                      |
| <i>Follow-up</i>                   | <i>Outpatient check-up</i>                        | <i>Diagnostics<br/>Laboratory</i>            | <i>Diagnostics<br/>Radiology</i>              |
| <i>SES indicators (n)</i>          | <i>% (n)</i>                                      | <i>% (n)</i>                                 | <i>% (n)</i>                                  |
| <i>Educational level mother</i>    |                                                   |                                              |                                               |
| post secondary level (222)         | 33 (72)                                           | 32 (71)                                      | 23 (51)                                       |
| secondary school high (391)        | 34 (131)                                          | 36 (139)                                     | 29 (114)                                      |
| secondary school low (380)         | 35 (132)                                          | 33 (126)                                     | 26 (100)                                      |
| primary school or less (109)       | 39 (42)                                           | 34 (37)                                      | 25 (27)                                       |
| <i>Household equivalent income</i> |                                                   |                                              |                                               |
| high (377)                         | 64 (241)                                          | 33 (124)                                     | 27 (104)                                      |
| medium (363)                       | 68 (246)                                          | 33 (118)                                     | 26 (95)                                       |
| low (365)                          | 66 (239)                                          | 36 (132)                                     | 26 (95)                                       |
|                                    | <i>Use alternative<br/>medication<sup>†</sup></i> | <i>Healthstatus<br/>Fair/bad<sup>‡</sup></i> | <i>Residence in<br/>Rotterdam<sup>‡</sup></i> |
| <i>SES indicators (n)</i>          | <i>% (n)</i>                                      | <i>% (n)</i>                                 | <i>% (n)</i>                                  |
| <i>Educational level mother</i>    |                                                   |                                              |                                               |
| post secondary level (222)         | 48 (107)                                          | 11 (24)                                      | 42 (94)                                       |
| secondary school high (391)        | 44 (180)                                          | 12 (46)                                      | 32 (123)                                      |
| secondary school low (380)         | 38 (143)                                          | 12 (44)                                      | 39 (148)                                      |
| primary school or less (109)       | 22 (24)                                           | 14 (15)                                      | 89 (97)                                       |
| <i>Household equivalent income</i> |                                                   |                                              |                                               |
| high (377)                         | 48 (179)                                          | 8 (25)                                       | 32 (120)                                      |
| medium (363)                       | 44 (160)                                          | 13 (48)                                      | 29 (105)                                      |
| low (365)                          | 32 (116)                                          | 14 (52)                                      | 65 (238)                                      |

<sup>a</sup> Median with 25th and 75th percentile between brackets

<sup>†</sup> p<0.05 for educational level mother      <sup>‡</sup> p<0.05 for income level



**Table 2:** Associations between socio-economic factors (educational level mother and mean adjusted family income) and presented health problems according to disease entity or organ system in a population of children visiting the outpatient department between Feb. 2000 and 2001 (n=1103)

|                                    | <i>Infections (n=149)</i>       | <i>Gastro-intestinal (n=186)</i> | <i>Respiratory (n=100)</i>    |
|------------------------------------|---------------------------------|----------------------------------|-------------------------------|
|                                    | <i>OR (95%CI)</i>               | <i>OR (95%CI)</i>                | <i>OR (95%CI)</i>             |
| <i>Educational level mother</i>    |                                 |                                  |                               |
| post secondary level               | 1                               | 1                                | 1                             |
| secondary school high              | 0.91 (0.56-1.47)                | 1.46 (0.91-2.34)                 | 1.20 (0.64-2.24)              |
| secondary school low               | 0.76 (0.46-1.25)                | 1.25 (0.77-2.02)                 | 1.58 (0.85-2.91)              |
| primary school or less             | 0.61 (0.26-1.41)                | 2.00 (0.98-4.13)                 | 2.44 (1.02-5.83)              |
| <i>Household equivalent income</i> |                                 |                                  |                               |
| high                               | 1                               | 1                                | 1                             |
| medium                             | 0.73 (0.46-1.13)                | 1.71 (1.14-2.55)                 | 1.12 (0.68-1.82)              |
| low                                | 0.89 (0.56-1.42)                | 1.60 (1.04-2.47)                 | 0.70 (0.40-1.25)              |
|                                    | <i>Endocrinological (n=125)</i> | <i>Neurology (n=115)</i>         | <i>Pain syndromes (n=186)</i> |
|                                    | <i>OR (95%CI)</i>               | <i>OR (95%CI)</i>                | <i>OR (95%CI)</i>             |
| <i>Educational level mother</i>    |                                 |                                  |                               |
| post secondary level               | 1                               | 1                                | 1                             |
| secondary school high              | 0.74 (0.43-1.26)                | 1.26 (0.70-2.26)                 | 1.38 (0.77-2.48)              |
| secondary school low               | 0.54 (0.31-0.95)                | 1.65 (0.93-2.92)                 | 1.10 (0.61-2.02)              |
| primary school or less             | 0.92 (0.38-2.25)                | 1.89 (0.76-4.68)                 | 1.10 (0.45-2.70)              |
| <i>Household equivalent income</i> |                                 |                                  |                               |
| high                               | 1                               | 1                                | 1                             |
| medium                             | 0.54 (0.33-0.87)                | 1.08 (0.67-1.76)                 | 1.82 (1.10-3.0)               |
| low                                | 0.55 (0.33-0.91)                | 1.34 (0.81-2.20)                 | 1.64 (0.97-2.78)              |

## DISCUSSION

This study investigated relation between socio-economic status and presenting medical problems in children at the outpatient department of the Sophia Children's Hospital. A larger part of the children from families with low-income levels and from mothers with a low educational level presented with gastro-intestinal problems and a smaller part with endocrine problems. Low educational level was also associated with more respiratory problems and low-income levels with more complaints of pain and a low perceived health status.

Several health problems and diseases, such as asthma, obesity, psychosocial problems and developmental delay are known to be more common in children from lower socio-economic classes (3,6,8,20). For some health problems this can partly be explained by differences in lifestyle factors, such as dietary habits, smoking, housing, and care-seeking pattern (3,4,12,21).

In accordance with several other studies, mother's educational level and the family income were used as indicators of socio-economic status. Occupational class was not measured in our study. Although related, educational level indicates the more social-cultural aspect of socio-economic status (lifestyle, attitudes, knowledge) and family income more the

material aspects (22). In the Nordic countries, educational level of mother was a more important determinant of healthcare utilisation than was the financial situation of the families (14). In our study, the socio-economic indicators showed different relations to the health outcomes measured, suggesting different influences on these outcomes. In attempting to explain these socio-economic differences in presenting healthproblems, several factors are of importance. It could be that specific healthproblems exist more often in families with low socio-economic status, due to a higher prevalence of risk factors. Furthermore, several patient-bound and general practitioner-bound factors might influence the need for referral to the secondary care.

For example, a larger part of the children with a low socio-economic status presented the outpatient department with gastro-intestinal problems, like abdominal pain and constipation. These are most often long-lasting problems, in which dietary habits play a role in the aetiology as well as in the treatment. An explanation is that either the prevalence of these problems are more common in these groups of children, the helpseeking behaviour among these parents differ, or the treatment by the general practitioner is not sufficient enough, which lead to referrals to the paediatric outpatient department. In all cases, it is necessary to pay extra attention regarding information on a healthy diet pattern.

Respiratory problems, most often asthma related, were associated with the educational level of mother, however not with income. Although the literature is not univocal, most recent studies showed that the prevalence of asthma, especially severe asthma, is higher in low socio-economic groups of children (6-8,10). General practitioners are also more frequently visited for asthma by low socio-economic groups (12). An explanation for this phenomenon could be that the severity of asthma is influenced by a higher prevalence of provoking factors, such as smoking and allergen exposure, and by therapy compliance in these groups. General practitioners could refer patients from lower socio-economic groups more frequently, because the respiratory problems are more common or more severe. It could also be that treatment fails due to minimal understanding of the therapy for asthma by parents. Except for fewer outpatients follow-up appointments for children of lower educated mothers, there were no differences in performed diagnostic tests. Differences in helpseeking behaviour or non-compliance of the treatment for this chronic complaint might explain these differences, rather than the severity of the problem.

Endocrine problems seem to be less important in low socio-economic groups. These problems included mainly short and tall stature and obesity. For children presenting with short and tall stature, most common no underlying medical problem can be found. Possibly, parents with higher education experience short and tall stature more as a problem, are more aware of the possible underlying causes or are better informed about the possible treatment. The prevalence of obesity in the general populations of several countries is higher in children with low socio-economic status (20). Unfortunately, the number of children with obesity in our study was too small to analyse.

This study showed that socio-economic differences in health problems observed in the general population are also partly presented in a population of children referred by general practitioners to a paediatric outpatient department of a university children's hospital. These relatively socio-economic differences in this population could be extrapolated to other hospitals in large cities within Europe.

In conclusion, this study showed that small socio-economic differences exist in presented health problems at a paediatric outpatient department. Information about lifestyle factors and treatment related to gastro-intestinal and respiratory complaints for parents from low socio-economic backgrounds could optimise the care for these children.

## REFERENCES

1. Halldorsson M, Kunst AE, Kohler L, Mackenbach JP. Socio-economic inequalities in the health of children and adolescents. *Eur J Public Health* 2000;10:281-88.
2. Hjerm A, Haglund B, Rosen M. Socioeconomic differences in use of medical care and antibiotics among schoolchildren in Sweden. *Eur J Public Health* 2001;11(3):280-3.
3. Gissler M, Rahkonen O, Jarvelin MR, Hemminki E. Social class differences in health until the age of seven years among the Finnish 1987 birth cohort. *Soc Sci Med* 1998;46(12):1543-52.
4. Lucht van der F, Groothoff JW. [Causation and selection processes in children as explanation for socio-economic health differences] (in Dutch). *TSG* 1992;70:696-703.
5. West P. Inequalities? Social class differentials in health in British youth. *Soc. Sci. Med.* Vol. 1988;27 (4):291-296.
6. Halfon N, Newacheck PW. Childhood asthma and poverty: differential impacts and utilization of health services. *Pediatrics* 1993;91(1):56-61.
7. Miller JE. The effects of race/ethnicity and income on early childhood asthma prevalence and health care use. *American Journal of Public Health* 2000;90(3):428-30.
8. Erzen D, Carriere KC, Dik N, Mustard C, Roos LL, Manfreda J, et al. Income level and asthma prevalence and care patterns. *Am J Respir Crit Care Med* 1997;155(3):1060-5.
9. Weitzman M, Gortmaker S, Sobol A. Racial, Social, and environmental risks for childhood asthma. *AJDC* 1990;144:1189-1194.
10. Mielck A, Reitmeir P, Wjst M. Severity of childhood asthma by socioeconomic status. *Int J Epidemiol* 1996;25(2):388-93.
11. Cooper H, Smaje C, Arber S. Use of health services by children and young people according to ethnicity and social class: secondary analysis of a national survey. *BMJ* 1998;317:1047-1051.
12. Saxena S, Majeed A, Jones M. Socioeconomic differences in childhood consultation rates in general practice in England and Wales: prospective cohort study. *BMJ* 1999;318(7184):642-6.
13. Geyer S, Peter R, Siegrist J. Socioeconomic differences in children's and adolescents' hospital admissions in Germany: a report based on health insurance data on selected diagnostic categories. *J Epidemiol Community Health* 2002;56(2):109-14.
14. Halldorsson M, Kunst AE, Kohler L, Mackenbach JP. Socioeconomic differences in children's use of physician services in the Nordic countries. *J Epidemiol Community Health* 2002;56(3):200-4.
15. Bruijnzeels MA, Wouden van der JC, Foets M. General practice consultation in childhood in the Netherlands: sociodemographic variation. *J Epidemiol Community Health* 1995;49:532-533.
16. Bouwhuis C, Büller H, Moll H. [Ethnicity and medical problems in children: 10 year outpatient department general paediatrics in the Sophia Children's Hospital Rotterdam] in Dutch. *Tijdschr kindergeneesk* 2001;69(5):152-157.
17. Oostenbrink R, Moons KG, Theunissen CC, Derksen-Lubsen G, Grobbee DE, Moll HA. Signs of meningeal irritation at the emergency department: how often bacterial meningitis? *Pediatr Emerg Care* 2001;17(3):161-4.
18. Kunst AE, Mackenbach JP. Measuring socioeconomic inequalities in health. Copenhagen: WHO; 1995.

19. Little RJA. regression with missing X's: a review. J Am Stat Assoc 1992;87:1227-37.
20. Wang Y. Cross-national comparison of childhood obesity: the epidemic and the relationship between obesity and socioeconomic status. Int J Epidemiol 2001;30(5):1129-36.
21. Wadsworth ME. Health inequalities in the life course perspective. Soc Sci Med 1997;44(6):859-69.
22. Stronks K. Socio-economic inequalities in health: individual choice or social circumstances? (thesis) . Rotterdam: Erasmus University Rotterdam; 1997.



## **CHAPTER 3**

# **HEALTHCARE USE IN PAEDIATRICS**





# **CHAPTER 3.1**

## **Paediatric Emergency Department: determinants of non-urgent visits**

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*Submitted*

## ABSTRACT

**Aim:** The purpose of this study was to evaluate general characteristics and presented health problems associated with non-urgent visits at a paediatric emergency department (PED).

**Methods:** A questionnaire was administered to parents of patients aged between 0 and 15 years, who visited the paediatric emergency department of the Sophia Children's Hospital in Rotterdam in the Netherlands in a 3-month period. The visit was classified as emergent, urgent or non-urgent based on the combination of the ICD9 diagnosis with the differential diagnosis after patient history and physical examination, and performed diagnostics. Univariable and multivariable logistic regression analyses were performed to identify determinants of non-urgent visits compared to urgent visits. **Results:** One third of all emergency visits were classified as non-urgent. Characteristics associated with non-urgent visits compared to urgent visits were self-referral (OR 2.6, 95%CI 1.5-4.7), not currently receiving treatment for a disease by a paediatrician in this hospital (OR 2.5, 95%CI 1.3-5.0), insurance by the Dutch National Health Insurance Fund (OR 2.3, 95%CI 1.3-4.4) and low educational level of the mother (OR 2.5, 95%CI 1.0-6.6). Infectious and gastro-intestinal problems were most likely to be non-urgent (OR 4.5, 95%CI 2.0-9.9 and 6.0, 95%CI 2.2-16, respectively) compared to all other problems.

**Conclusion:** Several patient and family characteristics and presented health problems were found to be associated with non-urgent visits to a PED in a referral system and may serve as targets for preventive strategies. Extra information for parents on infectious diseases, gastro-intestinal problems and use of health care may optimise parental conceptions and attitudes towards these subjects and may contribute to a decrease of non-urgent visits.



## **INTRODUCTION**

Emergency departments experience an increasing number of non-urgent visits and thus unwillingly become a place of regular care. Despite the fact that emergency departments are intended for acute problems, about 40-50% of all visits is non-urgent (1-4). At paediatric emergency departments (PED's) this percentage varies between 29 to 72% (5-8). High numbers of non-urgent visits invoke long waiting times and high workload with unnecessary high costs. The increase of non-urgent visits is mainly caused by the increase of self-referred patients. However, other patient characteristics such as low social-economic factors, ethnic background, single parent family, rural region and low perceived health status are associated with non-urgent visits too (5,8-11).

Most studies on non-urgent visits have been performed in the United States and are not completely applicable to Europe (5,9,10). In the Netherlands, as well as in several other European countries, the healthcare system is based on a 'referral system', in which the general practitioner acts as a gatekeeper to the medical specialist (12). Emergency departments provide secondary and tertiary acute care for which patients require a referral from the general practitioner (or another physician). However, some patients bypass the general practitioner and visit the emergency department on their own initiative.

The aim of this study was to evaluate patient and family characteristics and presented health problems associated with non-urgent visits at a PED in a medical system based on referral. Insights into these factors may contribute to the development of a strategy to diminish or prevent such non-urgent visits.

## **PATIENTS AND METHODS**

### ***Patients***

The PED of the Sophia Children's University Hospital in Rotterdam is located in an urban setting with a multi-socio-economic and multi-ethnic population. It is open 24 hours a day, providing 90% basic paediatric care and 10% top-clinical care. Yearly, approximately 4500 patients with a paediatric problem (excluding surgical patients, including follow-up consultations) visit the PED. A referral from a general practitioner or other physician is formally required but the physicians in the PED also see self-referred patients.

Consecutive patients, aged from 0 to 15 years, attending the PED with a general paediatric problem, were eligible for this study. Excluded were patients with oncology diseases and metabolic diseases. The study was approved by the Institutional Review Board of the University Hospital Rotterdam and was conducted in a 3-month period between September and December 1999. After informed consent, a questionnaire was administered by the researcher or one of the PED nurses, at the PED. Questionnaires were available in Dutch, Turkish, Arabic, English and French and used in case of language barriers.

### **Data collection**

The standardised questionnaire contained questions regarding family characteristics: family structure, mean family income, educational level, employment level and country of birth of both parents. Ethnicity of the child was defined by both parents' country of birth. A child was classified for example, as Turkish if at least one of the parents was born in Turkey. If both parents were born in different countries outside the Netherlands, the mother's country of birth was chosen.

General characteristics including age, gender, place of residence and type of health insurance and medical consumption including performed laboratory diagnostics, X-rays and follow-up appointments were obtained by the hospital information system. The presented problem was derived from a problem-oriented patient classification system (13). In this system every medical problem presented at the paediatric emergency department is coded and characterised in a matrix by an internal organ system or disease entity, and by either a complaint or symptom, abnormal laboratory result or (presumed) diagnosis. The five most frequent presented disease-entities or organ-systems at the PED were selected and compared to all other problems.

The following items of the medical record were obtained: referral status (referred by a general practitioner or other physician or self-referred), treatment receiving treatment for a disease in this hospital, the time of the visit (during or outside office hours), and the urgency of the visit (emergent, urgent or non-urgent). Patients, who asked medical services without a referral from a general practitioner or other physician, were classified as self-referred. Patients, who received treatment by one of the paediatricians in the hospital for a specific disease and were permitted to visit the PED after a consultation by telephone with their paediatrician, were included in the group of referred patients.

### **Definition of urgency**

To define the urgency (emergent, urgent or non-urgent) of the visit, we used a combination of 1. the final diagnosis according to the International Classification of Diseases (ICD-9), 2. the differential diagnosis after patient history and physical examination and 3. performed diagnostics at the PED, according to Sharma et al (5).

*Emergent visit* The patient has a (suspected) diagnosis that is life threatening, or a potential critical condition, which could worsen if not treated promptly. These included diagnoses such as meningitis, sepsis, cardiac arrest, intussusception, coma, dehydration of more than 10% and near drowning.

*Urgent visit* A visit with a (suspected) diagnosis that is not immediately life threatening, but which if left untreated, may progress to an emergent condition. Patients in this category may require examination or ancillary data to rule out conditions, which left untreated within 24 hours may lead to a worse outcome. Patients with a pneumonia, acute bronchiolitis, urinary tract infection, febrile seizures, intoxication, bleeding by haemophilia, asthma exacerbation, or mildly dehydration were included. Also patients where diagnostic evaluation (laboratory or radiology), was necessary to rule out one of these conditions, were classified as urgent.

**Non-urgent visit** A visit in which a diagnosis was established that could have been managed in a primary care setting without harming the patient. Examples are viral upper respiratory infection, constipation, impetigo, impacted cerumen and viral gastro-enteritis without signs of dehydration.

For example, a child presented with cough and fever, that needed laboratory tests and an X-ray, after which a viral upper airway infection was established, was defined as an urgent visit. An upper airway infection diagnosed after physical examination and without performing further diagnostics, was classified as a non-urgent visit.

The urgency was determined independently from the type of referral. Two separate physicians classified all visits. Disagreements were discussed between the 2 physicians to reach consensus.

### **Analyses**

Differences in frequencies of non-urgent compared to urgent visits in relation to patient and family characteristics and presented healthproblems were analysed by the chi-square test. A p-value of 0.05 or less was considered as statistically significant. The emergent visits were included in the category of urgent visits. Univariable and multivariable logistic regression analyses were performed to assess characteristics and presented problems associated with non-urgent visits compared to urgent visits. All potentially relevant covariables were included in the multivariable model to account for all associations between the covariables when assessing the relationship of individual covariables with the frequency of a non-urgent visit compared to an urgent visit. The following patient characteristics were included in the model: age, gender, ethnicity, place of residence (in or outside Rotterdam), type of referral, currently receiving treatment for a disease in this hospital and time of the visit (during or outside office hours). Family characteristics were mean family income, family structure (one or two parents), type of insurance, mother's educational level and parental employment level. Ethnicity, mean family income and presented problems were included as categorical variables. The mean family income was adjusted by the household size and subsequently divided in three categories with an approximate equal number of patients (14). The continuous variable age was included as a linear term. Finally, determinants of 'self-referred non-urgent visits' compared to all other visits (referred and 'self-referred urgent') were assessed by multivariable logistic regression analyses.

## **RESULTS**

Of all 512 eligible patients, 424 were asked to participate and 350 (83% of the asked patients) parents completed the questionnaire. The participants differed in some aspects from the group of non-participants. Non-participants lived more often in the neighbourhood of the hospital, belonged more often to an ethnic minority group according to their surname, were more often self-referred and had more often a non-urgent visit.

**Table 1:** Frequencies of non-urgent visits in relation to patient characteristics, family characteristics and presented healthproblems presented at the PED of the Sophia Children's Hospital Rotterdam between September and December 1999 (according to disease-entity or organ system) (n=350)

|                                       |                                      | Non urgent |         |
|---------------------------------------|--------------------------------------|------------|---------|
| <i>Patient characteristics</i>        |                                      |            |         |
| age*                                  | < 1 year                             | 45%        | 47/105  |
|                                       | > 1 year                             | 29%        | 70/245  |
| gender                                | female                               | 32%        | 66/204  |
|                                       | male                                 | 35%        | 51/146  |
| residence*                            | Rotterdam                            | 38%        | 83/220  |
|                                       | outside Rotterdam                    | 26%        | 34/130  |
| receiving treatment for a disease*    | yes                                  | 23%        | 22/95   |
|                                       | no                                   | 39%        | 95/241  |
| referral*                             | general practitioner/ physician      | 27%        | 65/243  |
|                                       | self-referred                        | 49%        | 52/106  |
| time                                  | during office hours                  | 37%        | 56/184  |
|                                       | outside office hours                 | 30%        | 61/166  |
| ethnicity*                            | Dutch                                | 27%        | 48/175  |
|                                       | Turkish                              | 36%        | 13/36   |
|                                       | Moroccan                             | 26%        | 9/35    |
|                                       | Surinamese                           | 49%        | 19/39   |
|                                       | Others                               | 44%        | 25/57   |
| <i>Family characteristics</i>         |                                      |            |         |
| insurance*                            | private                              | 25%        | 30/121  |
|                                       | Dutch National Health Insurance Fund | 40%        | 87/220  |
| mean family income                    | low                                  | 40%        | 42/106  |
|                                       | middle                               | 27%        | 39/106  |
|                                       | high                                 | 32%        | 36/113  |
| employment level                      | unemployed                           | 35%        | 27/77   |
|                                       | employed                             | 33%        | 90/270  |
| educational level mother*             | low                                  | 52%        | 17/33   |
|                                       | high                                 | 32%        | 100/317 |
| family structure                      | two parents                          | 33%        | 93/285  |
|                                       | single parent                        | 38%        | 24/63   |
| <i>Disease-entities/organsystems*</i> |                                      |            |         |
|                                       | infectious problems                  | 41%        | 66/158  |
|                                       | gastro-intestinal problems           | 50%        | 17/35   |
|                                       | respiratory problems                 | 24%        | 10/42   |
|                                       | neurologic problems                  | 14%        | 4/28    |
|                                       | general problems                     | 39%        | 5/13    |
|                                       | others                               | 20%        | 15-74   |
|                                       | total                                | 33%        | 117/350 |

\* p< 0.05

Of all participating patients, 58% was male and the median age was 2.3 years. Two-third of the patients (n=220) lived in Rotterdam and 28% currently received treatment for a disease by one of the paediatricians in this hospital. Of all visits, 33% (n=117) was classified as non-urgent, 65% (n=219) urgent and 2% (n=6) emergent. A large part belonged to one of the ethnic minority groups: 9% was Turkish, 10% Moroccan, 11% Surinamese and 14% belonged to a mixed group of other ethnicities. The percentages of the Turkish, Moroccan and Surinamese children are comparable to the frequencies in the city or Rotterdam. Laboratory diagnostics were performed in 63% of the children, X-rays in 30% and 21% was hospitalised.

Frequencies of non-urgent visits according to patient and family characteristics are presented in table 1. Patients who were younger than 1 year, with a Surinamese background, a low educational level of the mother, living in the neighbourhood of the hospital (in Rotterdam) or without current medical treatment for a disease in this hospital, had more often a non-urgent visit at the emergency department. Of all self-referred patients, 49% had a non-urgent, 50% an urgent and 1% an emergent visit. These frequencies were 27%, 71% and 2% in the group of the referred patients.

Of the total number of visits for gastro-intestinal problems, 50% was non-urgent. This percentage was for infections 41% and for general problems 39%, respectively. (table 1). Most frequently presented *specific* problems of the group of non-urgent visits were "fever with cough or dyspnoe" (31%), "fever with acute vomiting and /or diarrhoea" (10%), "fever without a source" (9%), "abdominal pain or constipation" (9%) and "cough or dyspnoe without fever" (6%) (table 2). These five acute medical problems formed two-third of all the non-urgent visits.

**Table 2:** Top 5 of most frequently specific presented problems of non-urgent visits, compared to urgent/emergent visits at the PED of the Sophia Children's Hospital Rotterdam between September and December 1999

| <i>specific presented problems</i> | <i>Non-urgent</i> |      | <i>urgent/emergent</i> |      |
|------------------------------------|-------------------|------|------------------------|------|
| 'fever and cough/dyspnoe'          | 36                | 31%  | 52                     | 22%  |
| 'fever and vomiting/ diarrhoea'    | 12                | 10%  | 13                     | 6%   |
| 'fever without source'             | 10                | 9%   | 16                     | 7%   |
| 'abdominal pain or constipation'   | 11                | 9%   | 11                     | 5%   |
| 'cough or dyspnoe or wheezing'     | 7                 | 6%   | 27                     | 12%  |
| 'others'                           | 41                | 35%  | 114                    | 48%  |
| total                              | 117               | 100% | 233                    | 100% |

Table 3 shows patient and family characteristics and presented problems related to non-urgent visits at a PED by univariable and multivariable logistic regression analyses. Most important family characteristics related to non-urgent visits compared to urgent visits, were an insurance by the Dutch National Health Insurance Fund (OR 2.3, 95%CI 1.3-4.4), a low educational level of the mother (OR 2.5, 95%CI 1.0-6.5) and employment of one of the parents (OR 2.1, 95%CI 1.0-4.7). Self-referred patients were more likely to visit with a non-urgent problem (OR 2.6, 95%CI 1.5-4.7), compared to referred patients. The children's age, place of residence and the

time of the visit were not related with the urgency of the visit. Visits for infectious problems (OR 4.5, 95%CI 2-9.9) and gastro-intestinal problems (OR 6.0, 95%CI 2.2-15.9) were more likely to be non-urgent compared to the group of all other visits.

'Self-referred non-urgent' visits, in comparison to all other visits, were more frequently made by Turkish (OR 3.5, 95%CI 1.0-12) and Surinamese patients (OR 3.4, 95%CI 1.2-10) and more frequently made outside office hours (OR 5.0, 95%CI 2.0-10)(data not shown).

**Table 3:** Determinants of non-urgent visits at the PED of the Sophia Children's Hospital Rotterdam by univariable and multivariable logistic regression analyses

|                                                  | univariable |         | multivariable |          |
|--------------------------------------------------|-------------|---------|---------------|----------|
|                                                  | OR          | (95%CI) | OR            | (95%CI)  |
| <i>Patient characteristics</i>                   |             |         |               |          |
| Age (years)                                      | 1.0         | 1.0-1.0 | 1.0           | 1.0-1.1  |
| Gender (male vs. female)                         | 1.1         | 0.7-1.7 | 1.2           | 0.7-2.1  |
| Residence (in vs. outside Rotterdam)             | 1.6         | 0.9-2.6 | 1             | 0.5-2.1  |
| Receiving treatment for a disease                | 0.5         | 0.3-0.8 | 0.4*          | 0.2-0.8  |
| Referral (self referred vs. referred)            | 2.5         | 1.6-5   | 2.6*          | 1.5-4.7  |
| Time of visit (outside vs. during office hours)  | 0.8         | 0.5-1.2 | 1             | 0.6-1.7  |
| Ethnicity Dutch                                  | 1           |         | 1             |          |
| Turkish                                          | 1.5         | 0.7-3.2 | 1.0           | 0.4-2.8  |
| Moroccan                                         | 0.9         | 1.4-2.1 | 0.7           | 0.2-2.1  |
| Surinamese                                       | 2.5         | 1.2-5.1 | 1.9           | 0.8-4.5  |
| Others                                           | 2.1         | 1.1-3.8 | 1.3           | 0.6-2.8  |
| <i>Family characteristics</i>                    |             |         |               |          |
| Insurance (Dutch NHIF <sup>†</sup> vs. private)  | 1.7         | 1.1-3.3 | 2.3*          | 1.3-4.4  |
| Mean income low                                  | 1.3         | 0.8-2.3 | 0.8           | 0.4-1.8  |
| middle                                           | 0.9         | 0.5-1.6 | 0.7           | 0.4-1.3  |
| high                                             | 1           |         | 1             |          |
| Employment parents (yes vs. no)                  | 1.0         | 0.6-1.7 | 2.5#          | 1-6.6    |
| Educational level mother (low vs. high)          | 2.3         | 1.1-4.8 | 2.5#          | 1-6.6    |
| Family structure (single parent vs. two parents) | 1.4         | 0.8-2.5 | 1.3           | 0.6-2.7  |
| <i>Disease entities or organ systems</i>         |             |         |               |          |
| Infectious problems                              | 1.9         | 1.2-2.9 | 4.5*          | 2.0-9.9  |
| Gastro-intestinal problems                       | 2.3         | 1.1-4.8 | 6.0*          | 2.2-15.9 |
| Respiratory problems                             | 2.3         | 0.3-1.3 | 1.6           | 0.6-4.4  |
| Neurologic problems                              | 0.3         | 0.1-0.9 | 0.7#          | 0.2-2.6  |
| General problems                                 | 1.3         | 0.4-3.9 | 3.8           | 0.9-16.4 |
| Others                                           |             |         | 1             |          |

\*  $p \leq 0.05$

#  $p > 0.05$  and  $\leq 0.1$

† NHIF National Health Insurance Fund

## DISCUSSION

This study shows that one third of all visits at a PED at a University Hospital in a European referral system was non-urgent. Important factors associated with non-urgent visits were self-referral, not receiving treatment for a disease by one of the paediatricians in this hospital, insurance by the Dutch National Health Insurance Fund, low educational level of the mother and employment of one of the parents. Non-urgent visits concerned especially infectious and gastro-intestinal problems. Two-third of all the non-urgent visits was covered by only 5 specific medical problems.

Estimates on non-urgent visits in the literature vary between 29% and 72% due to different definitions of non-urgent visits and different populations and health care systems (1, 5-8). In a 'referral system', where the general practitioner act as a gatekeeper to the specialist, 27% of all referred children were classified as having a non-urgent problem, while 49% of the children who bypassed the general practitioner made a non-urgent visit. This means that by first visiting the general practitioner, a reduction of almost half of the non-urgent visits can be achieved. A study performed in America could not measure this reduction of non-urgent visits (8). However, our study showed that in a referral system, the role of the general practitioners as a gate-keeper works quite well.

The frequency of non-urgent visits among self-referred patients can be explained by the fact that parents often perceive their child's problem more urgent than to physicians do (2,15,16). Furthermore, parents might have several practical reasons to bypass the general practitioner such as difficulties in accessing the general practitioner (9,12,16-18). In this study this is shown by the fact that most (75%) non-urgent visits made by self-referred patients were made after office hours. Explanations for the number of non-urgent referrals by the general practitioner could be that problems that first appear as urgent could evolve to be non-urgent at the emergency department. Also non-medical factors, such as patient's wishes or pressure, communication problems and former experiences of the general practitioner influence the general practitioner's decision to refer (19).

Important factors related to non-urgent visits in our study were socio-economic factors, as insurance by the Dutch National Health Insurance Fund and a low educational level of the mother. In other studies, the relation between socio-economic status and general practitioner consultations, perceived health, health complaints, hospital admissions and non-urgent visits have been described (20-22). In a population-based study performed in the United States, Medicaid, rural region and racial background were found as predictors of non-urgent paediatric visits (5). In our study where we used ethnicity rather than race, ethnicity was not a determinant of non-urgent visits (5). Although, 'self-referred non-urgent' visits were more frequently made by Turkish and Surinamese children compared to the native Dutch children. Explanations for this can be that these parents are more anxious about their child's health problem or that they expect the emergency department to be the right place. But also more difficulties in accessing the general practitioner, communication difficulties with the general practitioner, practical problems or other cultural barriers can play a role.

Acute medical problems, such as gastro-intestinal, respiratory problems and infections are commonly presented at a PED and are frequently reasons for parents to worry and seek

medical care (18,23-25). In this study, infectious problems ('fever and cough or dyspnoe', 'acute vomiting and /or diarrhoea' or 'fever without a source') and gastro-intestinal problems ('constipation or abdominal pain') were strongly related with non-urgent visits. Fever with additional complaints made up even 50% of all non-urgent visits. Misconceptions and unrealistic fears about fever, called "fever phobia" appears to be still a relevant problem, leading to non-urgent visits (26,27). Parental concerns reflect their interpretation of medical knowledge, their fears that their child might be permanently harmed and their fear to fail in recognising a serious disease (28).

Preventive strategies should be considered to optimise parental conceptions and attitudes towards acute medical problems and healthcare, and to decrease non-urgent visits at the PED's. Information on infections, gastro-intestinal problems and use of the healthcare system needs to be targeted to specific populations, such as low socio-economic and ethnic minority groups. We expect these groups to benefit most. We recognise that the few intervention studies that have been performed to decrease healthcare use for minor illnesses, helped to improve parents confidence in managing the illness but had limited effect on the use of healthcare (29,30). Repeated and extensive early educational interventions, for example in well baby clinics, may lead to better results. This would save unnecessary costs and long waiting times at the PED.

To appreciate the results of this study, some aspects need to be discussed. This study is not a population-based cohort study. However, it gives insight into patient characteristics and presented problems related with non-urgent visits at a PED in the middle of large western European city. This insight may support the development of a strategy to decrease non-urgent visits in a 'referral system'. Furthermore, the terminology of non-urgent/urgent and inappropriate visits is used inconsistently in the literature. Sharma et al developed a classification-system describing non-urgent/ urgent and emergent visits by the ICD-9 patient diagnostic coding system (5). In our study we defined the severity of the visit based on the final diagnosis (ICD9) combined with the differential diagnosis and performed diagnostics. These additional data leads to a better classification system and delineation of the problem.

Finally, this study may suffer from selection bias. Compared to the group of participants, the frequencies of non-urgent visits for young children, Turkish children, self-referred children and children living in the neighbourhood of the hospital were higher in the non-participating group. However, these factors actually could make the described association with non-urgent visits only stronger.

In conclusion, infectious problems and gastro-intestinal problems are frequently non-urgent. Self-referral and low socio-economic factors are associated with non-urgent visits. By first visiting the general practitioner, the number of non-urgent visits can be decreased considerably. Information about fever/ infections, abdominal pain/constipation and use of health care may contribute to optimise parental conceptions and attitudes towards these subjects and might decrease non-urgent visits at paediatric emergency departments.



## REFERENCES

1. Dale J, Green J, F. R, Glucksman E. Primary care in accident and emergency department: Prospective identification of patients. *BMJ* 1995;311:423-6.
2. Hunt RC, DeHart KL, Allison EJ, Whitley TW. Patient and physician perception of need for emergency medical care: a prospective and retrospective analysis. *Am J Emerg Med* 1996;14(7):635-9.
3. Koolman CG, Wetering van de BJM, Mast van der RC. Clinical and demographic characteristics of Emergency Department patients in the Netherlands: a review of the literature and a preliminary study. *Am. J. Emergency Medicine* 1989;7 (6):632-638.
4. Liu T, Sayre MR, Carleton SC. Emergency medical care: types, trends, and factors related to nonurgent visits. *Acad Emerg Med* 1999;6(11):1147-52.
5. Sharma V, Simon SD, Bakewell JM, Ellerbeck EF, Fox MH, Wallace DD. Factors influencing infant visits to emergency departments. *Pediatrics* 2000;106(5):1031-9.
6. Fong C. The influence of insurance status on nonurgent pediatric visits to the emergency department. *Acad Emerg Med* 1988;6 (7):744-748.
7. Isaacman DJ, Davis HW. Pediatric Emergency Medicine: state of the art. *Pediatrics* 1993;91(3):587-90.
8. Phelps K, Taylor C, Kimmel S, Nagel R, Klein W, Puczynski S. Factors associated with emergency department utilization for nonurgent pediatric problems. *Arch Fam Med* 2000;9(10):1086-92.
9. Smith RD, McNamara JJ. Why not your pediatrician's office? A study of weekday pediatric emergency department use for minor illness care in a community hospital. *Pediatric Emergency Care* 1988;4(2):107-111.
10. Brown EM, Goel V. Factors related to emergency department use: results from the Ontario Health Survey 1990. *Ann Emerg Med* 1994;24(6):1083-91.
11. Halfon N, Newacheck PW, Wood DL, St Peter RF. Routine emergency department use for sick care by children in the United States. *Pediatrics* 1996;98(1):28-34.
12. Kulu-Glasgow I, Delnoij D, de Bakker D. Self-referral in a gatekeeping system: patients' reasons for skipping the general-practitioner. *Health Policy* 1998;45(3):221-38.
13. Oostenbrink R, Moons KG, Theunissen CC, Derksen-Lubsen G, Grobbee DE, Moll HA. Signs of meningeal irritation at the emergency department: how often bacterial meningitis? *Pediatr Emerg Care* 2001;17(3):161-4.
14. Kunst AE, Mackenbach JP. Measuring socioeconomic inequalities in health. Copenhagen: WHO; 1995.
15. Gill JM, Riley AW. Nonurgent use of hospital emergency departments: urgency from the patient's perspective. *J Family Pract* 1996;42(5):491-6.
16. Kini NM, Strait RT. Nonurgent use of the pediatric emergency department during the day. *Pediatr Emerg Care* 1998;14 (1):19-21.
17. Berns SD, Linakis JG, Lewander WJ, Alario AJ, Oh W. Appropriate use of a pediatric emergency department: is the pediatrician called before the visit? *Ped Emergency Care* 1994;10(1):13-7.
18. Bedford HE, Jenkins SM, Shore C, Kenny PA. Use of an east end children's accident and emergency department for infants: a failure of primary health care? *Quality in health care* 1992;1:29-33.
19. Langley GR, MacLellan AM, Sutherland HJ, Till JE. Effect of nonmedical factors on family physicians' decisions about referral for consultation. *Cmaj* 1992;147(5):659-66.
20. Bruijnzeels MA, Wouden van der JC, Foets M. General practice consultation in childhood in the Netherlands: sociodemographic variation. *J Epidemiol Community Health* 1995;49:532-533.
21. Halldorsson M, Kunst AE, Kohler L, Mackenbach JP. Socio-economic inequalities in the health of children and adolescents. *Eur J Public Health* 2000;10:281-88.
22. Saxena S, Majeed A, Jones M. Socioeconomic differences in childhood consultation rates in general practice in England and Wales: prospective cohort study. *BMJ* 1999;318(7184):642-6.
23. Armon K, Stephenson T, Gabriel V, MacFaul R, Eccleston P, Werneke U, et al. Determining the common medical presenting problems to an accident and emergency department. *Arch Dis Child* 2001;84:390-2.

24. Bouwhuis CB, Kromhout MM, Twijnstra MJ, Buller HA, Moll HA. Small ethnic differences in acute paediatric problems: 10 years of acute care in the Sophia Children's Hospital in Rotterdam, the Netherlands [in Dutch]. *Ned Tijdschr Geneesk* 2001;145(38):1847-51.
25. Bowling A, Isaacs D, Armston J, Roberts JE, Elliott EJ. Patient use of a paediatric hospital casualty department in the east end of London. *Fam Pract* 1987;4(2):85-90.
26. Crocetti M, Moghbeli N, Serwint J. Fever phobia revisited: have parental misconceptions about fever changed in 20 years? *pediatrics* 2001;107(6):1241-1246.
27. Schmitt BD. Fever phobia: misconceptions of parents about fevers. *American Journal of Diseases of Children* 1980;134(2):176-81.
28. Kai J. What worries parents when their pre-school children are acutely ill, and why: a qualitative study. *BMJ* 1996;313:983-986.
29. Chande VT, Wyss N, Exum V. Educational interventions to alter paediatric emergency department utilization patterns. *Archives of Pediatrics & Adolescent Medicine* 1996;150(5):525-8.
30. Heaney D, Wyke S, Wilson P, Elton R, Rutledge P. Assessment of impact of information booklets on use of healthcare services: randomised controlled trial. *BMJ* 2001;322(7296):1218-21.

## **CHAPTER 3.2**

### **Second Opinions at a University paediatric general outpatient department**

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*submitted*

## ABSTRACT

**Aim:** Get insight into the frequency, the presented healthproblems and patient characteristics of second opinions at an outpatient department of general paediatrics. **Methods:** A questionnaire was administered regarding patient and family characteristics and presenting healthproblems. Children, 0-15 years of age, visiting the outpatient department of general paediatrics of the Sophia Children's Hospital Rotterdam between February 2000-February 2001. A second opinion visit was defined as a visit initiated by the parents, in order to get a new opinion for a medical problem for which they already consulted another paediatrician. Univariable and multivariable logistic regression analyses were performed to identify presented healthproblems, patient and family characteristics associated with second opinion visits compared to first opinion visits. **Results:** Of all visits, 13% (145/1103) was a second opinion. Gastro-intestinal (OR 2.3, 95%CI 1.4-3.8), respiratory problems (OR 2.3, 95%CI 1.2-4.2) and long existing problems were more often presented as second opinions. No clear differences were found in performed diagnostics and follow-up appointments between second and first opinion visits. General characteristics associated with second opinions were patient's young age, Surinamese ethnicity, residence outside the neighbourhood of the hospital and poor perceived health. **Conclusion:** Of all general paediatric outpatient visits, 13% was a second opinion. They concern mostly gastro-intestinal and respiratory problems. Adequate information for specific target groups may contribute to diminish parental concerns and second opinions.

## **INTRODUCTION**

A 'second opinion', a visit to a second physician to get a new opinion for the same healthproblem, is a well-known phenomenon in medical practice. In recent years patients have adopted a more critical attitude towards health and are aware of their right to seek a second opinion. Increasing numbers of second opinions are experienced by clinicians, but prevalence data are scarcely available and only based on adult patients. Besides, they vary between 5% and 40% due to different definitions of second opinions and different populations and healthcare systems (1-4).

Insurance companies in the United States stimulate second opinions to decrease surgical interventions and reduce costs. Nevertheless, most second opinions are initiated by patients themselves (5-7). Reasons for patients to seek a second opinion are dissatisfaction with the first opinion (diagnosis or treatment) or with the general encounter, physicians paying insufficient attention to the patient's problem, and the wish to get a reaffirmation of the diagnosis or the treatment (1,5). In paediatrics, parents of patients reported especially dissatisfaction with the communication as a reason to seek a second opinion (8). Due to their responsibility and concerns for their children's health, parents may decide more quickly to seek a second opinion for their children than for themselves.

In the Netherlands, patients have the right to get a second opinion while insurance companies reimburse the charges. In such a system costs are not an issue for patients to seek a second opinion. However, other factors as communication problems, socio-economic factors, access barriers to healthcare and the kind of healthproblem, might influence parents to seek a second opinion or not. This study was performed to get insight in the frequency of second opinions and healthproblems related to second opinions at a paediatric outpatient department. Furthermore, we assessed patient and family characteristics associated with second opinion visits. This information might define target groups who need extra attention.

## **METHODS**

### ***Patients***

The Sophia Children's Hospital is a University Hospital in the middle of a large city (Rotterdam) with approximately 600.000 inhabitants, providing secondary and tertiary care to a multi-ethnic and multi-socio-economic population. A prospective study was conducted at the general paediatric outpatient department during one year (February 2000-February 2001). This study was approved by the Institutional Review Board of the University Hospital Rotterdam. Consecutive patients, aged from 0 to 15 years, who visited the outpatient department with a new general paediatric problem, were eligible for this study. After informed consent, parents completed an interviewer-administered questionnaire prior or after seeing a paediatrician in training. Questionnaires were available in Dutch, English, Turkish, Arabic and French.

### **Data collection**

The standardised questionnaire included information on family structure and income, educational level, employment level, age, country of birth, Dutch proficiency and length of stay in the Netherlands of both parents. Ethnicity was defined by both parents' country of birth. If at least one of the parents was born outside the Netherlands, the child's ethnicity was classified according to this country. If both parents were born abroad, but not in the same country, the country of birth of the mother was chosen. Parental perceived health of the child (bad, moderate, reasonable or well) and duration of the presented symptoms were also included. In addition, parents were asked if they had visited another paediatrician for the same healthproblem before and if the visit was a second opinion visit. A second opinion visit was defined as a visit initiated by the parents in order to get a new opinion for a medical problem for which they already had consulted another paediatrician in another hospital before.

General characteristics of the patient, including age, gender, and type of health insurance (Dutch National Health Insurance Fund or private insurance), performed diagnostics at the initial visit and the follow-up appointments were obtained from the hospital information system. The presented problem was derived from a problem-oriented patient classification system (9). In this system medical problems presented at the paediatric emergency department are coded and characterised in a matrix by an internal organ system or disease entity, and by either a complaint or symptom, abnormal laboratory result or (presumed) diagnosis.

### **Analyses**

Differences in frequencies of second opinions and first opinions in relation to patient characteristics, family background socio-demographics and presented problems were analysed by the chi-square test. A p-value of 0.05 or less was considered as statistically significant. Univariable and multivariable logistic regression analyses were performed to assess which presenting problems and patient and family characteristics were associated with a second opinion. All potentially relevant covariables were included in a multivariable model to account for all associations between the covariables when assessing the relationship of individual covariables with the frequency of a second opinion compared to a first opinion. The following variables were included: gender, age, ethnicity, place of residence (in or outside Rotterdam) and type of insurance of the child, average family income, educational level, age, and years of residence in the Netherlands of the mother, Dutch proficiency and employment level of both parents, perceived health of the child by the parents, duration of symptoms and presented healthproblem (according to disease entity or organ system). Ethnicity, average family income and duration of symptoms were included as categorical variables. The average family income was adjusted by the household size and subsequently divided in three categories with an approximately equal number of patients. The five disease entities or organ systems, which were most frequently presented in a second opinion visit, were selected and subsequently compared to the\_group of others problems. Continuous variables, like duration of symptoms, years of residence and age, were included as linear terms. An odds ratio (OR) was considered as the relative risk of the presence of a variable compared to the absence of that variable in relation to the outcome variable (a second opinion).

Because some data from the questionnaire were missing, we used a single imputation technique as implemented in SPSS version 8.0 (missing value analyses) to complete these data. Imputation techniques were used to reduce bias and aimed to increase statistical efficiency (10). Less than 2% of the following data were missing: employment level of the parents, educational level of the mother, Dutch proficiency of both parents, age of the mother and child's health status perceived by the parents. Sixty-four (6%) parents did not fill in their average income.

## RESULTS

Of all 1281 eligible patients, 1103 parents filled in the questionnaire. The participants did not clearly differ in background characteristics as age, gender and type of insurance from the non-participants. The median age of the children (25th-75th percentile) was 4.9 years (1.6-8.8) and 50% were males. Of all visits, 145 (13%) were classified as second opinions.

**Table 1:** Frequencies of second opinions in relation to patient's characteristics and family background socio-demographics of children visiting the paediatric outpatient department of the Sophia Children's Hospital Rotterdam between Feb. 2000 and 2001 (n=1103)

| Patient and family characteristics   |                   | %   | Number   |
|--------------------------------------|-------------------|-----|----------|
| Total                                |                   | 13% | 145/1103 |
| <i>Patient characteristics</i>       |                   |     |          |
| Gender                               | male              | 14% | 80/581   |
|                                      | female            | 13% | 65/522   |
| Age                                  | 0-1 years         | 14% | 26/191   |
|                                      | 1-5 years         | 14% | 49/363   |
|                                      | 5-15 years        | 13% | 70/549   |
| Ethnicity*                           | Dutch             | 14% | 93/688   |
|                                      | Turkish           | 8%  | 6/75     |
|                                      | Moroccan          | 7%  | 5/71     |
|                                      | Surinamese        | 19% | 19/102   |
|                                      | others            | 14% | 22/166   |
| Residence in Rotterdam*              | no                | 16% | 104/640  |
|                                      | yes               | 9%  | 41/463   |
| <i>Family socio-economic factors</i> |                   |     |          |
| Insurance*                           | Dutch NHIF †      | 15% | 97/650   |
|                                      | private           | 11% | 48/453   |
| Average income                       | low               | 16% | 54/347   |
|                                      | middle            | 14% | 48/351   |
|                                      | high              | 11% | 37/348   |
| Employment parents                   | no                | 11% | 17/153   |
|                                      | yes               | 14% | 128/950  |
| Educational level mother             | no/primary school | 10% | 12/115   |
|                                      | secondary school  | 14% | 134/988  |
| <i>Family characteristics</i>        |                   |     |          |
| Dutch proficiency                    | bad/moderate      | 11% | 11/99    |
|                                      | well              | 13% | 135/1004 |
| Family structure                     | single parent     | 14% | 18/130   |
|                                      | two parents       | 13% | 127/973  |
| Child's perceived health*            | moderate/bad      | 23% | 30/119   |
|                                      | well              | 12% | 116/974  |

\* p value <0.05

† Dutch NHIF Dutch National Health Insurance Fund

There were no large differences in the frequencies of second opinions between males and females, between the different age groups and socio-demographic groups (table 1). Patients insured by the Dutch National Health Insurance Fund, consulted more frequently for a second opinion compared to patients with a private insurance (11 and 15% respectively). Children living outside Rotterdam more often had a second opinion compared to children living in Rotterdam (16% and 9% respectively). Surinamese children (19%) visited more frequently for a second opinion compared to Dutch (14%), Turkish (8%) and Moroccan (7%) children.

Of all gastro-intestinal problems, 20% was classified as a second opinion (table 2). For respiratory problems, urinary tract problems, general problems, and psychosocial problems these percentages were respectively 17%, 16%, 16% and 13%. Cardiovascular and haematological problems were uncommonly presented as a second opinion (5%). Most frequently presented *specific* problems in second opinion visits were constipation/ abdominal pain (16%), recurrent upper respiratory tract infections (11%), cough/ wheezing (10%), excessive crying (6%), and short/large stature (6%) (table 3). Comparing second opinion visits with first opinion visits, no clear differences in performed laboratory diagnostics, performed X-rays and numbers of follow-up appointments were found (data not shown).

**Table 2:** Frequencies of second opinions in relation to the presented healthproblems according to disease entity or organ system at a paediatric outpatient department of the Sophia Children's Hospital Rotterdam between Feb. 2000 and 2001

| Presented healthproblems (disease entity/ organ system) | %   | Number   |
|---------------------------------------------------------|-----|----------|
| Total                                                   | 13% | 145/1103 |
| Infectious problems                                     | 12% | 18/149   |
| Gastro-intestinal problems                              | 20% | 37/186   |
| Endocrinological problems                               | 13% | 16/125   |
| Urinary tract problems                                  | 16% | 7/45     |
| Respiratory problems                                    | 17% | 17/100   |
| Cardiovascular/ haematological problems                 | 5%  | 6/115    |
| Neurological problems                                   | 10% | 11/115   |
| Psychosocial                                            | 13% | 7/54     |
| General problems                                        | 16% | 18/113   |
| Others                                                  | 8%  | 8/101    |

Patient characteristics, family background socio-demographics and presenting problems associated with second opinions are shown in table 4. Multivariable analyses showed that older children were less likely to visit for a second opinion compared to younger children (OR 0.9, 95%CI 0.84-1.0). Surinamese children were more likely to visit for a second opinion (OR 2.5, 95%CI 1.2-5.2). A higher average income led to a lower frequency of second opinions, although not significantly. Parents living outside Rotterdam (OR 2.7, 95%CI 1.6-4.4) or perceiving their child's health as poor to bad (OR 2.2, 95%CI 1.3-3.6), visited more frequently for a second opinion. Gastro-intestinal (OR 2.3, 95%CI 1.4-3.8) and respiratory problems (OR 2.3, 95%CI 1.2-4.2) were relatively more frequently presented as second opinion visits compared to the other disease entities or organ systems.



**Table 3:** Most frequently *specific* presented healthproblems in second opinion visits compared with first opinion visits at the outpatient department of general paediatrics of the Sophia Children's Hospital Rotterdam between Feb. 2000 and 2001

| <i>Specific</i> presented healthproblems | Second opinions |      | First opinions |      |
|------------------------------------------|-----------------|------|----------------|------|
|                                          | Number          | %    | Number         | %    |
| abdominal pain/constipation              | 23              | 16%  | 93             | 10%  |
| signs of recurrent urti*                 | 16              | 11%  | 93             | 9%   |
| cough/wheezing/dyspnoe                   | 14              | 10%  | 74             | 8%   |
| excessive crying                         | 9               | 6%   | 44             | 5%   |
| small/ large stature                     | 9               | 6%   | 54             | 6%   |
| overweight                               | 6               | 4%   | 20             | 2%   |
| psychomotor retardation                  | 6               | 4%   | 32             | 3%   |
| chronic vomiting                         | 6               | 4%   | 24             | 3%   |
| others                                   | 56              | 39%  | 534            | 54%  |
| total                                    | 145             | 100% | 958            | 100% |

\* urti upper respiratory tract infection

## DISCUSSION

A considerable part (13%, 145/1103) of all visits was defined as a second opinion. A long duration of symptoms, young age, a Surinamese background, residence outside the neighbourhood of the hospital (outside Rotterdam), and poor perceived health, were associated with second opinion visits. Patients with gastro-intestinal (constipation and abdominal pain) and respiratory problems (recurrent upper respiratory infections and asthma) were more likely to visit for a second opinion.

As far as we know, this is the first study that describes second opinions in a paediatric outpatient population. Therefore, the prevalence of 13% is only comparable with data from adult patients, which varies largely from 5 till 40% due to different definitions of second opinions, populations and healthcare systems (1-4). However, results on patient characteristics show large resemblance with these data. Adults visiting a gastro-intestinal outpatient department for a second opinion had relatively a longer duration of problems and perceived their health as being poor (1). In Japan, adult patients visiting the outpatient department for primary care of a university hospital for a second opinion had longer existing problems, lived at a further distance from the hospital and were more anxious (2).

Just like in adult patients, there were no associations between socio-economic factors and second opinions compared to first opinions (1,2). A low-income lead to an increase of second opinion visits, although this was not statistically significant. Next to socio-economic factors, ethnicity is an important factor in relation to health and access to healthcare (11-14). We expected Turkish and Moroccan patients to have less knowledge of the Dutch healthcare system, to be less assertive and to visit less often for a second opinion compared to Dutch patients. Turkish and Moroccan children indeed visited less frequently for a second opinion compared to Dutch patients, although these differences were not statistically significant. Surprisingly, Surinamese patients had more frequently a second opinion visit compared to the Dutch (OR 3.4, 95%CI 1.1-5.0), even after correction for the other factors included in the model.

**Table 4:** Patient characteristics, family background socio-demographics and presented healthproblems (according to disease entity/ organ system) associated with second opinion visits at the outpatient department of general paediatrics of the Sophia Children's Hospital Rotterdam between Feb. 2000 and 2001

| Characteristics and presented healthproblems            | Univariable odds ratio (OR) | 95% CI  | Multivariable odds ratio (OR) | 95% CI  |
|---------------------------------------------------------|-----------------------------|---------|-------------------------------|---------|
| <i>Patient characteristics</i>                          |                             |         |                               |         |
| Gender (male vs. female)                                | 0.9                         | 0.6-1.3 | 0.9                           | 0.6-1.3 |
| Age (years)                                             | 1                           | 0.9-1.0 | 0.9                           | 0.8-1   |
| Ethnicity Dutch                                         | 1                           |         | 1                             |         |
| Turkish                                                 | 0.6                         | 0.2-1.3 | 0.7                           | 0.2-2.1 |
| Moroccan                                                | 0.5                         | 0.2-1.2 | 0.6                           | 0.2-2.1 |
| Surinamese                                              | 1.5                         | 0.8-2.5 | 2.5                           | 1.2-5.2 |
| Others                                                  | 1                           | 0.7-1.6 | 1.2                           | 0.6-2.5 |
| Residence (outside vs. in Rotterdam)                    | 2                           | 1.4-2.9 | 2.7                           | 1.6-4.5 |
| <i>Family socio-economic factors</i>                    |                             |         |                               |         |
| Insurance (Dutch NHIF † vs. private)                    | 1.5                         | 1.0-2.1 | 1.5                           | 1-2.4   |
| Average income low                                      | 1.4                         | 0.9-2.1 | 1.6                           | 1-2.8   |
| middle                                                  | 1.1                         | 0.8-1.7 | 1.6                           | 1-2.7   |
| high                                                    | 1                           |         | 1                             | 1       |
| Employment parents (yes vs. no)                         | 1.3                         | 0.7-2.1 | 1.6                           | 0.8-3.3 |
| Educational level mother (no/primary school vs. higher) | 0.6                         | 0.3-1.3 | 1.2                           | 0.5-2.9 |
| <i>Family characteristics</i>                           |                             |         |                               |         |
| Dutch proficiency (well vs. bad)                        | 1.2                         | 0.7-2.2 | 0.2                           | 0.4-1.8 |
| Family structure (single parent vs. two parents)        | 1.1                         | 0.6-1.8 | 1.0                           | 0.5-2.1 |
| Duration stay in the Netherlands mother (per 10 years)  | 1                           | 0.8-1.2 | 0.4                           | 0.7-1.2 |
| Age mother (per 10 years)                               | 1                           | 0.7-1.3 | 1.1                           | 0.9-1.5 |
| Child's perceived health (poor/bad vs. well)            | 2.3                         | 1.4-3.6 | 2.2                           | 1.3-3.6 |
| <i>Presented healthproblems</i>                         |                             |         |                               |         |
| Duration presented problem (months)                     | 1                           | 1-1     | 1                             | 1-1     |
| Gastro-intestinal problems                              | 2.3                         | 1.5-3.6 | 2.3                           | 1.4-3.8 |
| Urinary tract problems                                  | 1.6                         | 0.7-3.8 | 1.5                           | 0.6-3.8 |
| Respiratory problems                                    | 1.9                         | 1-3.4   | 2.3                           | 1.2-4.2 |
| Psychosocial problems                                   | 1.4                         | 0.6-3.2 | 1.5                           | 0.6-3.7 |
| General problems                                        | 1.7                         | 1-3.1   | 1.5                           | 0.8-2.7 |
| Others                                                  | 1                           |         | 1                             |         |

† Dutch NHIF Dutch National Health Insurance Fund

An important finding of this study was that long existing problems and especially gastro-intestinal and respiratory problems were frequently presented in second opinion visits. The long duration of these particular problems and /or failure of treatment can lead to parental poor judgement of their child's health, parental concerns and second opinions. Performed diagnostics and follow-up appointments in second opinions were comparable to first opinion

visits. This suggests that in general the severity of the presenting problems in second opinions did not differ from the first opinions. It seems that there are no medical reasons to perform extra diagnostic test in second opinions and therefore information about the diagnosis and treatment appears to be more important. Second opinions can in some instances be avoided, despite the fact that we agree with the opinion that the possibility for patients to seek a second opinion is necessary and the patient's right. The first physician, as well as the general practitioner, could make a positive contribution to decrease parental concern and diminish the number of second opinions, especially regarding gastro-intestinal and respiratory problems. Within the treatment of these problems, lifestyle factors such as diets, compliance and adequate use of medication have a substantial role.

Unfortunately, this study was not designed to give us information on the exact reasons for parents to seek a second opinion. In literature, it is mentioned that reasons are predominantly communication problems (8). Adults reported dissatisfaction with the first physician, his/her diagnosis or treatment, the general encounter of the hospital or an inadequate or failing result of the given treatment (1, 5). Understanding the reasons for and factors related to second opinion behaviour in paediatrics will help us to decrease dissatisfaction in medical treatment. Extra attention needs to be paid to specific target groups, as children with gastro-intestinal problems and respiratory problems, concerning information about the treatment, causes and prognosis of the diagnoses.

*Conclusion:* A substantial part (13%) of the visits at a general paediatric outpatient department is for a second opinion. Gastro-intestinal, respiratory problems and longer existing problems were presented most often. Patient and family characteristics associated with a second opinion visit were young age, Surinamese ethnicity, living outside the neighbourhood of the hospital and poor child's health perceived by the parents. These results show that there are specific target groups, which need adequate information in order to diminish parental concerns and second opinions.

## REFERENCES

1. Sutherland LR, Verhoef MJ. Patients who seek a second opinion: are they different from the typical referral? *J Clin Gastroenterol* 1989;11(3):308-13.
2. Sato T, Takeichi M, Hara T, Koizumi S. Second opinion behaviour among Japanese primary care patients. *Br J Gen Pract* 1999;49(444):546-50.
3. Mellink WAM, Henzen-Logmans SC, Bongaerts AHH, Pruyn JFA, Geel van AN, Wiggers T. De tweedemeningspolikliniek Chirurgische oncologie in de Daniel den Hoed Kliniek: analyse van de eerste 245 patienten. *Ned Tijdschr Geneesk* 1999;143(49):2471-2475.
4. Bowling A, Redfern J. The process of outpatient referral and care: the experiences and views of patients, their general practitioners, and specialists. *Br J Gen Pract* 2000;50(451):116-20.
5. Baylis R. Second opinions (letter). *BMJ* 1988;296:808-809.
6. Graboyes TB, Headley A, Lown B, Lampert S, Blatt CM. Results of a second-opinion program for coronary artery bypass graft surgery. *JAMA* 1987;258(12):1611-4.
7. Myers SA, Gleicher N. A successful program to lower cesarean-section rates. *N Engl J Med* 1988;319(23):1511-6.
8. Young PC, Wasserman RC, McAuliffe T, Long J, Hagan JF, Heath B. Why families change pediatricians. Factors causing dissatisfaction with pediatric care. *Am J Dis Child* 1985;139(7):683-6.

9. Oostenbrink R, Moons KG, Theunissen CC, Derksen-Lubsen G, Grobbee DE, Moll HA. Signs of meningeal irritation at the emergency department: how often bacterial meningitis? *Pediatr Emerg Care* 2001;17(3):161-4.
10. Little RJA. regression with missing X's: a review. *J Am Stat Assoc* 1992;87:1227-37.
11. Flores G, Bauchner H, Feinstein AR, Nguyen US. The impact of ethnicity, family income, and parental education on children's health and use of health services. *Am J Public Health* 1999;89(7):1066-71.
12. Flores G, Abreu M, Olívar MA, Kastner B. Access barriers to health care for Latino children. *Arch Pediatr Adolesc Med* 1998;152(11):1119-25.
13. Schulpen TWJ, Steenbergen van JE, Driel van HF. Influences of ethnicity on perinatal and child mortality in the Netherlands. *Arch Dis Child* 2001;84:222-6.
14. Bouwhuis CB, Kromhout MM, Twijnstra MJ, Buller HA, Moll HA. [Few ethnic differences in acute pediatric problems: 10 years of acute care in the Sophia Children's Hospital in Rotterdam] in Dutch. *Ned Tijdschr Geneesk* 2001;145(38):1847-51.



## **CHAPTER 4**

### **EXPLANATIONS**

ON ETHNIC DIFFERENCES IN  
HEALTH AND HEALTHCARE  
USE





# **CHAPTER 4.1**

## **Omgaan met koorts bij kinderen: een cultureel verschijnsel?**

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*submitted*

## ABSTRACT

*Aim:* Get insight into the helpseeking behaviour of Turkish and Moroccan mothers in case of a child with fever. *Methods:* Group interviews with Turkish and Moroccan women from two existing women groups in Rotterdam, were organised to get insight into the knowledge, fear, and ideas about fever and the helpseeking behaviour of parents in case of a feverish child. *Results:* The interviews showed that Turkish and even more Moroccan mothers did not use a thermometer to take the temperature of the child. Both groups stressed the importance of a detailed physical examination by the general practitioner to determine a diagnosis. As for seeking medical care, Moroccan mothers adopt a more waiting attitude, while Turkish mothers more often attended the emergency department of a hospital directly. *Conclusion:* This study shows that group interviews contribute to get insight into the background of the helpseeking behaviour of Turkish and Moroccan mothers.

## SAMENVATTING

*Doel:* Het verkrijgen van inzicht in het hulpzoekgedrag van Turkse en Marokkaanse moeders bij een kind met koorts. *Methode:* Met Turkse en Marokkaanse vrouwen uit twee bestaande vrouwengroepen in Rotterdam werden groepsinterviews gehouden. Kennis, angsten, ideeën over koorts en het hulpzoekgedrag bij koorts stonden hierbij centraal. *Resultaten:* Uit de groepsgesprekken kwam naar voren dat Turkse en vooral Marokkaanse moeders weinig gebruik maken van een thermometer om de lichaamstemperatuur van hun kind te bepalen. Zij hechten veel belang aan een uitgebreid lichamelijk onderzoek door de arts bij het stellen van een diagnose. Marokkaanse vrouwen nemen een meer afwachtende houding aan als het gaat om medische behandeling van hun zieke kind dan Turkse moeders, die vaker direct met hun zieke kind naar de spoedeisende hulp van het ziekenhuis gaan. *Conclusie:* De opgedane ervaring leert dat groepsgesprekken meer inzicht kunnen geven in het hulpzoekgedrag van Turkse en Marokkaanse moeders



## INLEIDING

In Nederland bestaan er verschillen in gezondheidstoestand en gezondheidsproblemen tussen Nederlandse, Turkse en Marokkaanse kinderen (1,2). De groep infectieziekten behoort tot een van deze groepen problemen. Zo blijkt de perinatale sterfte onder Marokkaanse en Turkse kinderen ruim twee keer zo hoog als onder Nederlandse kinderen, onder andere veroorzaakt door infectieziekten (3-5). Luchtweginfecties zouden ook vaker voorkomen bij allochtone kinderen (2). Uit onderzoek in het Sophia Kinderziekenhuis te Rotterdam bleek dat kinderen van Turkse en Marokkaanse afkomst zich vaker met een infectieprobleem op de acute hulp presenteerden dan de Nederlandse kinderen (6). Turkse kinderen waren gemiddeld minder ziek, terwijl Marokkaanse kinderen vaker ernstige infecties hadden en vaker werden opgenomen.

Infectieziekten zijn de meest voorkomende acute ziekten bij kinderen; het betreft ongeveer 15% van alle bezoeken door kinderen aan de huisarts en 40% van alle bezoeken aan een pediatrische acute hulp (6,7). Hierbij kan het beeld variëren van een relatief onschuldige bovenste luchtweginfectie tot een ernstige bacteriële infectie als sepsis of meningitis. Koorts, met bijkomende klachten, is dus vaak een reden voor ouders om hulp te zoeken. De bezorgdheid wordt onder andere veroorzaakt door hun medische kennis, angst dat hun kind iets zeer ernstigs zal hebben en angst dit niet te kunnen herkennen. In de literatuur wordt de term 'fever phobia' beschreven: de kennis over de gevolgen van koorts en de behandeling van koorts is niet gestoeld op adequate medische kennis, waardoor onrealistische angsten ontstaan (8-11).

De vraag is in hoeverre kennis over koorts en reacties van ouders op een kind met koorts ook cultureel beïnvloed zijn. Het is bekend dat ideeën en verwachtingen ten aanzien van ziekten, ziektegedrag, en behandeling van ziekten, en het hulpzoekgedrag cultureel en sociaal bepaald zijn (12-20). Bovendien wordt er veel gebruik gemaakt van kruiden uit het land van herkomst (12-14,20).

Er is echter nog weinig onderzoek gedaan naar de achtergronden voor verschillen in hulpzoekgedrag bij etnische groepen (1). Het is van belang te onderzoeken in hoeverre sociaal-culturele factoren een mogelijke verklaring geven voor de gevonden verschillen. Hierbij gaat het niet zozeer om het verzamelen van "cultuurkennis", waarmee bedoeld wordt kennis m.b.t. de (andere) cultuur in het land van herkomst, maar meer om "migratiekennis", dat wil zeggen kennis m.b.t. de huidige waarden en normen die gevormd zijn tijdens de migratieperiode, waarin traditionele culturele elementen zich hebben vermengd met sociale en culturele omstandigheden in Nederland (21).

De vraagstelling van deze studie is of er specifieke elementen van sociaal-culturele aard zijn, die mogelijk van invloed zijn op ziektebeleving en het omgaan met koorts bij kinderen van Marokkaanse en Turkse afkomst in Nederland. In voorlichting naar ouders en artsen toe kan hier specifiek rekening mee gehouden worden en kan hierdoor de interculturele communicatie omtrent koorts worden verbeterd.

## METHODE

De onderzoeksgroep bestond uit Turkse en Marokkaanse moeders uit bestaande vrouwen-groepen in Rotterdam. De Turkse vrouwengroep was actief in Bospolder en de Marokkaanse vrouwengroep in Crooswijk. Dit zijn beide woonwijken van Rotterdam waar het percentage allochtonen inwoners relatief hoog is (22).

Bij beide groepen werden groepsinterviews gehouden. De vrouwen waren via hun coördinator geïnformeerd over het doel van het groeps gesprek. De interviews werden geleid door de onderzoeker (MK). Tevens waren bij beide interviews een tolk en een notulist aanwezig. Bij het interview met de Turkse vrouwen werden (video)opnames gemaakt, de Marokkaanse vrouwen stonden dit niet toe omdat zij niet zomaar door vreemden gezien of gehoord mogen worden.

Het interview werd met behulp van een semi-gestructureerde vragenlijst gehouden en was gebaseerd op ervaringen uit eerder onderzoek, literatuur studie en een aantal gesprekken met sleutelfiguren. Het onderwerp van gesprek bij de groepsinterviews was kennis, ideeën en angsten bij koorts bij kinderen en het daaruit voortvloeiend hulpzoekgedrag (zelfzorg, huisartsbezoek, acute hulp bezoek). Ten eerste werd gevraagd hoe men bepaalt of een kind koorts heeft en wat men onder (hoge) koorts verstaat. Vervolgens werd gevraagd wat mogelijke oorzaken zijn van koorts en welke gevolgen men vreest bij een kind met koorts: waar is men bang voor bij koorts? Ook werd de vraag gesteld hoe men handelt als het kind koorts blijkt te hebben: wat doet men zelf, naar wie gaat men toe voor raad of hulp en wat is de rol van de huisarts en acute hulp hierin? Tenslotte is er gevraagd naar de behandeling van koorts bij een kind in het land van herkomst.

## RESULTATEN

### *Het verloop van de groepsinterviews*

Het aantal deelnemers en hun karakteristieken zijn weergegeven in tabel 1.

Bij de Marokkaanse vrouwen werd i.v.m. tijdgebrek en enthousiasme van de deelnemers een tweede gesprek gevoerd, waarbij het aantal aanwezige vrouwen was verdubbeld ten opzichte van het eerste gesprek. De interviews verliepen goed ondanks enige onrust veroorzaakt door het regelmatig in en uit lopen van de vrouwen. De video-opnames die tijdens het groepsinterview met de Turkse vrouwen werden gemaakt gaven een goede indruk van de enthousiaste en open sfeer en de draad van het gesprek.

### *Kennis over hoge koorts: meten, oorzaken en gevolgen*

Een aantal Marokkaanse vrouwen vindt een temperatuur van boven de 38°C koorts. De temperatuur wordt meestal niet met een thermometer gemeten, maar men voelt met de hand aan het hoofd of het kind koorts heeft. Andere kenmerken van een ziek kind zijn slaperigheid, bleek zien, vermoeidheid, ijlen, spugen en buikklachten.

Als oorzaken van koorts worden door de Marokkaanse vrouwen allerlei infecties genoemd (oor- en keelontsteking, hersenvliesontsteking, griep, een bacterie, cholera), maar ook kanker en astma. Tegelijkertijd zeggen een aantal vrouwen dat koorts ook van het 'Boze Oog' kan komen

of een straf van God kan zijn. Koorts, en vooral het ijlen bij hoge koorts, vindt men angstaanjagend. Naast angst dat het kind dood zal gaan, worden ook andere gevolgen van koorts genoemd, zoals hersenbeschadiging, flauwvallen, buiten bewustzijn raken of gehandicapt raken.

De meeste *Turkse* vrouwen vinden een temperatuur van boven de 39°C hoge koorts, en zeggen veelal een thermometer te gebruiken. Enkelen merken alleen aan de rode wangen of het kind flinke koorts heeft of voelen in de nek, terwijl ze goed opletten hoe het kind zich voelt. De *Turkse* vrouwen noemen als mogelijke invloeden op de gezondheid voeding (vitamines), de omgeving, hygiëne en ook het 'Boze Oog'. Er worden voorbeelden gegeven van ooginfecties en huidinfecties die zijn veroorzaakt door het 'Boze Oog'. De meningen over de invloed hiervan zijn echter duidelijk verdeeld. Mogelijke gevolgen van koorts worden genoemd: sterfte, hersenvliesontsteking, hersenbeschadiging waardoor verstandelijk gehandicapt, uitdroging, stotteren, druk op de oren (slecht horen) en verlamming.

**Tabel1:** Karakteristieken deelnemende vrouwen aan de groepsinterviews

| <u>Marokkaanse vrouwengroep:</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>Turkse vrouwengroep:</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Aantal deelnemers: eerst 8, daarna 16 vrouwen.</li> <li>Alle vrouwen zijn (of waren) getrouwd met een Marokkaanse man.</li> <li>Gemiddelde verblijfsduur in Nederland: 22 jaar.</li> <li>Gemiddelde leeftijd: 40 jaar.</li> <li>Opleiding: geen van de vrouwen heeft enige opleiding.</li> <li>Taalbeheersing: de meeste vrouwen verstaan wel Nederlands, maar spreken het gebrekkig of zelfs helemaal niet.</li> <li>Kinderen: alle aanwezige vrouwen hebben kinderen, in aantal variërend van 2 tot 6.</li> <li>Leefomstandigheden: de helft van de vrouwen is afkomstig uit een grote stad in Marokko, de andere helft uit meer rurale gebieden.</li> </ul> | <ul style="list-style-type: none"> <li>Aantal deelnemers: 8 vrouwen mee.</li> <li>De meeste vrouwen zijn getrouwd met een Turkse man, één met een Nederlander.</li> <li>Gemiddelde verblijfsduur in Nederland: 16 jaar (één vrouw is in Nederland geboren).</li> <li>Gemiddelde leeftijd: 33 jaar.</li> <li>Opleiding: 4 vrouwen zijn in Turkije een aantal jaren naar school geweest, de rest niet. Eén vrouw heeft in Nederland de MAVO/MBO gedaan.</li> <li>Taalbeheersing: er spreken 3 vrouwen goed Nederlands, 3 een beetje en 2 zeggen het wel te begrijpen maar spreken het niet.</li> <li>Kinderen: alle vrouwen hebben 2 tot 3 kinderen.</li> <li>Leefomstandigheden: 7 vrouwen zijn afkomstig uit een grote stad in Turkije, één uit een kleinere stad.</li> </ul> |

### **Handelen bij koorts**

De meeste *Marokkaanse* vrouwen proberen de koorts te verlagen door natte doeken op hoofd of oksels te leggen, het kind uit te kleden, veel te laten drinken of onder een lauwe douche te zetten. Soms geeft men paracetamol. Op de vraag bij wie men hulp zoekt zegt een enkeling eerst naar familie of buren te gaan, maar over het algemeen belt men de huisarts. Als die niet komt, wacht men af, want men wordt bij het ziekenhuis weggestuurd. Of men belt de huisarts net zolang tot hij toch komt. In het tweede groepsgesprek zegt men niet meer af te wachten, maar direct naar de acute hulp van het ziekenhuis te gaan. Men is van mening dat de huisarts vaak te laat komt en vraagt zich af waarom je altijd zo moet 'zeuren'. Het belangrijkste vindt men dat een (huis)arts uitgebreid lichamelijk onderzoek doet om de oorzaak van de klachten vast te stellen. Als de huisarts niet komt en men denkt dat het 'Boze Oog' in het spel is, gebruikt men bepaalde kruiden en drankjes en men leest de Koran.

De meeste *Turkse* vrouwen zeggen eerst even af te wachten en goed op het kind te letten. Zij nemen de temperatuur op en geven paracetamol of deppen het kind af. Als de koorts niet snel daalt, bellen zij meteen een arts voor advies. Bij lage koorts de huisarts, bij hoge koorts gaan meerdere vrouwen liefst direct naar het ziekenhuis. Uit de discussie die volgt blijkt dat men erg weinig vertrouwen heeft in de werkwijze van de Nederlandse huisarts. Hij zou te lang treuzelen met medicijnen voorschrijven of doorverwijzen. Men zegt dat het wel lijkt alsof de huisarts pas reageert bij conflicten. Men gaat ook gewoon zelf bij de apotheek of drogist iets halen als men geen gehoor krijgt bij de dokter. De (Turkse) tolk vertelde dat Turkse mensen vinden dat koorts altijd behandeld moet worden.

Naast de huisarts raadpleegt men de moeder of schoonmoeder (indien in Nederland aanwezig) en het Consultatie Bureau. Als geen enkel middel helpt, zegt men ook wel naar een 'kruiden-mevrouw' te gaan. De meningen over het effect zijn echter verdeeld. Soms worden kruiden ook als voorzorgsmaatregel gebruikt. Om zichzelf en het kind te beschermen tegen de invloed van het 'Boze Oog', draagt men een blauwe kraal bij zich, of stukken Korantekst op een papiertje onder de kleding, men doet een kort gebedje bij iedere nieuwe ruimte die men betreedt, of leest de Koran bij het bed van het kind. Ook zegt men dat de imam soms bepaalde stoffen hiertegen gebruikt. De tolk (coördinator) is echter van mening dat het raadplegen van de imam voor een ziek kind niet praktisch is. Deze wordt vooral ingeschakeld als het gaat om iets dat "buiten het kunnen en kennen ligt".

### **Ervaringen in het land van herkomst**

De ervaringen met de gezondheidszorg in Marokko vertonen grote overeenkomsten met die in Turkije. Naast de (goedkope) overheidsziekenhuizen, kan men naar eigen keuze particuliere specialisten raadplegen, mits men maar (veel) betaald. Tijdens dat bezoek wordt bijna altijd diagnostiek verricht (echo's, foto's), waarna een diagnose wordt gesteld en medicijnen worden voorgeschreven. Men kan voor medicijnen ook altijd tegen lage tarieven terecht bij de apotheek, waar medisch geschoold personeel aanwezig is voor advies. Marokkaanse vrouwen geven echter aan die medicijnen niet altijd te vertrouwen en prefereren het gebruik van kruiden.

## BESCHOUWING EN CONCLUSIES

### *Kennis en ziektebeleving bij kind met koorts*

In het groepsinterview blijkt dat de meeste Marokkaanse moeders, en enkele Turkse moeders, geen thermometer gebruiken om de koorts te *meten* bij hun zieke kind. In de literatuur wordt beschreven dat allochtonen onze kennis van anatomie en fysiologie van het lichaam niet zouden delen. "Zij hebben andere denksystemen en begrippenkaders: verdeling yin en yang, in hopen en vloeistoffen, in invloeden van bovennatuurlijke aard, voorouderlijke oorsprong en eigentijdse krachten" (17). Ook kan de kennis over "het menselijk lichaam" (spieren, bloed, lymfe, zenuwen etc.) heel gering zijn, afhankelijk van de mate van acculturatie of (bij)scholing. Leeftang stelt dat vooral de meer traditionele allochtonen ziekteverschijnselen, zoals koorts bij een kind, minder vaak verklaren vanuit onze westerse terminologie en ook minder geneigd zijn deze verschijnselen te gaan meten en lokaliseren (13). Men spreekt eerder van vage klachten zoals hoofdpijn, buikpijn, of "overal pijn", vermoeidheid, spanningen of het verlies van kracht en "zomaar neervallen" (12,14). Bij het bepalen van de diagnose is zodoende de inbreng van de patiënt zelf ook niet gericht op anatomische en fysiologische aspecten van het lichaam.

In deze studie werden naast medische *oorzaken* van koorts, ook andere oorzaken genoemd zoals het 'Boze Oog' of straf van God. Slechte sociale omstandigheden van migranten kunnen een rol spelen in het toewijzen van de oorzaak van allerlei problemen aan het 'Boze Oog' (19). Allochtonen blijken soms ziekte, en dus ook koorts, direct te koppelen aan de dood, waardoor er sprake is van grote angst en bezorgdheid. Ook angst voor het 'Boze Oog' en het bovennatuurlijke worden beschreven (14,18,19). Deze angsten worden gemakkelijk gevoed door zowel bovengenoemde afwezigheid van kennis over het lichaam, als ook door ziekte- en doodservaringen in landen waar de gezondheidszorg nog te wensen overlaat. In onze studie werden in beide groepen angsten voor sterfte, hersenbeschadiging, en verlamming genoemd. De mate van angst werd echter niet bepaald en kan mogelijk verschillend zijn.

Uit de literatuur is bekend dat er bij veel ouders (onrealistische) angsten over koorts bestaan, aangeduid als "fever-phobia" (8,9). Hierbij waren kleine verschillen tussen blanke en zwarte mensen aantoonbaar (9).

### *Handelen bij een kind met koorts*

De Marokkaanse vrouwen lijken meer terughoudend in het gebruik van medicijnen dan de Turkse vrouwen, die vertelden ook zelf naar de apotheek of drogist te gaan voor medicijnen. Over het gebruik van medicijnen wordt echter in de literatuur melding gemaakt van het feit dat het sociale netwerk (van in dit geval Marokkaanse vrouwen) een belangrijke bron is van westerse geneesmiddelen, die goedkoop in het land van herkomst bij de apotheek te verkrijgen zijn en worden ingekocht voor gebruik in Nederland (14).

Indien de huisarts geen gehoor geeft lijken de meeste Turkse vrouwen als zij het kind erg ziek vinden directer het conflict aan te gaan met de huisarts. Veel van hen gaan zelfs al direct naar het ziekenhuis en slaan bij hoge koorts de huisarts over. Zij vinden dat koorts altijd behandeld dient te worden. De Marokkaanse vrouwen nemen een meer afwachtende houding aan. De Marokkaanse vrouwen lijken in dit opzicht meer op, zoals Leeftang dat noemt: "de

moderne hulpeloze patiënt, die niet voor zichzelf op komt en geen behandeling eist" (13). De Marokkaanse vrouwen in het groepsinterview hebben ook een aanzienlijk lagere opleiding dan de Turkse vrouwen en beheersen de Nederlandse taal minder goed; de meeste vrouwen verstaan wel Nederlands, maar spreken het gebrekkig of zelfs helemaal niet.

Enerzijds zorgt grote angst en bezorgdheid ervoor dat men een dringend beroep doet op de huisarts of zelfs direct op de acute hulp van het ziekenhuis, anderzijds grijpt men terug op de traditionele middelen om de invloeden van het 'Boze Oog' te weren. De Marokkaanse vrouwen zeiden dat bijvoorbeeld ook te doen als de huisarts geen oorzaak voor hun klacht kon vinden. Het is bekend dat gebruik wordt gemaakt van eigen 'inheemse' middelen zoals kruiden, oliën, drankjes en men regelmatig in het land van herkomst of ook hier in Nederland, traditionele kruidendokters, genezeressen, de imam of islamitische genezers raadpleegt (12-14,17,20).

De Marokkaanse vrouwen benadrukken veelvuldig dat zij het lichamelijk onderzoek bij de huisarts het belangrijkste vinden. Dit zou te maken kunnen hebben met het feit dat men weinig of andere kennis heeft van ziektes en denkt geen mondelinge inbreng te kunnen leveren. Dit laatste wordt nog versterkt door het slecht of niet beheersen van de Nederlandse taal. Hierdoor neemt het lichamelijk onderzoek al vanzelf een centrale plaats in bij het stellen van de diagnose en krijgt daarmee ook meer gewicht.

### ***Voor- en nadelen van groepsinterviews***

Groepsinterviews geven een goed inzicht in de sociaal-culturele elementen die deel uitmaken van de achtergrond van Turkse en Marokkaanse moeders. Uiteraard kan er op basis van deze gegevens uit slechts twee interviews niet gegeneraliseerd worden, maar het biedt goede aanknopingspunten voor nader onderzoek.

De groeps gesprekken verliepen nogal chaotisch, maar juist het spontane karakter ervan levert eerlijke en verrassende uitspraken. De verschillende participanten stimuleerden elkaar ook om door te praten over bepaalde onderwerpen.

Een groepsinterview vergt veel voorbereidingstijd (structureren onderwerp en informeren participanten), een goede gespreksleider, bij voorkeur de onderzoeker zelf, en twee tolken (één schrijft, de ander vertaalt), zeker als er Berber wordt gesproken. Het blijkt moeilijk om persoonlijke gegevens te koppelen aan persoonlijke uitspraken. Een ander nadeel kan zijn dat heel persoonlijke zaken niet worden besproken. Opvallend was dat bij de Marokkaanse vrouwen men bij het tweede groepsinterview geleerd bleek te hebben van de eerste keer wat betreft het geven van het "juiste", sociaal gewenste antwoord. Bij groepsinterviews, in het bijzonder bij bestaande groepen, komt veel meer de groepsnorm naar boven. Individuele interviews zijn mogelijk een betere methode om meer gedetailleerde gegevens over bepaalde patiëntencategorieën te verkrijgen (13, 23). Wellicht levert het groepsinterview als vorm goede mogelijkheden voor het geven van voorlichting die direct aansluit bij de gedachtewereld van de participanten (24).

Door middel van groepsinterviews is een inzicht verkregen in de kennis, ideeën en hulpzoekgedrag van Turkse en Marokkaanse moeders bij een kind met koorts. Hieruit blijkt dat de meeste Marokkaanse moeders en een aantal Turkse koorts niet met een thermometer te meten. Er bestaan grote angsten voor (hoge) koorts. Marokkaanse moeders lijken een meer afwachterende houding aan te nemen dan Turkse moeders, die eerder geneigd zijn de huisarts over te slaan en direct naar een spoedeisende hulp te gaan. Het verrichten van een uitvoerig lichamelijk onderzoek is voor de Turkse en vooral de Marokkaanse moeders van essentieel belang. Het groepsinterview lijkt een goede vorm om informatie te krijgen.

## REFERENTIES

1. Raad van de Volksgezondheid (RVZ) Interculturalisatie van de gezondheidszorg. Zoetermeer: Raad voor de volksgezondheid en zorg (RVZ); 2000.
2. Schulp TW. Migration and child health; the Dutch experience. *Eur J Pediatr* 1996;155(5):351-6.
3. Schulp TWJ, Steenbergen van JE, Driel van HF. Influences of ethnicity on perinatal and child mortality in the Netherlands. *Arch Dis Child* 2001;84:222-6.
4. Driel vHF, Steenbergen vJE, Gosissen WHM, Schulp TWJ. Etnische en sociaal-economische verschillen in perinatale en zuigelingensterfte in de stad Utrecht. een analyse. *TSG* 1999;77(4):208-216.
5. Enk van A, Buitendijk E, K.M. Pvd, Enk van WJJ, Schulp TWJ. Perinatal death in ethnic minorities in the Netherlands. *J Epidemiol Community Health* 1998;52:735-739.
6. Bouwhuis CB, Kromhout MM, Twijnstra MJ, Buller HA, Moll HA. Geringe etnische verschillen in spoedeisende problemen: 10 jaar acute hulp in het Sophia Kinderziekenhuis. *Ned Tijdschr Geneesk* 2001;145(38):1847-1851.
7. Hart HE, Bruijnzeels MA, Wouden van der JC, Suijlekom van -Smit LWA, Does van der E, Velden van der J. Het kind met koorts in de huisartsenpraktijk. *huisarts en wetenschap* 1992;35(6):246-248.
8. Schmitt BD. Fever phobia: misconceptions of parents about fevers. *American Journal of Diseases of Children* 1980;134(2):176-81.
9. Crocetti M, Moghbeli N, Serwint J. Fever phobia revisited: have parental misconceptions about fever changed in 20 years? *pediatrics* 2001;107(6):1241-1246.
10. Blumenthal I. What parents think of fever. *Family practice* 1998;15(6):513-518.
11. Stuijvenberg van M, Vos de S, Tjiang GC, Steyerberg EW, Derksen-Lubsen G, Moll HA. Parent's fear regarding fever and febrile seizures. *Acta Paediatrica* 1999;88(6):618-622.
12. Dijkman P, Haan de M. Cultureel bepaalde ziektebeleving en geneeswijzen. *Huisarts en wetenschap* 1999;42 (5):205-210.
13. Leeflang RLI. Zoeken naar Gezondheid: Hulpzoekgedrag van personen van Nederlandse en Turkse herkomst. Leiden: Lidesco; 1994.
14. Reysoo F. Ziektebeleving en hulpzoekgedrag van Marokkaanse vrouwen in Leiden: een exploratief onderzoek (deelonderzoek 1). In: Richters A, editors. *Gezondheidsvoorlichting aan Marokkaanse vrouwen in Leiden*. Leiden: Stichting Vrouwegezondheidszorg (LUMC); 1999.
15. Kleinman AK. Patients and healers in the context of culture: an exploration of the borderland between anthropology, medicine and psychiatry. Berkeley: University of California Press; 1980.
16. Kijlstra M, Wieringen van JCM, Schulp TWJ. Cultuur en communicatie. *Tijdschr Kindergeneesk* 2001;69(5):159-162.
17. Graaf de F. *Zorg aan buitenlanders*?, deel van mijn vak. Utrecht: Bureau Voorlichting Gezondheidszorg Buitenlanders; 1995.
18. Olthuis G. *Colorful care (Multiculturele zorg: tussen beleid en mentaliteit)*. Nijmegen: Katholiek Universiteit Nijmegen; 2000.
19. Timmerman C. De attitude van Turkse vrouwen tegenover de westerse gezondheidszorg. *Medische antropologie* 1992;4(2):155-61.

20. Hoffer C. Volksgeloof en religieuze geneeswijzen onder moslims in Nederland (proefschrift). Leiden; 2000.
21. Dijk van R. Cultuur als excuus voor een falende hulpverlening. *Medische Antropologie* 1989;1(2):131-43.
22. Centrum voor Onderzoek en Statistiek (COS). Demografic data Rotterdam 1999. 1999.
23. Vleuten van der MMW. Hoe denken buitenlandse moeders over opvoeding? Een oriënterend onderzoek naar de uitvoerbaarheid van groepsinterviews met Turkse, Marokkaanse en Nederlandse moeders van jonge kinderen in Rotterdam. Rotterdam: GGD Rotterdam; 1987.
24. Kocken P, Voorham T, Haastrecht van P. Aids-voorlichting voor en door Turkse en Marokkaanse mannen (doelstellingen, determinanten en praktijk). *TSG* 2000;78(3):152-160.



## **CHAPTER 4.2**

**Helpseeking behaviour and ethnicity:  
interviews with parents of feverish children  
who attended a paediatric emergency  
department**

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## ABSTRACT

**Aim:** Helpseeking behaviour is related to ideas, fears, and expectations, people have regarding causes, cure and treatment of diseases. These factors are socially and culturally dependent. Explanations on ethnic differences in health and healthcare use have been described in a conceptual model. Unfortunately, studies regarding these aspects have only been performed in adults. In this report we describe a conceptual model "ethnicity and helpseeking behaviour in feverish children" In this model the process of helpseeking behaviour of parents and the determinants and underlying mechanisms that might influence this process is described.

**Methods:** In order to operate this model, interviews at home were performed by interviewers with the same ethnic background and same language speaking. Children up to five years of age, who visited the paediatric emergency department with fever were eligible for the study. The questionnaire contained among others, questions regarding the actual helpseeking for a feverish illness, "fever phobia" and knowledge of fever in general and socio-demographic data.

**Results:** Of all 220 eligible patients, 179 were contacted and 95 participated the study. The average length of the interview were 60-75 minutes. Most parents (85%) liked to have more information about fever. Turkish and Moroccan patients were less often referred by a general practitioner. Of all Turkish mother's, 91% reported to be anxious for the fever, especially for brain-damage, deafness and death, compared to 69% of the Moroccan mothers and 50% of the Dutch mothers. **Conclusion:** Response rate among Turkish, Moroccan and Dutch parents is not optimal but acceptable. Despite that 'fever phobia' seems not to play an important role in the Netherlands, small ethnic differences are suggested.

## INTRODUCTION

Several European and North American studies in adults have reported worse health outcomes of ethnic minorities. Ethnic minorities have higher mortality and morbidity rates, assess their health worse and report more health complaints than the indigenous people (1-9). Moreover, access to healthcare appears to be lower for ethnic minority groups.

In the Netherlands, ethnic minorities also reported more health complaints as compared to the Dutch indigenous people (10-12). Visits to general practitioners and use of medication are higher among ethnic minorities. Other health services, like hospitalisations and visits to medical specialist, are less frequently used as compared to Dutch people (12,13). Also with children, ethnic differences in health in the Netherlands have been perceived. Children from ethnic minorities have higher mortality rates, higher incidences of infectious diseases, metabolic diseases, anaemia, diabetes and nocturnal enuresis and less frequently have asthmatic complaints (14-26). Furthermore, differences in acute medical problems presented to general practitioners and paediatricians have been reported (27-29).

Infectious diseases, often accompanied with fever, are the most frequent acute diseases in childhood. Fever often is a reason for parents to worry and to seek medical care. Approximately, 15% of all paediatric visits to general practices and 40% of all visits to emergency departments concern children with fever (28,30). The underlying cause of fever varies from a self-limiting viral infection to bacterial meningitis or sepsis.

Infectious diseases are one of the causes of the higher mortality rate among Turkish and Moroccan children (17,19,31). Compared to Dutch children, Turkish and Moroccan children relatively attend the paediatric emergency department (PED) more often for an infectious problem. Some differences in the severity of infectious diseases have been found (28): Turkish children attended more frequent with a self-limiting disease and Moroccan children attended more frequent with a severe infection the PED and were more frequently been admitted to hospital. Turkish children also attended frequently self referred the PED for non-urgent problems (32). These data suggests differences in helpseeking behaviour of Turkish, Moroccan and Dutch parents in case of feverish children.

Helpseeking behaviour has been defined by Hosman as "the behaviour to get help from others to solve an experienced problem or to reduce the suffering from the problem" (33). In general, there are three domains of healthcare in which patients seek medical help: the popular domain (family, social network), the professional domain (general practitioner, specialists) and the folk domain (non-professional healers) (34). However, one can decide not to seek help and do nothing or take self-care (35,36). Studies regarding helpseeking behaviour and healthcare utilisation have shown that demographic factors, such as gender, socio-economic status, social integration, the cultural background, acculturation, and psychological factors influences helpseeking behaviour (33,34,36).

Helpseeking behaviour is related to ideas, fears and expectations people have regarding causes, cure and treatment of diseases. These factors are socially and culturally dependent (34,37-40). "Folk therapist", for example, are frequently consulted simultaneously with professional therapists by people from non-western cultures (38,40). They often do not share

'Western' knowledge of the physiology and anatomy of the body and have other explanations for illnesses and diseases (41,42). It is known that several misconceptions about fever do exist. Incorrect knowledge and fears about fever, its causes and consequences can lead to incorrect behaviour, called "fever phobia" (43-46). Ideas and knowledge of fever and infectious diseases and expectations towards the treatment of these diseases is suggested to be different between parents of different ethnic groups (46,47).

Differences in the ideas, fears and expectations about illnesses and diseases between patients and physicians might lead to communication problems and subsequently to mutual misunderstanding between patient and physician. This might result in repeated visits for the same health problem, non-compliance of prescribed treatment or seeking medical help from other physicians or non-professional healers (48).

Anthropologists and psychologists have been studying helpseeking behaviour, especially regarding psychosocial problems in relation to ethnicity. Reysoo reported that Moroccan women experience their health different and have other expectations towards physicians and their treatments. For psychosocial problems, 'Dutch' as well as 'Moroccan' doctors are consulted, and frequently self-medication is used (39). Gelauff-Hanzon described differences in helpseeking behaviour of Turkish and Moroccan parents for their children with (psychosocial) problems (49). In his study, Turkish parents indicated to attend hospital frequently without referral from their general practitioner with their ill child. Turkish and Moroccan parents also reported to seek help in the popular domain less often than Dutch parents (49).

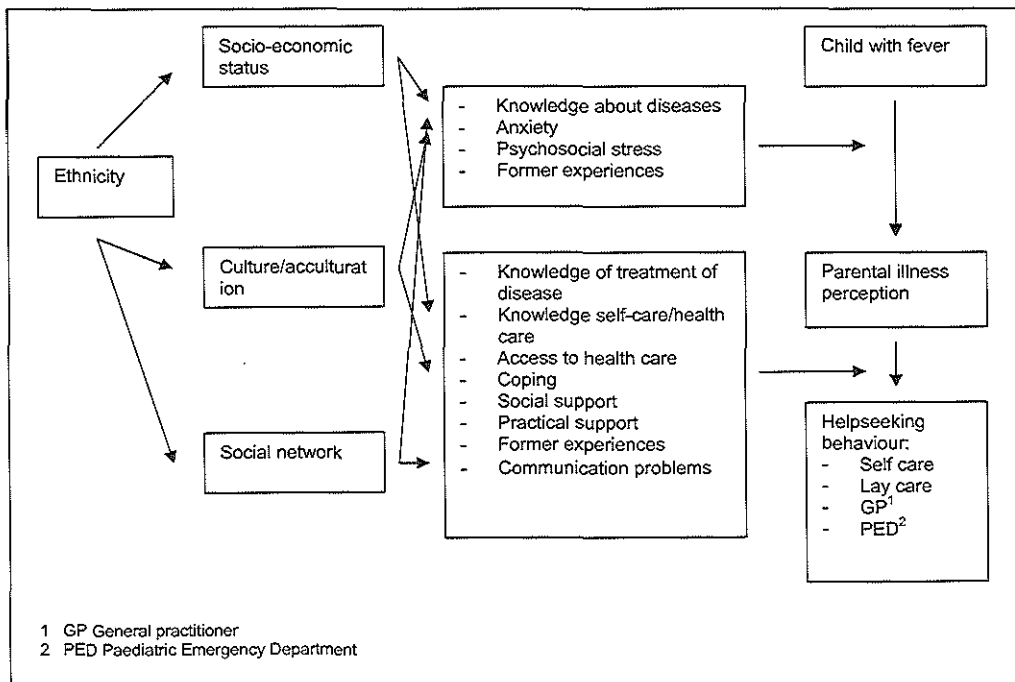
To our knowledge, explanations for ethnic differences in helpseeking behaviour are sparse and have only been reported in studies regarding psychological/psycho-social problems in adults (50,51). These studies have shown that acculturation and educational level were important factors in the helpseeking behaviour for psychosocial care. The question arises which factors play a role in the helpseeking behaviour for physical problems of adults and children. Helpseeking behaviour and their determinants in physical problems could be very different from psychosocial problems. Furthermore, in medical problems, differences between chronic and acute problems and between adult problems and problems in children can be expected. In order to understand and optimise the use of healthcare services by ethnic minority groups for acute medical problems, it is necessary to get insight into the determinants and mechanisms that influences helpseeking behaviour.

A conceptual model that explains differences in health between ethnic groups has been developed by Stronks (52). The model includes risk factors for health, such as lifestyle, physical environment, social environment, psychosocial stress and use of healthcare. These factors are influenced by mechanisms like genetics, migration, culture and acculturation, socio-economic position and social context (52). This model by Stronks has been adjusted to investigate the relation between ethnicity and the use of healthcare (53,54). This adapted model shows that the use of healthcare depends on the health, health perception, knowledge about diseases, self-care, and the healthcare system and the accessibility of the healthcare system.

Because use of healthcare and helpseeking behaviour are related, we have developed a conceptual model, based on the former mentioned model in combination with available literature (34,36,43-47,52,55-57). This conceptual model "Ethnicity and helpseeking behaviour in feverish children", describes the process of helpseeking behaviour of parents and the determinants and underlying mechanisms that might influence this process in relation to the ethnicity of parents (Figure 1).

At first parents experience that their child is ill and feverish. They evaluate the problem and it's severity and take the decision to do nothing, apply self-treatment, have lay consultation or consult a healthcare professional (either a general practitioner or a ED) (right side of the model) (35,36,58,59). This whole process in relation to ethnicity is influenced by several factors (left side of the model). The parental perception of the child's illness is influenced by the knowledge about diseases, anxiety and psychosocial stress of the parents and former experiences with illnesses and diseases. The step from perception to action is influenced by factors like knowledge of treatment, self-care and healthcare, access to healthcare, coping factors, social and practical support, former experiences with general practitioners and emergency departments and communication problems. All these factors might be different in the relation with ethnicity, influenced by underlying mechanisms such as socio-economic status, culture, acculturation and the social network (52,53).

Figure1



In order to operate this model, interviews at home performed by interviewers with the same ethnic background and same language speaking were chosen as the method for this study. The first aim of this report is to describe the response, pitfalls in participation of parents and applicability of home interviews by parents of different ethnicities. Secondly, we evaluate some aspects of helpseeking behaviour of parents who visited the PED with their feverish child in relation to their ethnic background (based on preliminary results). One of the determinants of helpseeking behaviour in relation to ethnicity is knowledge and anxiety for fever, called "fever phobia". In this report we also describe "fever phobia" -knowledge and anxiety of fever- in relation to ethnicity.

## **PATIENTS AND METHODS**

### **Study population**

The general paediatric emergency department (PED) of the Sophia Children's University Hospital is located in an urban setting with a multi-ethnic and multi-socio-economic population. It has a 24 hours consultancy department for children aged between 0 and 15 years. Patients are either referred by their general practitioner or self-referred. Yearly approximately 4000-4500 patients visits the PED. Of these patients, 40%-45% has an infectious problem.

All consecutive patients up to five years of age with fever (and accompanying complaints) as a reason for encounter, were eligible for this study. The reasons for encounters were coded by a problem oriented patient classification system of the Sophia Children's Hospital (60-62). Patients with chronic underlying diseases were excluded.

### **Methods**

All parents of the study population received a letter from the paediatrician to inform the parents about the study and ask for participation. The letter was translated in the Turkish language. According to the patient's surname, the children were classified into Turkish, Moroccan, Dutch and a group of others. After one week, we telephoned the parents to ask consent and to make an appointment for an interview. Within 2 weeks after the visit at the PED, an interview was administered at the parents' home. Medical students with the same ethnic background and language telephoned the parents to overcome language barriers and optimise the participation among the ethnic minority groups. These students also administered the interviews in the preferred language.

A structured interview, including multiple choice questions and some open questions, and a semi-structured in-depth interview were administered. The questionnaires, consisting of 4 parts were based on available literature and existing (validated) questionnaires (43,44,46, 47,56,57,63-69).

Part 1 contained questions about the actual helpseeking behaviour regarding the PED visit. The whole process from assessing the physical condition of a child at home in advance of the PED visit was evaluated. Among others, we asked the type of referral, the exact reason for the PED visit, the duration of the complaint, the preceding self-care and preceding general practitioner visits. Part 2 contained questions about the general knowledge, fears, use of self-

medication and helpseeking behaviour in case of fever. Examples of questions in this part are: What is fever? What can be consequences of fever? What are causes of fever? Where are you afraid for when your child has fever? What do you do at home when your child has fever? Part 3 included questions regarding general background characteristics (parent's country of birth, socio-economic indicators, age, years of residence and acculturation). Part 4 contained psychosocial variables with two existing validated questionnaires: a questionnaire on coping and a questionnaire on anxiety (Utrecht Copinglijst and STAI2).

We collected data from the patient medical record and the hospital information system (HIS), including patient's age, gender, performed diagnostic tests (laboratory and radiology tests), and hospital admission.

### **Analyses**

The analyses were performed on the preliminary data. In this report we first describe the response rate of the different ethnic groups, the process for optimal participation and the experiences of the interviews. Secondly, background characteristics (age, gender, and ethnicity by name) and clinical presentation (type of referral, performed diagnostics and hospital admission) are evaluated. Third, the chi-square test and the student's t-test measure differences in background characteristics, some aspects of helpseeking behaviour and aspects of "fever phobia" test between the different ethnic groups. Ethnicity is defined by the mother's country of birth.

## **RESULTS**

### **Participation**

In the period between February the first and May 15 2002, 220 patients were eligible for the study and approached by letter. The median time period between the visit to the PED and the date of sending the letter was 8 days. Of these 220 patients, 179 (81%) could be contacted by telephone or by personal visits at home. Of the 179 contacted patients, 109 (61%) participated the study and 71 (39%) refused participation. In 52 cases, personal home visits were necessary to contact the parents because telephone numbers, documented in the hospital information system, were incorrect. Six of these contacted parents gave consent for participation and 5 refused it. According to the family name, the response rate among Dutch contacted patients was 60%, Turkish 67%, Arabic (Moroccan) 68% and the group of others 51%.

No differences in background characteristics (gender, age and ethnicity) were observed between the participating and non-participating group. The non-participants were more frequently children who were admitted to the hospital.

## Interview

After a median number of 22 days after the PED-visit the questionnaire was administered at the parent's home. The duration of the interview ranged from 30 to 90 minutes. Several parents mentioned to be pleased that the topic fever in children got attention. Of all parents, 81% liked to receive more information about fever and infectious diseases from physicians (paediatricians and general practitioners). Compared to Dutch parents (69%), Turkish (100%) and Moroccan (92%) parents more often liked to have extra information.

## General characteristics and clinical presentation

We analysed data from the first 95 parents, who participated the study (table 1). Of these 95 patients, 44 (46%) were girls, 40% was younger than 1 year, 36% between 1 and 2 years and 24% older than two years. Of all children, 43% visited the PED without a referral, 40% was referred by the general practitioner and 12% visited by ambulance. Five percent was already in follow-up in the Sophia Children's hospital. Of all patients, 75% had contacted the general practitioner before the hospital visit. According to the mother's country of birth, 41% was Dutch, 13% Turkish, 14% Moroccan and 34% belonged to the group of others.

At presentation at the PED, 20% of the children had a temperature of less than 38 degrees Celsius, 25% between 38 and 39 degrees, 30% between 39 and 40 degrees and 25% above 40 degrees Celsius. The mean duration of the fever was 2 days. Forty-five percent of the children received laboratory diagnostics and 19% a chest-X-ray. Sixteen percent of the children was hospitalised.

**Table 1:** General characteristics and follow-up of the participating children with fever who visited the PED between Feb 2002 and May 2002 (n=95)

| Background characteristics and follow-up |           | Frequency (%) | Number (n) |
|------------------------------------------|-----------|---------------|------------|
| Gender                                   | male      | 54%           | 51         |
|                                          | female    | 46%           | 44         |
| Age                                      | 0-1 years | 40%           | 38         |
|                                          | 1-2 years | 36%           | 34         |
|                                          | > 2 years | 24%           | 22         |
|                                          |           |               |            |
| Ethnicity                                | Dutch     | 41%           | 38         |
|                                          | Turkish   | 13%           | 12         |
|                                          | Moroccan  | 14%           | 13         |
|                                          | Others    | 33%           | 32         |
| Referred                                 | yes       | 57%           | 54         |
|                                          | no        | 43%           | 41         |
| Temperature at physical examination      |           |               |            |
| <38 degrees                              |           | 20%           | 19         |
| 38-39 degrees                            |           | 25%           | 24         |
| 39-40 degrees                            |           | 30%           | 28         |
| >40 degrees                              |           | 25%           | 24         |
| Laboratory diagnostics                   |           | 44%           | 42         |
| Chest X-ray                              |           | 19%           | 18         |
| Hospital admission                       |           | 16%           | 15         |



### Ethnicity, helpseeking and "fever phobia"

Turkish (55%) and Moroccan children (62%) attended the PED significantly more often without a referral than Dutch children (23%) (table 2). They also had less frequently contacted a general practitioner before the hospital visit. The duration of fever of 3 days was more often documented for the Turkish and Moroccan children than for the Dutch children.

Ninety-five % of Dutch mothers reported to be anxious for the fever for which they sought help. This percentage was 91% for Turkish and 77% for Moroccan mothers (table 3). Especially anxiety for convulsions, dehydration and dead were mentioned. There were no large differences in these anxieties between the different ethnic groups.

Most mothers used a thermometer to measure the temperature, although almost all told to feel the skin first before measuring. Fever was thought to be a temperature above 38-38.5 degrees Celsius. No differences between the ethnic groups were found. We asked whether the parents were in general anxious/ little anxious or not anxious for fever. Fifty percent of the Dutch mother's and 91% of Turkish mothers were anxious. Of all Moroccan mothers, 23% was little and 69% (very) anxious for fever. Mothers from ethnic minority groups thought more often that brain damage and deafness could be a consequence of untreated fever, compared to Dutch mothers.

**Table 2:** Differences in some aspects of the actual helpseeking behaviour, which lead to the PED visit

| Actual helpseeking behaviour |       | Dutch<br>(39) |    | Non-Dutch<br>(56) |    | Turkish<br>(11) |   | Moroccan<br>(13) |   |
|------------------------------|-------|---------------|----|-------------------|----|-----------------|---|------------------|---|
|                              |       | %             | n  | %                 | n  | %               | n | %                | n |
| Referred                     | no *# | 23%           | 9  | 57%               | 32 | 55%             | 6 | 62%              | 8 |
|                              | yes   |               |    |                   |    |                 |   |                  |   |
| Contact general practitioner | *#    | 87%           | 34 | 64%               | 36 | 64%             | 7 | 46%              | 6 |

\* p< 0.05 difference between Dutch, Turkish and Moroccan parents # P< 0.05 difference between Dutch and non-Dutch parents

**Table 3:** Differences in background characteristics and 'fever phobia' between Dutch and non-Dutch children and Dutch , Turkish and Moroccan children

|                                                                             |                | Dutch<br>(39) |    | Non-Dutch<br>(56) |    | Turkish<br>(11) |    | Moroccan<br>(13) |    |
|-----------------------------------------------------------------------------|----------------|---------------|----|-------------------|----|-----------------|----|------------------|----|
| General characteristics                                                     |                | %             | n  | %                 | n  | %               | n  | %                | n  |
| Gender male#                                                                |                | 41%           | 16 | 63%               | 35 | 15%             | 5  | 69%              | 9  |
| Age                                                                         | 0-1 years      | 36%           | 14 | 43%               | 24 | 46%             | 5  | 54%              | 7  |
|                                                                             | 1-2 years      | 41%           | 16 | 32%               | 18 | 36%             | 4  | 23%              | 3  |
|                                                                             | 2-5 years      | 23%           | 9  | 26%               | 14 | 18%             | 2  | 23%              | 3  |
| Actual fever episode                                                        |                |               |    |                   |    |                 |    |                  |    |
| Duration fever*                                                             | 1 day          | 45%           | 17 | 42%               | 20 | 22%             | 2  | 42%              | 5  |
|                                                                             | 2 days         | 45%           | 17 | 29%               | 14 | 45%             | 4  | 8%               | 1  |
|                                                                             | 3 days         | 10%           | 4  | 29%               | 14 | 33%             | 3  | 50%              | 6  |
| Worries about fever                                                         |                | 59%           | 23 | 73%               | 41 | 91%             | 10 | 77%              | 10 |
| Used a thermometer                                                          |                | 93%           | 34 | 96%               | 54 | 91%             | 10 | 93%              | 12 |
| Harmful effects of feverconvulsions                                         |                | 77%           | 30 | 71%               | 40 | 73%             | 8  | 77%              | 10 |
|                                                                             | brain-damage # | 26%           | 10 | 46%               | 26 | 64%             | 7  | 46%              | 6  |
|                                                                             | deafness *     | 8%            | 3  | 21%               | 12 | 73%             | 8  | 15%              | 2  |
|                                                                             | dead           | 46%           | 18 | 46%               | 26 | 18%             | 2  | 62%              | 8  |
| Knowledge and anxiety about fever in general                                |                |               |    |                   |    |                 |    |                  |    |
| Fever is a temp > 37                                                        |                | 3%            | 1  | 2%                | 1  | 0%              | 0  | 0%               | 0  |
|                                                                             | > 38           | 36%           | 14 | 32%               | 18 | 18%             | 2  | 46%              | 6  |
|                                                                             | >38,5          | 41%           | 16 | 27%               | 15 | 36%             | 4  | 31%              | 4  |
|                                                                             | > 39           | 18%           | 7  | 32%               | 18 | 46%             | 5  | 8%               | 1  |
|                                                                             | > 40           | 0%            | 0  | 2%                | 1  | 0%              | 0  | 8%               | 1  |
|                                                                             |                |               |    |                   |    |                 |    |                  |    |
| Anxious for fever #                                                         | no             | 49%           | 19 | 13%               | 7  | 0%              | 0  | 8%               | 1  |
|                                                                             | little         | 23%           | 9  | 23%               | 13 | 9%              | 1  | 23%              | 3  |
|                                                                             | (very) anxious | 28%           | 11 | 64%               | 36 | 91%             | 10 | 69%              | 9  |
| When a child has fever the doctor needs to visit the child at home *#       |                |               |    |                   |    |                 |    |                  |    |
|                                                                             | agree          | 15%           | 6  | 9%                | 5  | 9%              | 1  | 15%              | 2  |
|                                                                             | little agree   | 21%           | 8  | 55%               | 31 | 73%             | 8  | 54%              | 7  |
|                                                                             | not agree      | 62%           | 24 | 30%               | 17 | 9%              | 1  | 23%              | 3  |
| Wake up child to measure the temperature                                    |                | 41%           | 16 | 50%               | 28 | 45%             | 5  | 53%              | 7  |
| Wake up child to give antipyretics                                          |                | 40%           | 12 | 39%               | 22 | 45%             | 5  | 45%              | 6  |
| Parents wanted antibiotics while doctor did not give antibiotics (> 1 time) |                | 18%           | 7  | 23%               | 13 | 36%             | 4  | 15%              | 2  |

\* p< 0.05 difference between Dutch, Turkish and Moroccan parents # P< 0.05 difference between Dutch and non-Dutch parents (Turkish, Moroccan and others)

## DISCUSSION

Although the results of the study are preliminary, some aspects need to be discussed. This report showed that a considerable part of the parents could not be contacted due to wrongly recorded or mentioned telephone numbers or addresses of the patients. This number was larger in ethnic minority groups compared to the Dutch group of patients. According to other studies, it took much more effort for the interviewers to ask the parents of the ethnic minority groups to participate. However, the participation among the Turkish and Moroccan parents who could be contacted by phone or visit does not differ from the Dutch parents. This is probably due to the fact that the interviewers speak Turkish and Berber. With this method language problems have been overcome.

The second aim of this study was to evaluate the helpseeking behaviour of parents from different ethnic groups. Turkish and Moroccan patients visited more frequently the PED without a referral. They also had less frequently contacted a general practitioner prior to the PED visit. In a former study, Turkish patients also visited more frequent a PED without a referral from the general practitioner (32). The results of the study do not give explanations for these differences in helpseeking behaviour. In this report we restricted the analyses to one of the major explanations, namely differences in knowledge and anxiety of fever ("fever phobia").

The results show that a large part of the parents is anxious about fever, especially the Turkish and Moroccan parents. Turkish parents reported more frequently to be anxious for the consequences such as deafness and brain damage. However, differences in knowledge and anxiety about fever between the ethnic groups were rather small. Compared to studies regarding fever phobia performed in the United States, "fever phobia" seem to be a smaller problem in the Netherlands (43, 46). Almost all parents use a thermometer and indicate that fever is a temperature above 38-38.5 degrees Celsius. Although parents worries less about fever compared to parents in the study by Crocetti, in our study more often harmful effects of fever (death, seizures, brain damage and dehydration) were mentioned (43, 46).

Because the number of patients are rather small the results should be interpreted with caution. After completion of the study, the relation between ethnicity and helpseeking behaviour and the determinants and mechanisms as are described in figure 1 and the introduction, can be analysed.

In this study, a specific group of children, who had sought help from a paediatrician at a PED, has been studied. Interesting is to study parents who only visited a general practitioner or parents who did not visit a physician at all for their feverish child. Therefore, we suggest also to perform this study in a population of children who contacted a general practitioner and in the general population.

Preliminary conclusions: Response rate among the Turkish, Moroccan and Dutch parents who can be contacted are acceptable (without differences between these groups). Turkish and Moroccan parents visit more often without referral and are more anxious about fever and it's consequences. In general, "fever phobia" seems not to play an important role in the Netherlands.

## REFERENCES

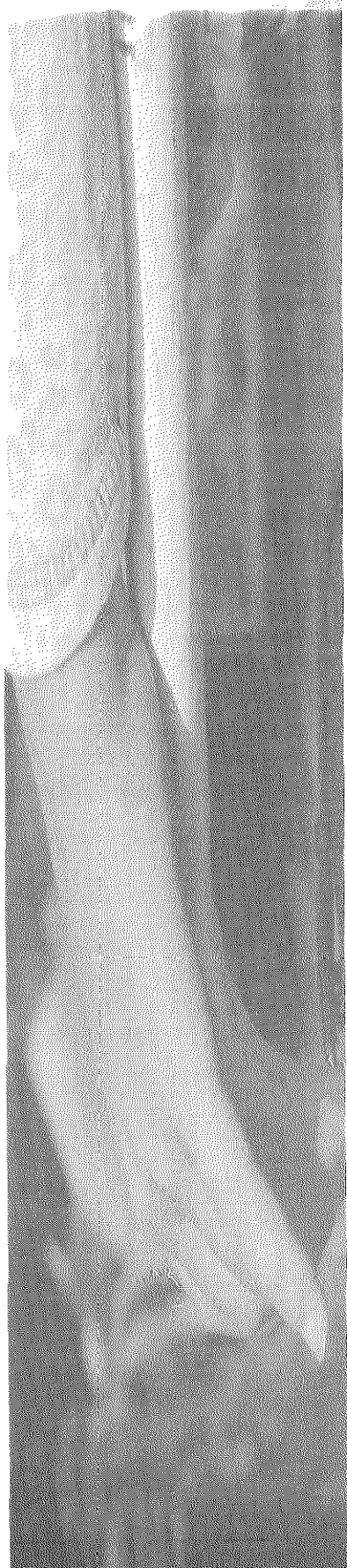
1. Council on ethical and judicial affairs. Black-white Disparities in Health Care. *JAMA* 1990;263 (17):2344-2346.
2. Baker DW, Stevens CD, Brook RH. Determinants of emergency department use: are race and ethnicity important? *Ann Emerg Med* 1996;28(6):677-82.
3. Blendon RJ, Aiken LH, Freeman HE, Corey CR. Access to Medical Care for Black and White Americans: a matter of continuing concern. *JAMA* 1989;261 (2):278-281.
4. Curtis S, Lawson K. Gender, ethnicity and self-reported health: the case of African-Caribbean populations in London. *Social Science & Medicine* 2000;50(3):365-85.
5. Donovan JL. Ethnicity and health: a research review. *Soc. Sci Med.* 1984;19 (7):663-670.
6. Gwatkin DR. Health inequalities and the health of the poor: what do we know? What can we do? [see comments]. *Bulletin of the World Health Organization* 2000;78(1):3-18.
7. Lewin-Epstein N. Determinants of Regular Source of Health Care in Black, Mexican, Puerto Rican, and Non-hispanic White Populations. *Med. Care* 1991;29 (6):543-557.
8. Murray-Garcia JL, Selby JV, Schmittiel J, Grumbach K, Charles P, Quesenberry CP. Racial and Ethnic Differences in a Patient Survey (patients values, ratings, and reports regarding physician primary care performance in a large health maintenance organization). *Medical care* 2000;38 (3):300-310.
9. Smaje C, Grand Le J. Ethnicity, equity and the use of health services in the British NHS. *Soc. Sci. Med.* 1997;45 (3):485-496.
10. Weide MG, Foets J. Migranten en de huisarts: bevindingen uit twaalf onderzoeken in kaart gebracht. *Tijdschr Soc Geneesk* 1997;75:4-12.
11. Central Bureau voor de Statistiek (CBS). De leefsituatie van Turken en Marokkanen in Nederland 1984: deel 2 kerncijfers. 's Gravenhage: Staatsuitgeverij.CBS-publicaties; 1986.
12. Reijneveld SA. Reported health, lifestyles, and use of health care of first generation immigrants in The Netherlands: do socioeconomic factors explain their adverse position? *J Epidemiol Community Health* 1998;52(5):298-304.
13. Stronks K, Ravelli AC, Reijneveld SA. Immigrants in the Netherlands: equal access for equal needs? *J Epidemiol Community Health* 2001;55(10):701-7.
14. Schulpen TW. Migration and child health: the Dutch experience. *Eur J Pediatr* 1996;155(5):351-6.
15. Schulpen T. Kindergeneeskunde in een multiculturele maatschappij. *Tijdschr Kindergeneesk* 2001;69(5):151-152.
16. Schulpen TWJ. Internationale en interculturele aspecten van kindergeneeskunde en jeugdgezondheidszorg. In: *Ned Tijdschr Geneesk*; 1994. p. 367-370.
17. Schulpen TWJ, Steenbergen van JE, Driel van HF. Influences of ethnicity on perinatal and child mortality in the Netherlands. *Arch Dis Child* 2001;84:222-6.
18. Driel vHF, Steenbergen vJE, Gosissen WHM, Schulpen TWJ. Etnische en sociaal-economische verschillen in perinatale en zuigelingensterfte in de stad Utrecht. een analyse. *TSG* 1999;77(4):208-216.
19. Enk van A, Buitendijk E, K.M. Pvd, Enk van WJJ, Schulpen TWJ. Perinatal death in ethnic minorities in the Netherlands. *J Epidemiol Community Health* 1998;52:735-739.
20. Vos C, Reeser HM, Hirasig RA, Bruining GJ. Confirmation of high incidence of type 1 (insulin-dependent) diabetes mellitus in Moroccan children in The Netherlands. *Diabet Med* 1997;14(5):397-400.
21. Schulpen TWJ, Hirasig RA, Jong de TPVM, Heyden van der AJ, Dijkstra RH, Sukhai RN, et al. Going Dutch in nocturnal enuresis. *Acta paediatr* 1996;85:199-203.
22. Spee- Wekke van der J, Hirasig RA, Meulmeester JF, Radder JJ. Childhood nocturnal enuresis in the Netherlands. *Urology* 1998;51(6):1022-26.
23. Wal van der M. Etnische ongelijkheid in gezondheid bij kinderen. Utrecht: Academic University Utrecht; 1997.
24. Wal van der MF, Pauw-Plomp H, Schulpen TWJ. Bedplassen bij Nederlandse, Surinaamse, Marokkaanse en Turkse kinderen van 3-4, 5-6 en 11-12 jaar. *Ned Tijdschr Geneesk* 1996;140:2410-14.

25. Most van der- van Spijk MW, Hopstaken NSM, Visser AEM, Schulpen TWJ. Behandeling van hardnekkige enuresis nocturna bij kinderen van Turkse en Marokkaanse migranten vraagt extra aandacht voor het gezin. *Ned Tijdschr Geneeskd* 1994;138:1369-73.
26. Gorissen WHM, Brussaard-Scholtman GCA, Schulpen TWJ. Luchtwegklachten bij schoolkinderen in Utrecht: de invloed van etniciteit en de woning. *Tijdschrift voor Jeugdgezondheidszorg* 1999;31(2):17-21.
27. Versluis-van Winkel SY, Bruijnzeels MA, Lo Fo Wong SH, van Suijlekom-Smit LWA, van der Wouden JC. Geen verschil in frequentie van huisartsbezoek door Turkse, Surinaamse en Marokkaanse kinderen van 0-14 jaar en door Nederlandse, maar wel in contactredenen. *Ned Tijdschr Geneeskd* 1996;140, nr18:980-984.
28. Bouwhuis CB, Kromhout MM, Twijnstra MJ, Buller HA, Moll HA. [Few ethnic differences in acute pediatric problems: 10 years of acute care in the Sophia Children's Hospital in Rotterdam] in Dutch. *Ned Tijdschr Geneeskd* 2001;145(38):1847-51.
29. Bouwhuis CB, Buller H, Moll H. Etniciteit en medische problemen bij kinderen: 10 jaar poliklinische algemene kindergeneeskunde in het Sophia Kinderziekenhuis te Rotterdam. *Tijdschr Kindergeneeskunde* 2001;69(5):152-158.
30. Hart HE, Bruijnzeels MA, Wouden van der JC, Suijlekom van -Smit LWA, Does van der E, Velden van der J. Het kind met koorts in de huisartsenpraktijk. *Huisarts en Wetenschap* 1992;35(6):246-248.
31. Schulpen TW, van Enk A. Mortaliteit naar etniciteit bij kinderen in Nederland. *Ned Tijdschr Geneeskd* 1996;140(50):2489-92.
32. Bouwhuis CB, Steyerberg EW, Kromhout MM, Buller HA, Moll HA. Paediatric Emergency Department; determinants of non-urgent visits? submitted 2002.
33. Hosman CMH. Psychosociale problematiek en hulpzoeken. Lisse: Swets & Zeitlinger; 1983.
34. Kleinman A, Eisenberg L, Good B. Culture, illness, and care: clinical lessons from anthropologic and cross-cultural research. *Ann Intern Med* 1978;88(2):251-8.
35. Dean K. Lay care in illness. *Soc Sci Med* 1986;22(2):275-84.
36. Bruijnzeels MA. Illness in children and parental response. Rotterdam: Erasmus University Rotterdam (thesis); 1996.
37. Kleinman AK. Patients and healers in the context of culture: an exploration of the borderland between anthropology, medicine and psychiatry. Berkeley: University of California Press; 1980.
38. Pachter LM. Culture and clinical care. Folk illness beliefs and behaviours and their implications for health care delivery. *JAMA* 1994;271(9):690-4.
39. Reysoo F. Ziektebeleving en hulpzoekgedrag van Marokkaanse vrouwen in Leiden: een exploratief onderzoek (deelonderzoek 1). In: Richters A. Gezondheidsvoorlichting aan Marokkaanse vrouwen in Leiden. Leiden: Stichting Vrouwengezondheidszorg (LUMC); 1999.
40. Dijkman P, Haan de M. Cultureel bepaalde ziektebeleving en geneeswijzen. *Huisarts en Wetenschap* 1999;42 (5):205-210.
41. Leeftang RL. Zoeken naar Gezondheid: Hulpzoekgedrag van personen van Nederlandse en Turkse herkomst. Leiden: Lidesco; 1994.
42. Graaf de F. Zorg aan buitenlanders"?, deel van mijn vak. Utrecht: Bureau Voorlichting Gezondheidszorg Buitenlanders; 1995.
43. Schmitt BD. Fever phobia: misconceptions of parents about fevers. *American Journal of Diseases of Children* 1980;134(2):176-81.
44. Kramer MS, Naimark L, Leduc DG. Parental fever phobia and its correlates. *Pediatrics* 1985;75(6):1110-3.
45. Kai J. Parents and their child's fever: do as I say, not as I do? *Family practice* 1998;15(6):505-506.
46. Crocetti M, Moghbeli N, Serwint J. Fever phobia revisited: have parental misconceptions about fever changed in 20 years? *Pediatrics* 2001;107(6):1241-1246.
47. Stuijvenberg van M, Vos de S, Tjiang GC, Steyerberg EW, Derksen-Lubsen G, Moll HA. Parent's fear regarding fever and febrile seizures. *Acta Paediatrica* 1999;88(6):618-622.
48. Wieringen van JCM, Harmsen JAM, Bruijnzeels MA. Intercultural communication in general practice. *Eur J Public Health* 2002;12:63-68.
49. Gelauff-Hanzon CW. Hulpzoeken; een onderzoek naar het hulpzoekgedrag van Turkse, Marokkaanse en Nederlandse ouders ten behoeve van hun 0 t/m 12 jarige kinderen. Den Haag: Nederlands instituut voor kinderstudies; 1985.

50. Vliet van A. Hulpzoekgedrag, verklaringsmodellen en acculturatie. Amsterdam: Klinische psychologie vrije universiteit Amsterdam; 1996 99.
51. Aykuz H. De zoektocht naar hulp. Amsterdam: Klinische psychologie, vrije universiteit Amsterdam; 1997.
52. Stronks K, Uniken Venema P, Dahhan N, Gunning-Schepers LJ. Allochtoon, dus ongezond? Mogelijke verklaringen voor de samenhang tussen etniciteit en gezondheid geïntegreerd in een conceptueel model. TSG 1999;77(2):33-49.
53. ZONNWO. Onderzoeksprogramma "Cultuur en Gezondheid". Den Haag: ZONNWO; 1998.
54. Raad van de volksgezondheid en zorg (RVZ). Interculturalisatie van de gezondheidszorg. Zoetermeer: Raad voor de volksgezondheid en zorg (RVZ); 2000.
55. Conner M, Sparks P. The theory of planned behaviour and health behaviours. In: Conner M, Norman P, editors. Predicting health behaviour. Buckingham; 1995. p. 121-162.
56. Hammen JAM, Bruijnzeels MA, Van der Wouden JC, Bohnen AM. Allochtone kinderen op het spreekuur; communicatie tussen huisarts en allochtone ouders. Huisarts en wetenschap 1999;42 (5).
57. Hammen JAM, Bernsen RMD, Bruijnzeels MA. Ethnic minority patients in general practice. In: European Public Health Association; 2001; Brussels; 2001.
58. Campion PD, Gabriel J. Illness behaviour in mothers with young children. Soc Sci Med 1985;20(4):325-30.
59. Chrisman NJ. The health seeking process: an approach to the natural history of illness. Cult Med Psychiatry 1977;1(4):351-77.
60. Derksen- Lubsen G, Jongkind CJ, Kraayenoord S, Aarsen RSR, De Goede- bolder A, Suijlekom-Smit van LWA, et al. Een probleemorienterend patientenclassificatiesysteem voor de algemene kindergeneeskunde I. Tijdschr Kindergeneeskunde 1996;64:93-98.
61. Steensel van-Moll HA, Jongkind CJ, Aarsen RSR, De Goede-bolder A, Dekker A, Suijlekom van-Smit LWA, et al. Een probleemgeoriënteerd patientenclassificatiesysteem voor de algemene kindergeneeskunde II. Tijdschr Kindergeneeskunde 1996;64, nr3:99-104.
62. Bouwhuis CB, Moll HA, Derksen-Lubsen G. A problem oriented patient classification system in paediatric outpatient care. 2002.
63. Kai J. What worries parents when their preschool children are acutely ill, and why: a qualitative study. BMJ 1996;313:983-986.
64. Kromhout MM, Bouwhuis CB, Moll HA. Omgaan met koorts bij kinderen: een cultureel verschijnsel? submitted 2002.
65. Stickler GB, Salter M, Broughton DD, Alario A. Parents' worries about children compared to actual risks. Clinical Pediatrics 1991;30(9):522-8.
66. Stickler GB. Worries of parents and their children. Clinical Pediatrics 1996;84-90.
67. Stickler GB, Salter M, Hagge W, Geisert J, Kersten H, Hower J, et al. Elternsorgen in USA und Westeuropa. der Kinderarzt 1993;24(11):1288-1293.
68. Parkinson GW, Gordon KE, Camfield CS, Fitzpatrick EA. Anxiety in parents of young febrile children in a pediatric emergency department: Why it is elevated? Clinical Pediatrics 1999;38:219-226.
69. Kulu-Glasgow I, Delnoij D, de Bakker D. Self-referral in a gatekeeping system: patients' reasons for skipping the general-practitioner. Health Policy 1998;45(3):221-38.

## **CHAPTER 5**

### **METHODOLOGICAL ASPECTS**







# **CHAPTER 5.1**

## **Determination of ethnicity in children: two methods compared**

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*submitted*

## ABSTRACT

**Aim:** Investigate whether names (surnames and the combination of surnames and first names) are adequate to identify Turkish, Moroccan and Surinamese children in a Dutch population.

**Methods:** Parents visiting the Emergency Department of the Sophia Children's Hospital with their child filled in a questionnaire about their ethnic background, socio-economic factors and cultural factors. Patients' names were classified by students with a Turkish, Moroccan and Surinamese (Hindustanic and Creole) background. A combined name method (surnames in combination with first names) and surnames only were compared with a reference method (ethnicity by parents' country of birth). The validity of both name methods and the measurements of agreement (kappa) of both comparisons were analysed. **Results:** Turkish names showed good validity measurements between the combined name method and the reference method (sensitivity of 81% and a positive predictive value of 86%). The Arabic names were distinguishable with a sensitivity of 77%, specificity of 99% and positive predictive value of 87%. Surinamese names were less easy to distinguish from the other names (69%, 96% and 69% respectively). Overall, the measurement of agreement showed a kappa of 0.69 in the comparison between the classification of the combined names and the classification by parent's country of birth. The classification of the combined names was slightly better than the classification by surnames only. **Conclusions:** Names can be used to identify Turkish and Arabic (Moroccan) children in a routinely registered database of Dutch children. For Surinamese names this method is less suitable.

## **INTRODUCTION**

Health and the healthcare use of ethnic minorities in Europe as well as in the United States differ from those of the indigenous people. In the large number of studies that described the relations between ethnicity and several health outcomes, different methods and definitions of determining ethnicity have been used. In adults, the person's nationality, country of birth and self-identity have been applied (1-3). All methods have pros and cons and the use of each method depends on the purpose of the study. Most ethnic minority children belong to the second and third generation of immigrants. The parents' and eventually the grandparents' country of birth can define the ethnicity of these children. In the Netherlands, this method is preferred and applied in most studies (4). Unfortunately, this information is not always available in routine databases, because of ethical, juridical and practical problems. Name search-method is an easy available method, applicable for large databases. This method was already described in 1985 to be a good method for distinguishing Asian names in an English population (5). Following this, comparable studies have been performed (6-11).

In the Netherlands, most ethnic minorities originate from Turkey, Morocco, Suriname and the Netherlands Antilles. The surname technique has been used to identify ethnicity in adult patients, but was not validated (12). Turkish names can easily be differentiated from Western European and Arabic names (10,11). We expected Arabic and Surinamese names to be distinguishable from Dutch names.

The aim of this study was to analyse whether using names (surnames only or combined with first names) is a good alternative method compared to ethnicity based on parent's country of birth, to identify Turkish, Moroccan and Surinamese children in a Dutch population of children.

## **METHODS**

The Sophia Children's Hospital is an inner city university hospital in Rotterdam, the Netherlands. Parents who attended the paediatric emergency department between September 1999 and December 1999, were asked to participate this study. The Institutional Review Board of the University Hospital Rotterdam approved this study. A questionnaire was administered after informed consent, by one of the researchers. The standardised questionnaire contained questions regarding the parent's country of birth, socio-economic factors, their length of stay in the Netherlands, communication and some cultural aspects.

Four medical students with a Turkish, Moroccan, Creole Surinamese and Hindustanic Surinamese ethnic background and one of the researchers (CBB) with a Dutch origin classified the patients' surnames (obtained from the Hospital Information System): 'the surname method'. Clinical and demographic data were removed from the data set. In random order, first the Arabic surnames, then the Turkish, Surinamese and finally the Dutch surnames were distinguished. A group of surnames that could not be classified into these 4 groups were classified as others/non-classified. Secondly, the first names were added to the surnames and these combinations of names (the 'combined name-method'), were again classified into Turkish, Arabic, Surinamese, Dutch and other names.

Turkish names can be easily recognised because these names have specific meanings in Turkish, have no religious content and haven't changed much over the years (11). Arabic names consist frequently of compound names with specific meanings in Arabic and with frequently a religious content. This makes the Arabic names easy to discriminate from the Western-European and the Turkish names. Nearly all people who emigrated from the Arabic countries to the Netherlands originate from Morocco. Therefore, we assumed that the Arabic names represent the Moroccan people in this study. Suriname is a multicultural country itself, existing of Javanese, Indians, Chinese, Hindustanic and Creole people. Suriname has been a colony from the Netherlands. In the 19th century mainly the Creole people were given family names, which were Dutch sounding and non-existing in Suriname and the Netherlands till that time (13). These new family names were related to plantations, existing words, expressions, physical characteristics or personal characters. Most frequently they consisted of two independent words. The Hindustanic people in Suriname originally came from North-India and their language and names are very specific for this group. From the seventies, especially the Creole and the Hindustanic people immigrated to the Netherlands.

To measure the validity of the surname-method and the combined name-method, we compared these methods with a reference-method. The reference-method was defined by the parents' country of birth. If at least one of the parents was born outside the Netherlands, the child's ethnicity was classified according to this country. In case both parents were born outside the Netherlands, but in different countries, the mother's country of birth was chosen.

Statistical analyses were performed by statistical package SPSS 8.0. First, we described the frequencies of each ethnicity group based on the 3 different methods (e.g. surname method, combined name method and the reference method). Subsequently, both name methods were compared with the reference method. The specificity, sensitivity and positive predictive value of the name methods were measured. We also measured the percentage of agreement between the name methods and the reference-method, with kappa as the measurement of agreement. This is the inter-rater agreement for nominal variables. Kappa is defined as the ratio of what we have reached, against what we can reach if we just gamble. A kappa between 0.41 and 0.6 means a moderate, between 0.61 and 0.8 a good and above 0.80 a very good strength of agreement. A p-value of less than 0.05 was considered as statistically significant.

## RESULTS

Of all 350 participating patients, 15 patients were excluded, because data on the father's native country were lacking. The median age of the 335 included children was 2.5 years and 194 (58%) were males. Fifty-nine percent of the children was Dutch, 10% Turkish, 9% Moroccan, 10% Surinamese and 11% non-classified according to the combined name-method (surname and first name) (table 1).

In table 1 the sensitivity, specificity and positive predictive value of the combined name-method compared to the reference-method, are shown. The sensitivity of the Turkish names was 81%: 30 of the 37 Turkish children were correctly classified by the combined name-

method. The specificity and the positive predictive value were 98% and 86% respectively. The Arabic names had a sensitivity of 77%, a specificity of 99% and a positive predictive value of 87%. The measurements of validity were lowest among the Surinamese names: Twenty-four of the 35 Surinamese children were classified correctly (69%) and also 24 Surinamese names belonged to Surinamese children (69%). The measurement of agreement (kappa) between the combined name method and the reference method was 0.69.

When using only the surname, the measurement of agreement was 0.67 (table 2). The sensitivity of the Turkish names was 73%. No differences in the measurements for the Arabic names were observed. Of the Surinamese names, the sensitivity was 69%, the specificity 96% and the positive predictive value 67%.

**Table 1:** Patients classified by the combined name method compared with the reference method (n=335)

| <i>Reference method</i><br><i>Combined name method</i> | <i>Dutch</i> | <i>Turkish</i> | <i>Moroccan</i> | <i>Surinamese</i> | <i>Non-class.</i> | <i>Total</i> |
|--------------------------------------------------------|--------------|----------------|-----------------|-------------------|-------------------|--------------|
| Dutch                                                  | 165          | 1              | 3               | 5                 | 24                | 198          |
| Turkish                                                | 1            | 30             | 2               | 1                 | 1                 | 35           |
| Arabic                                                 | 1            | 2              | 27              | 0                 | 1                 | 31           |
| Surinamese                                             | 4            | 0              | 0               | 24                | 7                 | 35           |
| Others/ non-class.                                     | 2            | 4              | 3               | 5                 | 22                | 36           |
| Total                                                  | 173          | 37             | 35              | 35                | 55                | 335          |
| Sensitivity                                            | 95%          | 81%            | 77%             | 69%               | 40%               |              |
| Specificity                                            | 80%          | 98%            | 99%             | 96%               | 99%               |              |
| Positive predictive value                              | 83%          | 86%            | 87%             | 69%               | 61%               |              |

Measurement of agreement K=0.69 (SD 0.033) (p-value<0.05)

**Table 2:** Patients classified by the surname method compared with the reference method (n=335)

| <i>Reference method</i><br><i>Surname method</i> | <i>Dutch</i> | <i>Turkish</i> | <i>Moroccan</i> | <i>Surinamese</i> | <i>Non-class.</i> | <i>Total</i> |
|--------------------------------------------------|--------------|----------------|-----------------|-------------------|-------------------|--------------|
| Dutch                                            | 163          | 1              | 3               | 5                 | 24                | 196          |
| Turkish                                          | 1            | 27             | 2               | 1                 | 1                 | 32           |
| Arabic                                           | 1            | 2              | 27              | 0                 | 1                 | 31           |
| Surinamese                                       | 5            | 0              | 0               | 24                | 7                 | 36           |
| Others/ non-class.                               | 3            | 7              | 3               | 5                 | 22                | 40           |
| Total                                            | 173          | 37             | 35              | 35                | 55                | 335          |
| Sensitivity                                      | 94%          | 73%            | 77%             | 69%               | 40%               |              |
| Specificity                                      | 80%          | 98%            | 99%             | 96%               | 94%               |              |
| Positive predictive value                        | 80%          | 84%            | 87%             | 67%               | 55%               |              |

Measurement of agreement K=0.67 (SD 0.033) (p value<0.05)

## DISCUSSION

This study describes the validation of the use of names to identify Turkish, Moroccan and Surinamese children in a Dutch population. We showed that by comparing the classification of ethnicity by names (surnames and the combination of surnames and first names) with the classification by parent's country of birth, good strengths of agreement could be reached (kappa 0.67 and 0.69). Turkish and Arabic names were easy to distinguish in a Dutch population. However, Surinamese names were difficult to discriminate.

Name-search methods have been used to determine patients' ethnicity. Asian names as well as Indian and Chinese names have been identified in the British population by this method with high value-measurements of validity (5-7,9). In Germany, Turkish people were distinguished from the Germans by a name-algorithm (10,11). It is an easy applicable method in case no other classification of ethnicity is available. Ethnic minorities from Turkey and Arabic countries such as Morocco live in several countries in Europe. The name method we used in our study will also be applicable for these countries.

In our study the Turkish and Arabic names were easy to identify. We showed that the Arabic names represented the Moroccan children in this population, because only one Arabic classified name belonged to a family from Eritrea. The Surinamese names showed the lowest validity measurements. Several patients with Surinamese classified names appeared to be actually Dutch or belonged to the group of other countries. Part of this can be explained by the fact that, notwithstanding the specific Surinamese names, these names are difficult to distinguish from the Dutch due to the same language.

In general the validity of the combined name-method was slightly better than the validity of the use of surnames only. No changes in the classification of the Arabic names were found. However, the sensitivity of the Turkish group increased from 72% to 81% by adding the first name. A number of names that were doubtful cases and therefore classified as unknown could be classified as Turkish by adding the first name to the surname. While especially the classification for Turkish names could be optimised by using the combination of first names and surnames, we recommend, just like other studies, to use the combination of surnames and first names in future studies (5,6).

The validity of the name-method could be influenced by personal judgements of the students. We expected that students with the specific ethnic backgrounds, who speak and understand the language of their country of origin and are familiar with the names, were able to classify the names. Their interest in this study was high, therefore, we expected a good accuracy. Two persons from each ethnic group (meaning two Turkish, two Moroccan etc) classifying all the names, might optimise the classification in future studies.

Measurements of sensitivity and specificity of the name-methods depend on the accuracy of the reference method (14,15). We used the parents' country of birth, which is preferred and most frequently used in several European countries (4). The use of grandparents' country of birth will probably be used in the very near future, because of the third generation migrants. It could be that third generation migrants were included in our study, which were classified as non-Dutch by the name-methods and Dutch by the reference method. This could explain a small part of the differences between the two methods.

In very large population-samples our method would be very time-consuming. Computerised name-techniques/ algorithms have been developed to identify Asian names in England and Turkish names in Germany (6,8,10,11). Algorithms are limited to identify all individuals. A group of names will still have to be reviewed manually. However, for large databases it would be worthwhile to develop an algorithm for the Arabic and Surinamese names by collecting names.

In conclusion, name search methods can easily be used to identify Turkish and Moroccan children in routine registered databases. For Surinamese children this method is less suitable.

## REFERENCES

1. Senior PA, Bhopal R. Ethnicity as a variable in epidemiological research. *BMJ* 1994;309:327-330.
2. Bhopal R, Donaldson L. White, European, Western, Caucasian, or what? Inappropriate labelling in research on race, ethnicity, and health. *Am J Public Health* 1998;88(9):1303-7.
3. Chaturvedi N, McKeigue PM. Methods for epidemiological surveys of ethnic minority groups. *J Epidemiol Community Health* 1994;48(2):107-11.
4. Bruijnzeels MA. [Measurement of ethnic backgrounds] [in Dutch]. Amsterdam: Zorgonderzoek Nederland; 1999.
5. Nicoll A, Bassett K, Ulijaszek SJ. What's in a name? Accuracy of using surnames and forenames in ascribing Asian ethnic identity in English populations. *J Epidemiol Community Health* 1986;40(4):364-8.
6. Coldman AJ, Braun T, Gallagher RP. The classification of ethnic status using name information. *J Epidemiol Comm Health* 1988;42:390-395.
7. Choi BCK, Hanley AJG, Holowaty EJ, Dale D. Use of Surnames to identify individuals of Chinese ancestry. *Am J Epidemiol* 1993;138(9):723-734.
8. Harding S, Dews H, Simpson S. The potential to identify South Asians using a computerised algorithm to classify names. *Population trends* 1999;97:46-49.
9. Harland JO, White M, Bhopal RS, Raybould S, Unwin NC, Alberti KGMM. Identifying Chinese populations in the UK for epidemiological research: experience of a name analysis of the FHSA register. *The society of public health* 1997;111:331-337.
10. Razum O, Zeeb H, Beck K, Becher H, Ziegler H, Stegmaier C. Combining a name algorithm with a capture-recapture method to retrieve cases of Turkish descent from a German population-based cancer registry. *Eur J Cancer* 2000;36(18):2380-4.
11. Razum O, Zeeb H, Akgun S. How useful is a name-based algorithm in health research among Turkish migrants in Germany? *Trop Med Int Health* 2001;6(8):654-61.
12. Manna DR, Bootsma AH, Lamberts SW, Mackenbach JP. [Relation between ethnicity and reason for referral of new patients to the Internal Medicine outpatient clinic of the Academic Hospital Rotterdam-Dijkzigt, 1997] [in Dutch]. *Ned Tijdschr Geneesk* 2000;144(37):1785-9.
13. Striptaan van A. [What's in a name? Slavery and name giving in Suriname during the 18th and 19th century] [in Dutch]; 1990.
14. Martineau A, White M. What's not in a name. The accuracy of using names to ascribe religious and geographical origin in a British population. *J Epidemiol Comm Health* 1998;52:336-337.
15. Perez-Stable EJ, Hiatt RA, Sabogal F, Otero-Sabogal R. Use of Spanish Surnames to Identify Latinos: Comparison to Self-Identification. *J Natl Cancer Inst Monogr* 1995;18:11-15.





## **CHAPTER 6**

### **SUMMARY**





# **CHAPTER 6.1**

**Summary &  
future perspectives**

## Summary

The outpatient department of general paediatrics as well as the emergency department of the Sophia Children's Hospital provides general paediatric outpatient care for children up to 16 years of age with different ethnic and socio-economic backgrounds. Ethnic and socio-economic differences in health and use of health care by children have been described in the literature (1-15). Apart from the increase of children from ethnic minorities, other changes in the use of paediatric outpatient care have also been suggested: more children visit the emergency department with non-urgent problems and second opinions are commonly seen at the outpatient department (16-20). The aim of this thesis was to describe the relations between patient's socio-demographics (ethnicity and socio-economic status) and presented medical problems, and the use of the paediatric outpatient care.

All studies in this thesis included children who attended the paediatric emergency department or the outpatient department of the Sophia Children's Hospital Rotterdam for a general paediatric problem. The presented problems are coded according to a problem oriented patient classification system (21) (chapter 5.2). In this system every new presented medical problem is coded and characterised in a matrix by an internal organ system or disease entity, and by either a complaint or symptom, abnormal laboratory result or (presumed) diagnosis.

### Presenting problems and socio-demographics

In **chapter 2**, the relations were assessed between patient's ethnicity, socio-economic status and medical problems presented to the outpatient care. **Chapter 2.1** described ethnic differences in presenting problems at the emergency department of general paediatrics. For this aim, data including background characteristics, presenting problems, performed diagnostic tests and follow-up data from patients, aged 0-15 years, were collected (period 1988-1997). Of all 8789 patients, 49% were Dutch, 14 % Turkish, 11 % Moroccan, 8% Surinamese and 17% others, classified according to the patient's surname. Infectious problems were most frequently the reason for encounter. Compared to the Dutch children (40%), a larger part of the Turkish and Moroccan children had an infectious problem (45%). There were no differences between the Surinamese and Dutch children. Turkish children with infectious problems received less often laboratory tests (OR 0.72, 95%CI 0.56-0.94) or X-ray diagnostics (OR 0.73, 95%CI 0.58-0.91) and were less frequently admitted to the hospital (OR 0.74, 95%CI 0.59-0.94) compared to Dutch children. In contrast, Moroccan children had more often a severe infection (OR 1.65, 95%CI 1.18-2.31) and were more frequently admitted, especially to the intensive care department. The results can be explained by either a higher frequency of infectious diseases among Turkish and Moroccan children in the general population or differences in helpseeking behaviour of Turkish, Moroccan and Dutch parents with feverish children.

**Chapter 2.2** focussed on ethnic differences in medical problems presented at the outpatient department of general paediatrics. All patients who were referred to the outpatient department in the period 1988-1997 for a general paediatric medical problem were included. Results were restricted to residents of the city Rotterdam, stratified by age (0-5 years and 5-15 years) and adjusted for socio-economic status and gender. Of all 3913 patients, 64% was Dutch, 14% Turkish, 11% Moroccan and 11% Surinamese. A larger part of the Turkish children attended with gastro-intestinal problems, like constipation and abdominal pain compared to the Dutch children. In the age group of 5-15 years also urinary tract (enuresis) problems were presented more frequently by Turkish children compared to the Dutch children (OR 2.0, 95%CI 1.13-3.54). Moroccan children presented more frequently with urinary tract (enuresis) (OR 2.39, 95%CI 1.34-4.25) and respiratory problems (OR 2.31, 95%CI 1.37-3.87) compared to the Dutch children. Asthma was more commonly diagnosed in the Moroccan and Surinamese children. The results showed small ethnic differences in presenting medical problems at a paediatric outpatient department.

Infectious related problems are the most common presented problems at paediatric emergency departments (PED's). In **chapter 2.3** we scrutinised a specific infectious medical problem, namely "meningeal signs". Signs of meningeal irritation are indicative for possible bacterial meningitis but also other underlying diseases such as pneumonia or self-limiting (viral) diseases can be the cause (21). We evaluated whether there were differences in clinical presentation and disease severity between ethnic minority children and Dutch children who attended the PED with meningeal signs. Of all 432 patients, 58% was Dutch, 7% Turkish, 10% Moroccan, 10% Surinamese or Antillean and 15% others. No differences in clinical presentation and hospital admission were observed. Turkish children had relatively more frequently a self-limiting disease. A larger part of the Moroccan children had a serious bacterial infection (OR 3.47, 95%CI 1.23-9.8).

Socio-economic differences in health and use of healthcare by children in the general population have been described (4-6,8,22,23). In **chapter 2.4** the relation between socio-economic status (SES) and medical problems presented to the outpatient department of general paediatrics was evaluated. Patients aged up to 16 years, who attended the outpatient department for a new health problem in a period of one year (February 2000-February 2001), were included. A questionnaire was administered which included questions regarding the presented problem and patient and family background socio-demographics. The household equivalent income and the educational level of the mother were used as indicators of SES. Presented medical problems, diagnostic tests and outpatient follow-up appointments were collected. We showed that children from families with a low and medium income level were more likely to visit with gastro-intestinal problems (OR 1.6, 95%CI 1.04-2.47 and 1.71, 95%CI 1.14-2.55, respectively) and less likely to visits with endocrine problems (OR 0.55, 95%CI 0.33-0.91 and 0.54, 95%CI 0.33-0.87, respectively) compared to children from families with a high SES. Low-income levels were related to low perceived health status by the parents and low

educational levels with respiratory problems. We suggested to pay more attention to the provision of information on lifestyle factors and the treatment of gastro-intestinal and respiratory problems for children from families with low socio-economic status.

### **Use of paediatric outpatient care**

Emergency departments are meant for acute medical problems. However, the number of non-urgent visits at PED's varies between 29% and 72% (16-18, 20). Most of these studies have been performed in the United States and are not applicable to the Dutch situation, in which the health care system is based on referral. In **Chapter 3.1**, we described determinants of non-urgent visits at a PED in a health care system based on referral. For this aim, parents of patients attending the emergency department of the Sophia Children's hospital filled in a questionnaire regarding family background characteristics. The urgency of the visit was defined by the final diagnosis in combination with the differential diagnosis after patient history and physical examination and performed diagnostics. One third of all visits was considered as non-urgent. Patients who were self-referred (OR 2.6, 95%CI 1.5-4.7) or had no current treatment for a disease in this hospital (OR 2.5, 95%CI 1.2-5) were more likely to visit for a non-urgent problem. Infectious problems (OR 4.5, 95%CI 2.0-9.9) and gastro-intestinal problems (OR 6.0, 95%CI 2.2-15.9) were more frequently classified as non-urgent compared to other problems, such as haematological problems and intoxication. Turkish and Surinamese children were more likely to attend the PED self-referred with non-urgent problems compared to Dutch children. We concluded that a considerable part of the visits at the PED is non-urgent. By first visiting the general practitioners, the number of non-urgent visits could be reduced.

Second opinion visits are defined as visits initiated by the patient to get a new opinion for a medical problem for which they consulted another physician of the same expert level before. Data regarding adult patients showed frequencies between 5% and 40% (24-27). Numbers of second opinions in children are unknown. In **chapter 3.2** we focussed on background characteristics and health problems related to second opinion visits at a paediatric outpatient department. We used the same population as in chapter 2.4. Thirteen percent of all 1103 visits were second opinion visits. Gastro-intestinal problems (OR 2.3, 95%CI 1.4-3.8) and respiratory problems (OR 2.3, 95%CI 1.2-4.2) were more frequently presented in a second opinion visit compared to other problems. Long duration of the medical complaint, poor perceived health by the parents, patient's age, a Surinamese background or resident outside the neighbourhood of the hospital, were associated with a second opinion visit. Compared to data on adult patients, the number of second opinions in children is in the lower range. However, determinants, like duration of the medical complaints, living outside the hospital neighbourhood are comparable to the data on adult patients (24, 25).

**Some explanations on ethnic differences in helpseeking behaviour**

In **Chapter 4.1**, we described group interviews with Turkish and Moroccan mothers. The topics in these interviews included aspects of knowledge, fears, attitudes and helpseeking behaviour of parents in feverish children. A large part of the Turkish and Moroccan mothers reported not to use a thermometer to measure the temperature. They underlined that physical examination by the general practitioner is in their opinion very important. Moroccan mothers seem to have adopted a more expectantly attitude, while Turkish mothers more often reported to attend the emergency department without referral from the general practitioner. Group interviews attribute to our knowledge regarding idea's, fears, knowledge and helpseeking behaviour of groups of Turkish and Moroccan mothers in case of feverish children.

To get more information on the determinants of helpseeking behaviour in relation to ethnicity, we designed a study in which individual interviews were administered to parents. In **Chapter 4.2**, first the determinants of helpseeking behaviour in general and the relation between ethnicity and helpseeking behaviour were reviewed from the literature. A conceptual model for the relation between ethnicity and helpseeking behaviour in feverish children and their determinants was presented. In this study (February 2002- May 2002) individual interviews were held with Turkish, Moroccan and Dutch mothers of children aged between 0 and 5 years of age, who attended the PED of the Sophia Children's Hospital with fever. In this report, the response rate, helpseeking behaviour and "fever phobia" in relation to ethnicity were evaluated.

In total 95 parents participated the study. Response rate of the different ethnic groups was approximately 60%. Turkish and Moroccan patients visited more often the PED without a referral from the general practitioner. Although "fever phobia" did not play an important role in the group of parents, the Turkish and Moroccan parents reported more often to be anxious about fever and it's possible consequences as seizures and death.

### **Methodological aspects**

Patient surnames were used to identify the ethnicity of children in some studies. In **chapter 5.1**, the use of names to identify Turkish, Moroccan and Surinamese children in a Dutch population was evaluated. The classification of ethnicity by surnames, as well as by the combination of surnames and first names was compared with a reference method (parents' country of birth) by measuring the validity measures and the measurement of agreement. Turkish names (surnames in combination with first names) were distinguishable with a sensitivity of 81%, a specificity of 98% and a positive predictive value of 86%. For the Arabic names these measurements were 77%, 99% and 87% respectively. The Surinamese names were less easy to discriminate. The measurement of agreement between the combined name method and the reference method was 0.69 for this group. The use of first names increased the validation of the Turkish names. We concluded that names can be used to identify the Turkish and Moroccan (Arabic) ethnicity of children in a Dutch population. This method will be useful for other studies in European populations consisting of groups with a Turkish and Arabic background.



## **Future perspectives**

The ethnic differences in infectious related health problems might be influenced by differences in the helpseeking behaviour of Turkish, Moroccan and Dutch parents. This is suggested by the differences in the severity of the problems, the number of self-referred, non-urgent visits and the suggestions based on the group interviews. In chapter 4.2 we studied the helpseeking behaviour of Turkish, Moroccan and Dutch parents for feverish children in a pilot study at the emergency department. A larger study will most likely provide information on differences in helpseeking behaviour and the factors that might explain these differences.

Most feverish episodes are self cared by the parents and a part is presented to the general practitioner. Therefore, the interviews also need to be administered to parents who attend the general practitioner and to parents in the general population. Moreover, information on incidences of infectious diseases in the different ethnic groups is lacking. With this information, we are able to relate the helpseeking behaviour and the use of health care with the occurrence of infectious problems and the type of problems. These studies will provide information in order to develop intervention studies for specific groups of patients. With interventions, like information folders, video presentations or group meetings for parents, one could investigate whether we are able to diminish parental concerns, optimise parental knowledge, attitudes and helpseeking behaviour for infectious diseases. Moreover, trainees, paediatricians and general practitioners should obtain more knowledge about the (cultural) differences in opinions and expectations towards the causes and treatment of infectious illnesses and the related helpseeking behaviour. Altogether, this can lead to optimise the intercultural communication.

A larger part of the Turkish children, compared to the other children at the outpatient department presented with gastro-intestinal problems. Low-income level was also associated with gastro-intestinal problems presented to the outpatient department. Either the prevalence of gastro-intestinal problems, like constipation and abdominal pain, is higher among these groups of children or parents differ in managing these problems, leading to more consultations with general practitioners and paediatricians. Constipation is most often a functional complaint influenced by dietary habits and other lifestyle factors. Information regarding lifestyle factors, by the preventive as well as the first and secondary health care in order to prevent and treat these problems will probably be needed.

Moroccan and Surinamese children consulted the outpatient department relatively more frequent with respiratory problems, compared to the Dutch children. In the general population, non-Dutch children less frequently reported respiratory symptoms and consulted less frequently general practitioners for these problems (11,12,15). A low educational level of the mother was also associated with respiratory problems presented at the outpatient department. Severe asthma in the general population is more common in children from families with a low socio-economic status (28-31). This suggests that the severity of the symptoms is such that the general practitioner (or the parents) finds a referral to the paediatrician necessary. There are

some remarkable differences in the study outcomes regarding respiratory symptoms in relation to ethnicity between the general population, the general practice population and outpatient population. A suggestion for future studies is a population-based study in which insights into ethnic differences in incidences of respiratory problems, their related risk factors/determinants, the use of health care (general practitioners, paediatricians and hospital admissions), the treatment by general practitioners and paediatricians and treatment compliance are evaluated.

The study populations in this thesis encompassed patients who presented to the outpatient care of the Sophia Children's hospital. The results showed ethnic differences in the distribution of medical problems in this specific population of children. Studies in the general population will inform one about incidences of health problems and diseases and also about helpseeking behaviour among different ethnic and socio-economic populations in general. By studying the general population, one will gain more knowledge about the use of medical care in relation to the medical need. The generation R study, a cohort study of nearly 10.000 children in Rotterdam, in which children from 12 weeks gestational age up to the age of 20 years are followed, will provide information on ethnic and socio-economic differences in incidences of medical problems and the use of health care for these medical problems in the general population. According to the results of the studies in this thesis, infectious diseases, gastrointestinal and respiratory tract problems should be topics of special interest.

We showed that a considerable part (33%) of the visits to the paediatric emergency department (PED) was non-urgent. In our study, especially visits by self-referred patients and visits concerning infectious problems were non-urgent. The number of self-referrals and consequently the number of non-urgent visits might increase in the future. Especially, in the larger cities of the Netherlands, where the number of general practitioners seems to decrease, while the workload for them increases. This might lead to changes in parental attitude towards their helpseeking, by bypassing general practitioner in case of acute medical problems. Self-referrals to emergency departments should therefore be a basic aspect in future studies.

Data at our PED showed that self-referred patients also have urgent problems (in 50%) and that 15% of these patients needs hospital admission. The future needs to show whether changes in these frequencies will occur. The next step to get insight into self-referrals is to assess 1) the reasons for parents to attend an emergency department without referral, 2) the determinants of self referrals, such as socio-demographic backgrounds of the patients, presenting health problems and the hour of the day, and 3) the severity of the problems (urgency and hospital admission). The study described in chapter 4.2 will provide information regarding these aspects in relation to infectious problems in the near future and will as such guide further research.

This thesis showed that 13% of all new visits at the outpatient department of a University Hospital in the Netherlands, was a second opinion visit. In the future we might expect this percentage to be higher due to more awareness and assertiveness of patients. As yet, it seems

to concern non-severe gastro-intestinal and respiratory problems. Especially, information about the cause and treatment of these health problems to parents by general practitioners, paediatricians and others (media, preventive health care, leaflets etcetera) seems to be useful. In the future, a new study should be performed to observe any changes in second opinion visits. Important items to be addressed are 1. evaluation of the reasons for parents to seek a second opinion, 2. the role of the first physician and the general practitioner in the process and 3. the necessity of the second opinion. This should give us more background information on second opinions. Another suggestion for future studies is to get insight into the follow-up of the second opinions, the expectations of parent towards a second opinion and the fulfilling of these expectations.

Providing care for children in a multicultural setting entails several aspects. Language barriers are frequently experienced between patients and physicians: a large part of the Turkish and Moroccan adults is insufficiently fluent in the Dutch language to communicate well with physicians. (32-39). Frequently a family member or an acquaintance is used as an interpreter. In this thesis, language barriers between parents and paediatricians were not studied. In the long run, language barriers will probably be overcome because more parents (especially the second generation) will be able to speak the Dutch language.

Next to language barriers, cultural barriers are important. Knowledge of diseases, causes of disease and expectations towards treatment of diseases are cultural and socially dependent (40-42). The patient's explanatory model for illness and diseases can be different from the physicians' explanatory model, leading to communication problems and subsequently to differences in mutual understanding (41,43). Because norms, values and explanatory models are passed on from generation to generation, a part of the cultural barriers will still be a problem in the future. This will be partly influenced by the extent of acculturation of ethnic minorities. Studying cultural barriers is necessary to get more insight into the explanatory models for illnesses and diseases of patients from other ethnic backgrounds. By paying attention to these subjects during the consults, paediatricians will have more understanding of the individual parental ideas, fears and explanatory models and are able to give the information parents need. The intercultural communication between physicians and patients needs to be improved.

In some studies in this thesis (chapter 2.1, 2.2, 2.3) the patient's ethnicity was determined by surnames, because other data regarding ethnicity were lacking. In other studies, we asked the parent's country of birth in a questionnaire for which parents gave informed consent.

Registration of ethnicity in databases meets several ethical and juridical problems. Only as a part of scientific research it is allowed to register one's ethnicity. Within the patient-physician relation the physician sometimes asks the patient's ethnic background, especially when they consider for example a genetic metabolic disorders or a genetic hemoglobinopathy. In most medical records the ethnic background is not noted. The determination of ethnicity might also be different.

Based on this thesis and the literature, we are of the opinion that the individual patient might benefit if his/her ethnic background is taken into account in the medical care. Therefore, we suggest that paediatricians classify the ethnic background routinely, by asking the parents' and eventually the grandparents' country of birth as part of the patient history. This will benefit the intercultural communication and consequently the mutual understanding and the treatment compliance.

## References

1. Balarajan, R., P. Yuen, and V. Soni Raleigh, Ethnic differences in general practitioner consultations. *Bmj*, 1989. 299(6705): p. 958-60.
2. Bruijnzeels, M.A., J.C. Wouden van der, and M. Foets, General practice consultation in childhood in the Netherlands: sociodemographic variation. *J Epidemiol Community Health*, 1995. 49: p. 532-533.
3. Flores, G., et al., The impact of ethnicity, family income, and parental education on children's health and use of health services. *Am J Public Health*, 1999. 89(7): p. 1066-71.
4. Gissler, M., et al., Social class differences in health until the age of seven years among the Finnish 1987 birth cohort. *Soc Sci Med*, 1998. 46(12): p. 1543-52.
5. Halldorsson, M., et al., Socioeconomic inequalities in the health of children and adolescents. *Eur J Public Health*, 2000. 10: p. 281-88.
6. Halldorsson, M., et al., Socioeconomic differences in children's use of physician services in the Nordic countries. *J Epidemiol Community Health*, 2002. 56(3): p. 200-4.
7. Lucht van der, F., Sociale ongelijkheid en gezondheid bij kinderen. 1992, Den Haag: CIP. 196.
8. Saxena, S., A. Majeed, and M. Jones, Socioeconomic differences in childhood consultation rates in general practice in England and Wales: prospective cohort study. *Bmj*, 1999. 318(7184): p. 642-6.
9. Schulpen, T.W., Migration and child health: the Dutch experience. *Eur J Pediatr*, 1996. 155(5): p. 351-6.
10. Schulpen, T., Kindergeneeskunde in een multiculturele maatschappij. *Tijdschr Kindergeneeskde*, 2001. 69(5): p. 151-152.
11. Gorissen, W.H.M., G.C.A. Brussaard-Scholtman, and T.W.J. Schulpen, Luchtwegklachten bij schoolkinderen in Utrecht: de invloed van etniciteit en de woning. *tijdschrift voor jeugdgezondheidszorg*, 1999. 31(2): p. 17-21.
12. Wal van der, M.F. and B. Rijcken, Astmatische klachten bij autochtone en allochtone kinderen van 2-11 jaar in Amsterdam. *Tijdschr Soc Gezondheidsz*, 1995. 73: p. 42-50.
13. Wal van der, M.F., H. Pauw-Plomp, and T.W.J. Schulpen, Bedplassen bij Nederlandse, Surinaamse, Marokkaanse en Turkse kinderen van 3-4, 5-6 en 11-12 jaar. *NTVG*, 1996. 140: p. 2410-14.
14. Wal van der, M., Etnische ongelijkheid in gezondheid bij kinderen, . 1997, Academic University Utrecht: Utrecht.
15. Versluis-van Winkel, S.Y., et al., Geen verschil in frequentie van huisartsbezoek door Turkse, Surinaamse en Marokkaanse kinderen van 0-14 jaar en door Nederlandse, maar wel in contactredenen. *Ned Tijdschr Geneeskde*, 1996. 140, nr18: p. 980-984.
16. Sharma, V., et al., Factors influencing infant visits to emergency departments. *Pediatrics*, 2000. 106(5): p. 1031-9.
17. Liu, T., M.R. Sayre, and S.C. Carleton, Emergency medical care: types, trends, and factors related to nonurgent visits. *Acad Emerg Med*, 1999. 6(11): p. 1147-52.
18. Fong, C., The influence of insurance status on nonurgent pediatric visits to the emergency department. *Acad Emerg Med*, 1998. 6 (7): p. 744-748.
19. Isaacman, D.J. and H.W. Davis, Pediatric emergency medicine: state of the art. *Pediatrics*, 1993. 91(3): p. 587-90.
20. Phelps, K., et al., Factors associated with emergency department utilization for nonurgent pediatric problems. *Arch Fam Med*, 2000. 9(10): p. 1086-92.

21. Oostenbrink, R., et al., Signs of meningeal irritation at the emergency department: how often bacterial meningitis? *Pediatr Emerg Care*, 2001. 17(3): p. 161-4.
22. Hjerm, A., B. Haglund, and M. Rosen, Socioeconomic differences in use of medical care and antibiotics among schoolchildren in Sweden. *Eur J Public Health*, 2001. 11(3): p. 280-3.
23. Lucht van der, F. and J.W. Groothoff, Causatie- en selectieprocessen onder kinderen als verklaring voor sociaal-economische gezondheidsverschillen. *T.Soc.Gezondheidszorg*, 1992. 70: p. 696-703.
24. Sutherland, L.R. and M.J. Verhoef, Patients who seek a second opinion: are they different from the typical referral? *J Clin Gastroenterol*, 1989. 11(3): p. 308-13.
25. Sato, T., et al., Second opinion behaviour among Japanese primary care patients. *Br J Gen Pract*, 1999. 49(444): p. 546-50.
26. Mellink, W.A.M., et al., De tweedemeningspolikliniek Chirurgische oncologie in de Daniel den Hoed Kliniek: analyse van de eerste 245 patienten. *NTVG*, 1999. 143(49): p. 2471-2475.
27. Bowling, A. and J. Redfern, The process of outpatient referral and care: the experiences and views of patients, their general practitioners, and specialists. *Br J Gen Pract*, 2000. 50(451): p. 116-20.
28. Erzen, D., et al., Income level and asthma prevalence and care patterns. *Am J Respir Crit Care Med*, 1997. 155(3): p. 1060-5.
29. Halfon, N. and P.W. Newacheck, Childhood asthma and poverty: differential impacts and utilization of health services. *Pediatrics*, 1993. 91(1): p. 56-61.
30. Mielck, A., P. Reitmeir, and M. Wjst, Severity of childhood asthma by socioeconomic status. *Int J Epidemiol*, 1996. 25(2): p. 388-93.
31. Miller, J.E., The effects of race/ethnicity and income on early childhood asthma prevalence and health care use. *American Journal of Public Health*, 2000. 90(3): p. 428-30.
32. Gerits, Y.C., et al., De communicatie tussen huisarts en Turkse en Marokkaanse patienten nader bekeken. *TSG*, 2001. 79(1): p. 16-20.
33. Harmsen, J.A.M., et al., Allochtone kinderen op het spreekuur; communicatie tussen huisarts en allochtone ouders. *Huisarts en wetenschap*, 1999. 42 (5).
34. Bruijnzeels, M.A., et al., Etnische herkomst van patienten en werkbelasting van de huisarts. *Huisarts en wetenschap*, 1999. 42 (6): p. 254-258.
35. Hampers, L.C., et al., Language barriers and resource utilization in a pediatric emergency department. *Pediatrics*, 1999. 103 (6 pt 1): p. 1253-1256.
36. Hornberger, J.C., et al., Eliminating language barriers for non-English-speaking patients. *Medical Care*, 1996. 34(8): p. 845-56.
37. Hornberger, J., H. Itakura, and S.R. Wilson, Bridging language and cultural barriers between physicians and patients. *Public Health Reports*, 1997. 112(5): p. 410-7.
38. Kijlstra, M., J.C.M. Wieringen van, and T.W.J. Schulp, Cultuur en communicatie. *Tijdschr Kindergeneeskde*, 2001. 69(5): p. 159-162.
39. Sarver, J. and D.W. Baker, Effect of language barriers on follow-up appointments after an emergency department visit. *Journal of General Internal Medicine*, 2000. 15(4): p. 256-64.
40. Dijkman, P. and M. Haan de, Cultureel bepaalde ziektebeleving en geneeswijzen. *Huisarts en wetenschap*, 1999. 42 (5): p. 205-210.
41. Kleinman, A.K., Patients and healers in the context of culture: an exploration of the borderland between anthropology, medicine and psychiatry. *Comparative studies of health systems and medical care: no 3*. 1980: Berkeley: University of California Press. 427.
42. Pachter, L.M., Culture and clinical care. Folk illness beliefs and behaviors and their implications for health care delivery. *Jama*, 1994. 271(9): p. 690-4.
43. Wieringen van, J.C.M., J.A.M. Harmsen, and M.A. Bruijnzeels, Intercultural communication in general practice. *Eur J Public Health*, 2002. 12: p. 63-68.



## **CHAPTER 6.2**

### **Samenvatting**

## Samenvatting

De polikliniek algemene kindergeneeskunde en de afdeling Acute Hulp van het Sophia Kinderziekenhuis verzorgen de algemeen pediatrische zorg voor kinderen tot en met de leeftijd van 16 jaar. Naast een grote diversiteit aan problemen die worden gepresenteerd, is er ook een diversiteit aan kinderen met betrekking tot leeftijd, etnische en sociaal economische achtergrond. Met name het aantal allochtone kinderen in de algemen bevolking en daarmee ook in de ziekenhuizen is de laatste jaren toegenomen. In de literatuur is beschreven dat er etnische en sociaal economische verschillen in gezondheid van en gebruik van gezondheidszorg door kinderen bestaan.

Tevens wordt er gesuggereerd dat veranderingen in het gebruik van de gezondheidszorg hebben plaatsgevonden: meer kinderen zouden een spoed eisende hulp bezoeken voor niet-urgente problemen en het aantal bezoeken op de poliklinieken voor een tweede mening lijkt te zijn toegenomen.

Het doel van dit proefschrift is het beschrijven van de relaties tussen sociaal demografische gegevens van patiënten (etniciteit en sociaal economische status), de gepresenteerde problemen en het gebruik van de poliklinische zorg.

Alle studies in dit proefschrift betreffen kinderen die de acute hulp danwel de polikliniek algemene kindergeneeskunde van het Sophia Kinderziekenhuis bezochten voor een algemeen kindergeneeskundig probleem. Het gepresenteerde probleem ofwel reden van bezoek is gecodeerd door middel van een probleem georiënteerd patiënten classificatie systeem (hoofdstuk 5.2). In dit systeem is elk nieuw gepresenteerd medisch probleem gecodeerd en gekarakteriseerd in een matrix door een intern orgaansysteem of ziekte-entiteit, en door een klacht of symptoom, abnormale laboratorium uitslag of (veronderstelde) diagnose.

### Probleem bij presentatie en sociaal demografische gegevens

In hoofdstuk 2 worden de relaties tussen de etnische en sociaal economische achtergrond van kinderen en de gepresenteerde problemen/reden vankomst binnen de poliklinische algemene kindergeneeskunde beschreven. Hoofdstuk 2.1 beschrijft etnische verschillen in gepresenteerde kindergeneeskundige problemen op de acute hulp. Hiervoor werden gegevens, waaronder sociaal demografische gegevens, reden van bezoek (gepresenteerde klacht), verrichte laboratorium diagnostiek en follow-up data verzameld van patiënten in de leeftijd van 0-15 jaar (periode 1988-1997). Van alle 8789 patiënten was 49% Nederlands, 14% Turks, 11% Marokkaans, 8% Surinaams en 17% anders, geclassificeerd op basis van de achternaam van de patient. Infectieproblemen waren de meest voorkomende reden van bezoek. Gegeleken met de Nederlandse kinderen hadden Turkse en Marokkaanse kinderen vaker een infectie gerelateerd probleem. Er werden geen verschillen tussen de Nederlandse en Surinaamse kinderen aangetoond.



Turkse kinderen met een infectie gerelateerd probleem kregen minder vaak laboratorium onderzoek (OR 0.72, 95%BI 0.56-0.94) of radiodiagnostisch onderzoek (OR 0.73, 95%BI 0.58-0.91) en werden minder vaak opgenomen in het ziekenhuis (OR 0.74, 95%BI 0.59-0.94) in vergelijking met de Nederlandse kinderen. In tegenstelling tot de Turkse kinderen hadden Marokkaanse kinderen juist vaker een ernstige infectie en werden ze vaker opgenomen, met name op de 'intensive care' afdeling. De resultaten van dit onderzoek kunnen mogelijk worden verklaard door het hoger voorkomen van infecties bij Turkse en Marokkaanse kinderen in de algemene bevolking of door verschillen in hulpzoekgedrag van Turkse, Marokkaanse en Nederlandse ouders bij een kind met koorts.

Hoofdstuk 2.2 richt zich op verschillen in medische problemen gepresenteerd op de polikliniek algemene kindergeneeskunde tussen kinderen van verschillende etnische afkomst. Voor deze studie werden alle patiënten die naar de polikliniek algemene kindergeneeskunde werden verwezen in de periode 1988-1997 geïncludeerd. De analyses van deze studie hebben zich beperkt tot de patiënten die in de stad Rotterdam woonden, gestratificeerd voor leeftijd (0-5 jaar en 5-15 jaar) en gecorrigeerd voor geslacht en sociaal economische status. Van alle 3913 patiënten was 39% Nederlands, 14% Turks, 11% marokkaans en 11% surinaams. Een groter deel van de Turkse kinderen had een gastro-intestinaal probleem, zoals buikpijn en obstipatie, dan van de Nederlandse kinderen. In de leeftijdsgroep 5-15 jaar waren tevens urinewegproblemen (enuresis) vaker een reden voor bezoek voor Turkse kinderen in vergelijking met de Nederlandse kinderen. Marokkaanse kinderen presenteerde zich vaker met enuresis (OR 2.39, 95%BI 1.34-4.25) en luchtwegklachten (OR 2.31, 95%BI 1.37-3.87). Astma werd vaker gediagnostiseerd bij Marokkaanse en Surinaamse kinderen dan bij de Nederlandse kinderen. De resultaten van deze studie laten kleine etnische verschillen zien in de reden van bezoek op een polikliniek algemene kindergeneeskunde.

In hoofdstuk 2.3 onderzochten we een specifiek infectie gerelateerd probleem, namelijk 'meningeale prikkeling'. Meningeale prikkeling is een belangrijk symptoom van een bacteriële meningitis, maar ook andere onderliggende ziekten zoals een pneumonie of een minder ernstige (virale) ziekte kunnen de oorzaak zijn. We evalueerden de klinische presentatie en ziekte-ernst in relatie tot de etnische achtergrond van kinderen die zich presenteerden op de acute hulp van het Sophia Kinderziekenhuis met meningeale prikkeling. Van alle 432 kinderen was 58% Nederlands, 7% Turks, 10% Marokkaans, 10% Surinaams en 15% anders. Geen verschillen in klinische presentatie en ziekenhuis opname werden geconstateerd. Turkse kinderen hadden relatief vaker een niet ernstig/zelf limiterende ziekte dan de Nederlandse kinderen (OR 0.5, 95%BI 0.2-1.1). Een groter deel van de Marokkaanse kinderen had een ernstig bacteriële infectie vergeleken met de Nederlandse kinderen (OR. 2.5. 95%BI 1.2-5.3).

Verschillen in gezondheid van en gebruik van de gezondheidszorg in de algemene bevolking door kinderen met verschillende sociaal economische achtergronden zijn beschreven. In hoofdstuk 2.4 is de relatie tussen sociaal economische status (SES) en medische problemen gepresenteerd op de polikliniek algemene kindergeneeskunde onderzocht. Patiënten tot de

leeftijd van 16 jaar, die de polikliniek bezochten met een nieuw probleem in de periode februari 2001- februari 2002, werden geïncludeerd. Een vragenlijst met vragen over het probleem van presentatie en achtergrond gegevens van patient en gezin, werd afgenomen. Het huishoudelijk inkomen en de opleiding van moeder werden gebruikt als indicatoren voor de SES. Het gepresenteerde probleem, de verrichte diagnostiek en de vervolg afspraken werden verzameld. Dit onderzoek laat zien dat kinderen uit gezinnen met een laag en gemiddeld inkomens niveau zich vaker met gastro-intestinale klachten presenteerden en minder vaak met endocrinologisch problemen in vergelijking met kinderen uit een gezin met een hoog inkomens niveau. Een laag inkomensniveau was met name gerelateerd aan een laag ervaren gezondheid. Een laag opleidingsniveau van moeder was gerelateerd aan een frequentere presentatie met luchtwegklachten op de polikliniek. Het geven van voorlichting betreffende leefstijl factoren en de behandeling van gastro-intestinale en luchtwegklachten voor kinderen uit gezinnen met een lage sociaal-economische status verdient aandacht.

### **Gebruik van de poliklinische zorg**

Spoed eisende hulp afdelingen zijn bedoeld voor acute medische problemen. De laatste jaren wordt er in de literatur een toename van aantal niet-urgente problemen op een spoed eisende hulp beschreven, variërend tussen de 29% en 72%. De meeste van deze studies zijn verricht in de USA en niet volledig van toepassing op de Nederlandse situatie, waar het gezondheidssysteem is gebaseerd op een verwijzing door de huisarts. In hoofdstuk 3.1 beschrijven we determinanten van niet-urgente problemen gepresenteerd op een acute hulp voor kindergeneeskunde. Voor dit doel werden bij ouders van kinderen die de afdeling Acute Hulp van het Sophia Kinderziekenhuis bezochten, een vragenlijst afgenomen betreffende sociaal demografische achtergrond gegevens. De ernst/urgentie van het gepresenteerde probleem werd geclassificeerd door de uiteindelijke diagnose in combinatie met de differentiaal diagnose na anamnese en lichamelijk onderzoek en met de verrichte diagnostiek. Een derde van de bezoeken werd als niet -urgent beschouwd. Patienten die niet waren verwezen door een huisarts, maar op eigen initiatief waren gekomen, bezochten vaker de acute hulp voor een niet-urgent probleem. Ook kinderen die geen huidige behandeling hadden bij een van de kinderartsen bezochten de acute hulp vaker met een niet -urgent probleem.

Infectie gerelateerde en gastro-intestinale problemen werden vaker geclassificeerd als niet urgent in vergelijking met andere problemen, zoals hematologische problemen en verdenking intoxicaties. Turkse en Surinaamse kinderen bleken meer waarschijnlijk om de acute hulp afdeling op eigen initiatief te bezoeken voor een niet urgent probleem. Wij concludeerden dat een aanzienlijk deel van de bezoeken aan een acute hulp afdeling voor de kindergeneeskunde niet urgent is. Door eerst de huisarts te bezoeken kan mogelijk het aantal niet urgente bezoeken worden teruggebracht.

Bezoeken voor een tweede mening ofwel 'second opinion' worden gedefinieerd als bezoeken geïnitieerd door de patient met het doel een nieuwe mening te krijgen voor een probleem waar men al eerder hulp heeft gezocht bij een andere arts met hetzelfde expertise niveau. Gegevens betreffende volwassen patienten laten percentages zien tussen de 5% en 40%. Gegevens betreffende second opinions bij kinderen zijn onbekend.

In hoofdstuk 3.2 hebben wij onderzocht welke patienten voor een second opinion komen en welke gezondheidsproblemen gepresenteerd worden bij bezoeken voor een second opinion op een polikliniek algemene kindergeneeskunde. Hiervoor hebben we dezelfde populatie gebruikt als in hoofdstuk 2.4. Dertien procent van alle 1103 bezoeken was een second opinion. Gastro-intestinale problemen en luchtwegklachten waren de meest gepresenteerde problemen. Een lange duur van de klachten, slecht ervaren gezondheid van het kind door de ouders, de leeftijd van de patient, een Surinaamse achtergrond en/of wonende buiten de omgeving van het ziekenhuis waren factoren die geassocieerd waren met het bezoeken voor een tweede mening in vergelijking met een eerste mening. Vergeleken met gegevens bij volwassenen is het aantal second opinions bij kinderen iets lager. Echter kenmerken van second opinions, zoals duur van de klacht en patienten wonend buiten de omgeving van het ziekenhuis, zijn wel vergelijkbaar met de gegevens over volwassenen. In de toekomst zullen nieuwe studies uitwijzen of er veranderingen plaats vinden met betrekking tot de frequentie van second opinions in de kindergeneeskunde. Hierbij zal aandacht moeten worden besteed aan de reden van ouders om een tweede mening te vragen, de rol van de eerste arts die bezocht is en de noodzaak van de tweede mening.

### **Enkele verklaringen voor etnische verschillen in hulpzoekgedrag**

In hoofdstuk 4.1 beschrijven we groepsinterviews met Turkse en Marokkaanse moeders. De onderwerpen in deze interviews betroffen aspecten van kennis, angsten, attitudes en hulpzoekgedrag van ouders bij kinderen met koorts. Een groot deel van de Turkse en Marokkaanse moeders vertelden geen thermometer te gebruiken om de hoogte van de koorts te meten. Zij benadrukte dat lichamelijk onderzoek door de huisarts erg belangrijk is. Marokkaanse moeders leken een meer afwachterende houding aan te nemen, terwijl Turkse moeders juist vertelden snel zonder verwijzing naar een acute hulp te gaan. Groeps interviews dragen naar ons inziens bij aan de kennis betreffende angsten, ideeën, kennis en hulpzoekgedrag van Turkse en Marokkaanse ouders bij kinderen met koorts.

Om meer inzicht te krijgen in de determinanten van hulpzoekgedrag in relatie tot de etnische achtergrond van ouders en kinderen hebben we onderzoek verricht waarbij individuele interviews bij ouders worden afgenomen. In hoofdstuk 4.2 worden eerst determinanten en verklaringen van het hulpzoekgedrag in het algemeen en vervolgens van hulpzoekgedrag in relatie tot etniciteit beschreven. Een conceptueel model voor de relatie tussen etnische achtergrond en hulpzoekgedrag ten aanzien van koorts bij kinderen en de bijbehorende determinanten/verklaringen is weergegeven. In deze study (februari 2002- mei 2002) werden individuele interviews afgenomen bij ouders van kinderen in de leeftijd van nul tot vijf jaar die

de acute hulp van het Sophia Kinderziekenhuis bezochten met de reden koorts. In dit hoofdstuk worden participatie, aspecten van het hulpzoekgedrag en "fever phobia" beschreven. In totaal namen 95 ouders deel aan het onderzoek. De participatie graad per groep was ongeveer 60%. Turkse en Marokkaanse kinderen bezochten vaker de acute hulp zonder verwijzing van de huisarts. Ondanks dat "fever phobia" geen grote rol speelde in deze groep ouders, meldden Turkse en Marokkaanse ouders vaker angstig te zijn voor de mogelijke gevolgen van koorts, zoals convulsies en de dood. Analyses van de complete gegevens zal inzicht geven in verschillen in hulpzoekgedrag en de verklaringen voor dit hulpzoekgedrag zoals in het model beschreven is.

### **Methodologische aspecten**

In enkele studies van dit proefschrift werden achternamen van de patienten gebruikt om de etniciteit van de patienten te achterhalen. In hoofdstuk 5.1 is het gebruik van namen om Turkse, Marokkaanse en Surinaamse kinderen in een Nederlandse populatie te herkennen, geëvalueerd. De classificatie van etniciteit door middel van zowel achternamen, als door de combinatie van achternamen en voornamen, werd vergeleken met een referentie methode (geboorteland van ouders). Hierbij werd de validiteit van deze naam-methode bepaald. Turkse namen (achternamen in combinatie met voornamen) konden onderscheiden worden met een sensitiviteit van 81%, een specificiteit van 98% en een positieve predictieve waarde van 86%. Voor de arabische namen waren deze getallen respectievelijk 77%, 99% en 87%. De surinaamse namen waren moeilijker te onderscheiden. De mate van overeenkomst tussen beide methoden liet een kappa van 0.69 zien. Wij concludeerden dat namen gebruikt kunnen worden om Turkse en Marokkaanse (arabische namen) etniciteit van kinderen in een Nederlandse populatie te bepalen in geval geen andere gegevens beschikbaar zijn. Deze methode kan mogelijk ook gebruikt worden in andere studies waar Turkse en Marokkaanse mensen deel uit maken van de populatie.

## APPENDIX 1

### Problem oriented patient classification system

Problem codes, characterised by an internal organ system or disease and complaint/symptom (X) or abnormal laboratory result (Y) or (presumed) diagnosis (Z)

|                             |                                     |                                  |                             |                        |                           |                                |                                                             |
|-----------------------------|-------------------------------------|----------------------------------|-----------------------------|------------------------|---------------------------|--------------------------------|-------------------------------------------------------------|
| <b>A. Infections</b>        |                                     | <b>E. Immunology</b>             |                             | <b>J. Intoxication</b> |                           | <b>N. Joint/limbs</b>          |                                                             |
| X                           | 1 neckstiffness +/- fever           | X                                | 1 recurrent infections      | X                      | 1 ingestion medicine      | X                              | 1 abn. of the hip in newborns                               |
|                             | 2 dyspnoea/cough/fever              |                                  | 9 other                     |                        | 2 ingestion detergent     |                                | 2 joint pain/ effusion                                      |
|                             | 3 dysuria/fever                     | Y                                | 9 other                     |                        | 3 ingestion object        |                                | 3 abn. gait/posture                                         |
|                             | 4 acute vomiting/diarrhoea          | Z                                | 1 immune deficiency disease |                        | 9 other                   |                                | 9 other                                                     |
|                             | 5 septic/poor circ./hypothermia     |                                  | 2 auto-immune disease       | Y                      | 9 other                   | Y                              | 9 other                                                     |
|                             | 6 rhinitis/tonsillitis/otitis/fever |                                  | 9 other                     | Z                      | 9 other                   | Z                              | 9 other                                                     |
|                             | 7 conjunctivitis                    | <b>F. Haematologic/oncologic</b> |                             | <b>K. Neurology</b>    |                           | <b>O. Psychological/social</b> |                                                             |
|                             | 8 fever                             | X                                | 1 tumour in the neck        | X                      | 1 febrile convulsion      | X                              | 1 behaviour/family disorders                                |
|                             | 9 other                             |                                  | 2 lymphadenopathy elsewhere |                        | 2 convulsion              |                                | 2 suspected child battering                                 |
| Y                           | 1 pos.serology syphilis             |                                  | 3 tumour elsewhere          |                        | 3 headache                |                                | 3 school problems                                           |
|                             | 2 pos. serology hepatitis B         |                                  | 4 bleeding disorder         |                        | 4 retardation             |                                | 4 suspected sexual abuse                                    |
|                             | 9 other                             |                                  | 9 other                     |                        | 5 dystonia                |                                | 9 other                                                     |
| Z                           | 9 other                             | Y                                | 1 anaemia                   |                        | 6 clumsy child            | Y                              | 9 other                                                     |
| <b>B. Gastro-intestinal</b> |                                     |                                  | 2 thrombocytopenia          |                        | 7 skull deformity         | Z                              | 1 anorexia nervosa                                          |
| X                           | 1 chronic vomiting                  |                                  | 9 other                     |                        | 8 unconsciousness         |                                | 9 other                                                     |
|                             | 2 chronic diarrhoea                 | Z                                | 9 other                     |                        | 9 other                   | <b>P. General</b>              |                                                             |
|                             | 3 constipation/encopresis           | <b>G. Urinary tract</b>          |                             | Y                      | 9 other                   | X                              | 1 malaise/crying                                            |
|                             | 4 jaundice (excl. Neonatal)         | X                                | 1 incontinence/enuresis     | Z                      | 1 neurofibromatosis       |                                | 2 failure to thrive                                         |
|                             | 5 feeding probl./foodallergy        |                                  | 9 other                     |                        | 9 other                   |                                | 3 external malformations,<br>multiple congenital malformat. |
|                             | 6 abdominal pain                    | Y                                | 1 haematuria                | <b>L. Neonatology</b>  |                           |                                | 4 nearmissed SIDS/ALTE                                      |
|                             | 7 hepato/splenomegaly               |                                  | 2 proteinuria               | X                      | 1 jaundice                |                                | 5 other sudden death                                        |
|                             | 9 other                             |                                  | 9 other                     |                        | 2 prematurity/dysmaturity |                                |                                                             |
| Y                           | 9 other                             |                                  | 9 other                     |                        | 3 asphyxia                |                                |                                                             |
| Z                           | 9 other                             | Z                                | 9 other                     |                        | 6 adoption                |                                | 7 referral well baby clinic                                 |
|                             |                                     |                                  | 9 other                     | Y                      | 9 other                   |                                | 9 other                                                     |
|                             |                                     |                                  |                             |                        |                           | Y                              | 9 other                                                     |
|                             |                                     |                                  |                             |                        |                           | Z                              | 9 other                                                     |

C. Endocrine

- X 1 prem. Thelarche/puberarche
- 2 delayed puberty
- 3 short stature
- 4 tall stature
- 5 obesity
- 6 polyuria/polydipsia
- 7 undescended testes
- 9 other

Y 1 pos. screening CHT

- 9 other
- Z 1 rickets
- 9 other

D. Metabolic

- X 9 other
- Y 1 pos. screening PKU
- 9 other

H. Cardiacascular

- X 1 murmur
- 2 dysrhythmia
- 3 cyanosis
- 4 hypertension
- 9 other
- Y 9 other
- Z 9 other

I. Pulmonary

- X 1 dyspnoea/wheezing/cough
- 2 chronic cough
- 3 inspiratory stridor
- 4 bronchorrhoe
- 9 other
- Y 9 other
- Z 9 other

M. Skin/mucous membranes

- X 1 vaginal discharge
- 2 itching/urticaria
- 3 stomatitis
- 4 napkin rash
- 5 exanthema
- 9 other
- Y 9 other
- Z 1 atopic eczema
- 2 impetigo
- 3 scabies/pediculosis
- 9 other

Q

- X 1 review after discharge  
(hospitalised for other sub-  
specialist e.a. neonatology)
- X 2 problem patient
- X 3 consultation for other subspec.

R. Ear/nose/throat/eyes

- X 1 deafness/speech disorders
- 9 other
- Y 9 other
- Z 1 uveitis/chorioretinitis/iridocyclitis
- 9 other

## Appendix 2 Questionnaire Chapter 3.1 (in Dutch)

Participatie: O ja / O nee

Ingevuld door ☐ verpleegkundige/ ☐ onderzoeker/ ☐ ouder(s)

Datum en tijdstip bezoek:.....

Pidnummer.....

Geslacht: ☐ man / ☐ vrouw

Geboortedatum kind:.....

Geboorteland:.....

Nationaliteit:.....

Het kind werd verwezen door:

1. ☐ huisarts
2. ☐ eigen initiatief
3. ☐ GGD
4. ☐ andere arts in ander ziekenhuis
5. ☐ dienstdoende arts (-assistent) SKZ
6. ☐ anders, nl.....

Indien op eigen initiatief, is er wel eerder contact geweest met de huisarts of een andere arts?

1. O nee
2. O ja de huisarts, datum.....
3. O ja nl..... datum.....

Plaats van het kind in het gezin: Gezinsgrootte:.....kinderen  
 .....volwassenen

Religie kind:

1. ☐ Christendom
2. ☐ Islam
3. ☐ Hindoeïsme
4. ☐ Boeddhisme
5. ☐ anders, nl.....
6. ☐ geen

Wordt het kind met behulp van een of meer alternatieve geneeswijzen behandeld?

(bv. Homeopathie, acupunctuur, gebedsgenezing, kruidenkuur, dieet)

1. O nee
2. O zo ja, door.....

|                                                                               | <u>Moeder:</u>           | <u>Vader:</u>            |
|-------------------------------------------------------------------------------|--------------------------|--------------------------|
|                                                                               | .....                    | .....                    |
| <b>Geboorteland:</b>                                                          |                          |                          |
| <b>Burgelijke staat:</b>                                                      |                          |                          |
| 1. gehuwd                                                                     | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. gescheiden                                                                 | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. samenwonend                                                                | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. weduwe/ weduwnaar                                                          | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. alleenstaand                                                               | 5. <input type="radio"/> | 5. <input type="radio"/> |
| <b>Arbeidsstatus:</b>                                                         |                          |                          |
| 1. betaald werk                                                               | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. werkloos met uitkering                                                     | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. arbeidsongeschikt                                                          | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. pensioen / vut                                                             | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. thuis zonder uitkering (huisman/vrouw)                                     | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. student                                                                    | 6. <input type="radio"/> | 6. <input type="radio"/> |
| <b>Hoogst genoten opleiding:</b>                                              |                          |                          |
| 1. geen onderwijs genoten                                                     | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. lager onderwijs                                                            | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. lager beroepsonderwijs ( LTS, LEAO, huishoudschool etc)                    | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. algemeen middelbaar onderwijs ( LAVO, ULO, MULO/MAVO)                      | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. middelbaar beroepsonderwijs (MTS, MEAO, VHBO, kleuterkweekschool)          | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. hoger algemeen voortgezet onderwijs ( HBS, HAVO, VWO, Atheneum/ gymnasium) | 6. <input type="radio"/> | 6. <input type="radio"/> |
| 7. hoger beroepsonderwijs ( HTS, HEAO, PABO, sociale academie etc)            | 7. <input type="radio"/> | 7. <input type="radio"/> |
| 8. academische opleiding                                                      | 8. <input type="radio"/> | 8. <input type="radio"/> |
| 9. nog in opleiding, nl.....                                                  | 9. <input type="radio"/> | 9. <input type="radio"/> |
| <b>Inkomen: netto per maand (gulden).</b>                                     |                          |                          |
| 1. geen inkomen                                                               | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. minder dan fl 1000                                                         | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. fl 1000 tot fl 1400                                                        | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. fl 1400 tot fl 1900                                                        | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. fl 1900 tot fl 2500                                                        | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. fl 2500 tot fl 3500                                                        | 6. <input type="radio"/> | 6. <input type="radio"/> |
| 7. meer dan fl 3500.                                                          | 7. <input type="radio"/> | 7. <input type="radio"/> |
| Hoeveel mensen zijn hiervan afhankelijk?.....                                 |                          |                          |
| <b>Religie:</b>                                                               |                          |                          |
| 1. Christendom                                                                | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. Islam                                                                      | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. Hindoeïsme                                                                 | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. Boeddhisme                                                                 | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. anders, nl.....                                                            | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. geen                                                                       | 6. <input type="radio"/> | 6. <input type="radio"/> |



**Appendix 3    questionnaire chapter 2.4 and 3.2 (in Dutch)**

Participatie: O ja / O nee                      Ingevuld door O verpleegkundige/ O onderzoeker/ O ouder(s)

Datum en tijdstip bezoek:.....

Pidnummer:.....

Geslacht: O man / O vrouw

Geboortedatum kind:.....

Geboorteland:.....

Nationaliteit:.....

Het kind werd verwezen door:

1.    O    huisarts
2.    O    kinderarts in ander ziekenhuis
3.    O    andere arts in een ander ziekenhuis
4.    O    anders, nl.....

Is het kind al eerder voor hetzelfde probleem bij een andere kinderarts geweest?

1.    O    nee
2.    O    ja

Indien ja, is dit een second opinion?

1.    O nee, want.....
2.    O ja

Hoe lang bestaan de klachten van uw kind waarvoor u nu komt?.....

Wat vindt u in het algemeen van uw gezondheid van uw kind?

1.    O goed
2.    O redelijk
3.    O matig
4.    O slecht

Plaats van het kind in het gezin:

|                                                                               | <u>Moeder:</u>           | <u>Vader:</u>            |
|-------------------------------------------------------------------------------|--------------------------|--------------------------|
|                                                                               | .....                    | .....                    |
| <b>Geboorteland:</b>                                                          |                          |                          |
| <b>Burgelijke staat:</b>                                                      |                          |                          |
| 1. gehuwd                                                                     | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. gescheiden                                                                 | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. samenwonend                                                                | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. weduwe/ weduwnaar                                                          | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. alleenstaand                                                               | 5. <input type="radio"/> | 5. <input type="radio"/> |
| <b>Arbeidsstatus:</b>                                                         |                          |                          |
| 1. betaald werk                                                               | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. werkloos met uitkering                                                     | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. arbeidsongeschikt                                                          | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. pensioen / vut                                                             | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. thuis zonder uitkering (huisman/vrouw)                                     | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. student                                                                    | 6. <input type="radio"/> | 6. <input type="radio"/> |
| <b>Wat is of was uw beroep?</b>                                               | .....                    | .....                    |
| <b>Hoogst genoten opleiding:</b>                                              |                          |                          |
| 1. geen onderwijs genoten                                                     | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. lager onderwijs                                                            | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. lager beroepsonderwijs ( LTS, LEAO, huishoudschool etc)                    | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. algemeen middelbaar onderwijs ( LAVO, ULO, MULO/MAVO)                      | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. middelbaar beroepsonderwijs (MTS, MEAO, VHBO, kleuterkweekschool)          | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. hoger algemeen voortgezet onderwijs ( HBS, HAVO, VWO, Atheneum/ gymnasium) | 6. <input type="radio"/> | 6. <input type="radio"/> |
| 7. hoger beroepsonderwijs ( HTS, HEAO, PABO, sociale academie etc)            | 7. <input type="radio"/> | 7. <input type="radio"/> |
| 8. academische opleiding                                                      | 8. <input type="radio"/> | 8. <input type="radio"/> |
| 9. nog in opleiding, nl.....                                                  | 9. <input type="radio"/> | 9. <input type="radio"/> |
| <b>Inkomen: netto per maand (gulden).</b>                                     |                          |                          |
| 1. geen inkomen                                                               | 1. <input type="radio"/> | 1. <input type="radio"/> |
| 2. minder dan fl 1000                                                         | 2. <input type="radio"/> | 2. <input type="radio"/> |
| 3. fl 1000 tot fl 1400                                                        | 3. <input type="radio"/> | 3. <input type="radio"/> |
| 4. fl 1400 tot fl 1900                                                        | 4. <input type="radio"/> | 4. <input type="radio"/> |
| 5. fl 1900 tot fl 2500                                                        | 5. <input type="radio"/> | 5. <input type="radio"/> |
| 6. fl 2500 tot fl 3500                                                        | 6. <input type="radio"/> | 6. <input type="radio"/> |
| 7. meer dan fl 3500.                                                          | 7. <input type="radio"/> | 7. <input type="radio"/> |
| <b>Hoeveel mensen zijn hiervan afhankelijk?.....</b>                          | .....                    |                          |

|                                                                    |                       |                       |
|--------------------------------------------------------------------|-----------------------|-----------------------|
| Wat is of was uw beroep?                                           | Moeder                | Vader                 |
|                                                                    | .....                 | .....                 |
| Wat is uw leeftijd?                                                |                       |                       |
|                                                                    | .....                 | .....                 |
| Hoe lang verblijft u in Nederland indien u hier niet bent geboren? |                       |                       |
|                                                                    | .....                 | .....                 |
| Beheerst u de Nederlandse taal?                                    |                       |                       |
| <input type="radio"/> goed                                         | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> redelijk                                     | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> matig                                        | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> slecht                                       | <input type="radio"/> | <input type="radio"/> |



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## DANKWOORD

Wat ooit begon als een pilotstudy voor 5 maanden is uiteindelijk een promotie onderzoek geworden van 3 jaar. En ja, nu is het al zover, het boekje is af. Als alles op papier staat komt tenslotte nog het dankwoord. Op dat moment blik je weer eens terug op vele momenten van onderzoek doen. Dan beseft je hoeveel mensen betrokken zijn geweest bij dit onderzoek. Daarom wil ik iedereen die op welke wijze dan ook een bijdrage heeft geleverd aan dit onderzoek bedanken. Een paar namen noem ik in het bijzonder.

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---

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## CURRICULUM VITAE

Carola Bouwhuis was born in Rotterdam, the Netherlands, on June 28<sup>th</sup>, 1973. She passed her secondary school exam (VWO) in 1992 at the "Christelijke Scholengemeenschap Comenius" in Capelle aan den IJssel. In 1992 she started her medical training at the Erasmus University Rotterdam. From February 1996 till June 1997 she participated in a research project regarding 22q11 deletions (Sphrintzen Syndrome) in children with cardiac output malformations at the department of Cardiology in the Sophia Children's Hospital. (Drs I.M.E Frohn and Prof.dr.J. Hess). In that same time she went to Finland for one month for a training in neonatology and paediatric cardiology at the University Hospital of Helsinki. After obtaining her medical degree in 1999, she started with a research project for 5 months "Health-problems in children in multicultural Rotterdam" at the outpatient department of general paediatrics of the Sophia Children's Hospital, under the supervision of dr. H.A. Moll. This 5 months became almost 3 years and the studies performed during this period are described in this thesis. In the same period she worked part-time at the outpatient department of paediatrics (including the emergency department) of the Sophia Children's Hospital as a junior registrar (AGNIO). (Head Prof.dr. A.J. van der Heijden). In May 2002, she started to work as a junior registrar (AGNIO) at the Sophia Children's Hospital/Erasmus MC Rotterdam (head prof dr H.A. Büller, tutor prof.dr. A.J. van der Heijden).

Carola Bouwhuis werd geboren op 28 juni 1973 te Rotterdam. In juni 1992 werd het eindexamen van het VWO behaald aan de 'Christelijke Scholengemeenschap Comenius' te Capelle aan den IJssel. In 1992 begon zij met de studie geneeskunde aan de Erasmus Universiteit van Rotterdam. Tijdens deze studie werkte ze als lid van het medisch studenten team op de afdeling neurochirurgie van het Dijkzigt Ziekenhuis te Rotterdam. Van februari 1996 tot juni 1997 werkte ze in het kader van haar keuze-onderzoek mee aan een onderzoek betreffende 22q11 deleties (Sphrintzen Syndroom) bij kinderen met aangeboren hartafwijkingen van het outflow gebied (drs. I.M.E. Frohn en prof.dr. J. Hess). In deze zelfde periode liep ze 1 maand stage op de afdeling neonatologie en kindercardiologie van het Academisch Ziekenhuis Helsinki in Finland. Na in juni 1999 het arts-examen behaald te hebben, startte zij voor 5 maanden aan een onderzoek op de afdeling kindergeneeskunde, subafdeling polikliniek algemene kindergeneeskunde van het Sophia Kinderziekenhuis te Rotterdam, onder begeleiding van dr. H.A. Moll. Dit onderzoek betrof de evaluatie naar verschillen in gezondheidsproblemen gepresenteerd op de acute hulp tussen kinderen van verschillende etnische afkomst. Deze 5 maanden werden uiteindelijk 3 jaar. Studies met betrekking tot sociaal demografische gegevens van kinderen, gepresenteerde problemen en het gebruik van de poliklinische setting werden verricht. De resultaten van de studies zijn beschreven in dit proefschrift. Tijdens de promotie periode was zij gedurende 1 jaar tevens parttime werkzaam als arts-assistent (AGNIO) op de afdeling acute hulp en polikliniek algemene kindergeneeskunde van het Sophia Kinderziekenhuis. In mei 2002 is zij als arts-assistent (AGNIO) begonnen op de afdeling kindergeneeskunde van het Sophia Kinderziekenhuis/ Erasmus MC Rotterdam (hoofd prof dr H.A. Büller, opleider prof.dr. A.J. van der Heijden).

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