MASTERTHESIS

THE INFLUENCE OF PARENTING AND RISK FACTORS ON THE FREQUENCY OF UPPER RESPIRATORY TRACT INFECTIONS IN CHILDREN AGED 1 – 4.

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Abstract

Background

Upper respiratory tract infection [URTI] is the most frequently occurring infectious disease in childhood and among the top fifteen reasons for children having to visit a physician. The current social and environmental system of children can be seen as an important subject to explain causes of health problems, in which parenting behaviors and risk factors are of high importance. Still there is limited research performed about the role and influences of parenting in combination with several risk factors on recurrent URTI's in young children. In this research the subjects parenting and risk factors both are included. The main question central in this study was:

How are parenting and risk factors associated with the frequency of upper respiratory tract infections of children in the age of 1 till 4 years?

Methods

To answer this question, a case-control study was performed. Two groups of parents were approached for participation: the first group were parents of children who were considered to suffer from recurrent URTI's and the second group consisted of parents with children who were considered to not suffer from recurrent URTI's or other chronic diseases. In total 63 participants participated this study, 31 parents participated the URTI group and 32 parents took part in the control group. All parents filled in a symptoms and infections diary and an online questionnaire with questions about demographics and parenting.

Results

Demographics consisted out of child demographics, family situation and parental demographics. Two characteristics which were, number of siblings and birth order, differed significant between the groups. The results showed no significant differences between both groups in the Parenting dimensions. The results about the descriptive statistics of URTI demonstrated that infections and symptoms differed significant between the groups as expected. Results about the risk factors showed that birth order differed significant between both groups.

Conclusion

Overall, the results of our study confirmed that there were no significant differences between both groups in the Parenting dimensions. However, the aspect structure scored low in both groups and should be further analysed to increase knowledge about the positive and negative influence on children with recurrent URTI's. Another interesting finding were that the characteristics, number of siblings, number of persons at home and the risk factor birth order, differed significant between the groups.

CONTENT

ABSTRACT **1**

INTRODUCTION **3**

METHODS **6**

RESULTS **10**

DISCUSSION **16**

REFERENCES **16**

APPENDICES **23**

APPENDIX A. INFORMATION LETTER DAY CARE CENTRE, HOST PARENT AND CHILDREN'S HEALTH CLINIC 24
APPENDIX B. INFORMATION LETTER PARTICIPANTS 26
APPENDIX C. INFORMED CONSENT 28
APPENDIX D. DAIRY SYMPTOMS AND INFECTIONS 29
APPENDIX E. ACCESS CODE ONLINE QUESTIONNAIRE 32
APPENDIX F. QUESTIONNAIRE 33

Introduction

In 19th century acute respiratory infection [ARI] was the most important cause of childhood death in Europe. The decline in the numbers of the death rate through ARI became obvious in the 1950s when antibiotics became available (Garenne, Ronsmans & Campbell, 1992). Acute respiratory infections can be divided in lower respiratory tract infections [LRTI] and upper respiratory tract infections [URTI]. Symptoms of LRTI's include bronchitis and bronchiolitis, with symptoms of dyspneu, coughs, fever and fatigue. URTI's include coughs, fever, cold nose, runny nose or earache. Medication for symptoms of URTI's are usually given to alleviate the symptoms and used as a response of parents out of fear for a serious deterioration (World Health Organization [WHO], 1984; WHO, 1991; WHO, 2001). Nowadays a lot more knowledge and information is available about URTI.

An URTI is the most frequently occurring infectious disease in childhood (Gruber, Keil, Kulig, Roll, Wahn, Wahn, & MAS-90 Study group, 2008; Shlomo, Adi & Eliezer, 2003). On average, a child has about six to eight periods of URTI every year, each lasting from seven to nine days (Taylor, Weber, Martin, McCarty & Englund, 2010; Jesenak, Ciljakova, Rennerova, Babusikova & Banovcin, 2011). Pre-school children are more susceptible for URTI's than older children, adolescents and adults explainable by being not yet full-grown and their immature immune system. The incidence of infections diminishes when a child grows and around the fifth or sixth year of life the immune system accomplishes the optimal protective level (Rovers, Balemans, Sanders, van der Ent, Zielhuis & Schilder, 2006; Schaad & Principi, 2012). URTI's are mainly caused by viruses (80-90%), mostly rhinoviruses, still a virus cannot always be traced (Shlomo, et al., 2003; Schaad, 2005; Lodes, et al., 2007). When the immune system is full-grown the frequency of URTI's declines in most children, but some children remain having frequent or prolonged complaints.

URTI's are usually mild and self-limiting, and there is no need for treatment. Still, parents worry about their children when illness arises. Research of Gergen (2001) does support the view that diseases of the respiratory tract are among the top fifteen reasons for children having to visit a physician. Parents are involved the most during their child's development and they may be insecure about their way of acting. For example, parents could have anxieties about failing to recognise a serious illness by their child. Two factors turn out to primary shape these responses. First, the feelings of a parent's personal control while confronted with illnesses of the child and second the perceived threat through these illnesses (Kai, 1996). When parents visit the general paediatrician, they want reassurance that their child does not have a serious disease and prevention of future complications (Vinker, Ron & Kitai, 2003). In former times, the general paediatrician frequently prescribed antibiotics to children with URTI's. Stott (1979) states that prescribing has started with the belief that antibiotics may shorten the illness, reduce symptoms and prevent from new complications. Nowadays it is clear that URTI's mostly are viral and that antibiotics do not cure URTI's (Vinker, et al., 2003). Still, there is not yet a clear approach which contributes to the health of children with recurrent URTI's.

Some risk factors which could increase the frequency of URTI's are already known including, passive smoking and birth order. Some factors are still inconsistent for example the influence of child day care. Passive smoking is the exposure to cigarette smoke and exhaled smoke from smokers (Shiva, Nasiri, Sadeghi & Paydab, 2003). The study of Cheraghi & Salvi (2009) claims that passive exposure to tobacco smoke is a significant risk factor for respiratory tract infections by young children. In which smoking habits of the mother appears to be of most influence (Shiva, et al., 2003). URTI's have been found to be associated with the amount of smokers in the house and the amount consumed cigarettes in presence of the children (Jin & MacKay-Rossignol, 1993). The second risk factor is birth order and

refers to the order a child is born in their family. The study of Koopman, et al., (2001) claims that household size and having older siblings increases the risk in the development of URTI's. When a younger child only has one older sibling, it is already a strong risk factor. Findings about attending a day care centre are still inconsistent. Day care attendance is associated with increased incidence of respiratory infections at preschool age, because transmission of infectious diseases happen easily (De Hoog, et al., 2014). But Brady (2005) appoints that the presence of child day care is associated with a decrease of the frequency of URTI's. When one or all of the risk factors are present, it increases the vulnerability of a child and may result in developing more URTI's.

Besides the aforementioned risk factors also parenting has been thought to be of influence on the number and seriousness of URTI. Children with recurrent illnesses are a great concern for their parents, which may ensure that URTI have impact on parenting (Serbin, Hubert, Hastings, Stack & Schwartzman, 2014). The family belongs to the microsystem, in which parents and child wellbeing are of direct influence (Bronfenbrenner, 1979; Watling & Neal, 2013). At this level, relationships have impact in two directions; away from and towards the child. One can imagine that when the child is suffering from an illness and cannot fall asleep, parents may be less strict with their rules and allow the child to stay up a little longer, whereby the child does not gain its required amount of sleep.

Some studies did find some associations about effects of parenting on child well-being. Serbin, et al., (2014) pointed out that parenting behaviours including use of structure and behavioral control might lower health risks of children. For example through avoiding exposure to infections, minimising injuries and decreasing stress, the well-being and long-term maturation of children are affected through parenting behaviors. Additionally Davis, Delamater, Shaw, La Greca, Eidson, Perez-Rodriguez & Nemery (2001) found that characteristics of warmth and low levels of harsh control were associated with better adherence in children with diabetes. Even as Rollins & Thomas (1979) who relate parental warmth with positive developmental effects and good behavior in multiple areas of children's social ability. As well as parenting influences several aspects of illness management and health promoting behaviour, it in turn can negatively affect children's health outcomes. In which parental coercion, such as control characterized by harshness and authority assertion, has been associated with poorer social competence and adherence in children (Rollins & Thomas, 1979). The well-being of children could also be more at risk when parents are unpredictable, controlling, unresponsive, unconcerned and rigid (Schor, 2003).

Parenting consists of various dimensions and is widely distinguished in research. From our view we believe that support, stimulation, structure, harsh discipline and positive discipline are most important in early childhood. Support can be defined as parental involvement by positive parent-child interaction moments and how sensitive and responsive parents are to their child's signals and needs. Stimulation can be defined as to which extent parents involve their child in learning activities, through activities, exposure to new activities and the presence of toys. Structure refers to the provided structured environment by parents and offering consistency and predictability during comparable moments or tasks. The ways in which parents organize their children's environment to achieve their desired childrearing goals, and that includes aspects of parent behavior such as consistency, organization, and proactive strategies, such as providing opportunities and modelling. Structured homes are characterized by an organized environment in which parents provide clear rules, boundaries, and support and guidance for following the rules, which are consistently enforced (Hughes, O'Connor & Power, 2008). In the research of Spagnola & Fiese, 2007 and Van der Gaag & van Droffelaar, 2012 both agree that daily structure and family functioning may be impeded for a long period when the child suffers from URTI. Positive discipline can be described as parents who praise the

child's well behavior and provide an explanation when specific behavior is unwanted. Harsh behavior can be defined as when parents raise their voice, reduced affection or attention to child's disruptive behavior or hard-handed behavior towards the child (Verhoeven, et al., 2007). Up to now it is not known if and how these Parenting dimensions are related to chronic illness.

A major difficulty are the several aspects that could play a role in the development of recurrent URTI's. The aforementioned parenting aspects and risk factors may all influence the number and seriousness of URTI's. There is limited research performed about the role and influences of parenting in combination with several risk factors on recurrent URTI's in young children. In this research the Parenting dimensions and risk factors both are included. The main question central in this study will be:

How are parenting and risk factors associated with the frequency of upper respiratory tract infections of children in the age of 1 till 4 years?

Based on the main questions three sub questions are formulated:

1. To what extent are the parenting aspects support, stimulation, structure and discipline positive or negative associated with the frequency of URTI?
2. Are the risk factors passive smoking, birth order and child day care attendance related to the frequency of upper respiratory tract infections?
3. What can parenting aspects add to the prediction of URTI, when controlled for other known risk factors?

Methods

Design

The present study was a case-control study and conducted at ZGT Hengelo The Netherlands, from December 2016 to March 2017. A case-control study can be defined as a study of individuals with a specific condition or illness (the cases), chosen to compare with a series of individuals who do not have the condition or illness (the controls) (Schlesselman, 1982). In this study, the cases were children with recurrent URTI's and the controls were children without recurrent URTI's. Both groups were compared with regard to differences in aspects of parenting and risk factors and its influence on the physical health of the children.

Participants

The participants of this study were 63 parents of preschool children aged 1 to 4 years. Two groups of parents were approached for participation: the first group (n= 31) were parents of children who were considered to suffer from recurrent URTI's. Recurrent URTI's were defined as having more than 1 URTI a month for more than 3 months in a row or who visited the general paediatrician frequently for this reason. The first group will be further described as the upper respiratory tract infections (URTI) group. The second group (n= 32) consisted of parents with children who were considered to not suffer from recurrent URTI's or other chronic diseases. Exclusion criteria for both groups were; anatomic ear, nose and throat [ENT] disorders, Down syndrome, immunological disorders and genetic disorders. All were confirmed by the parents of the child. The first group of parents (URTI group) were recruited during their visits at the general paediatrician and the ear, nose and throat [ENT] department. The researcher approached the parents in the waiting room of the department paediatrics and ENT before or after their appointment with the physician. For the second group of parents (control group), the researcher contacted multiple organisations with an information letter (see appendix A) about the study for permission. After permission, parents were approached for participation at child day care centres, kindergartens and children's health clinic.

Procedures

After the parents were recruited, explanation about participation to the study (appendix B) followed, the in- and exclusion criteria were checked and parents signed a letter of consent (appendix C). Subsequently, the parent took the symptom diary/infections (appendix D), the access code (appendix E) to fill in the online questionnaire and a return envelope with them. The researcher noted the mail address of the parents to send the online questionnaire later on.

When parents had started with the diary, the researcher sent a link to the online questionnaire by mail. After parents returned the diary and had filled in the online questionnaire their participation to the study was completed. The returned diary was addressed to the researcher and delivered at the department of paediatrics at ZGT.

Measurements

Frequency and intensity of URTI

Parents were asked to keep up a symptoms and infections diary for a period of 30 days. Each day, parents were asked to fill in if their child had any symptoms of URTI (yes/no). If the child had experienced any symptoms, the parents noted which of the following symptoms and infections were present (yes/no for every symptom): cough, fever (febrile temperature is defined as ≥ 38.5 °C), cold nose, runny nose, sore throat, wheezy breathing and earache. In addition, parents were asked if they had visited the paediatrician or general practitioner (yes/no), if antibiotics were taken (yes/no) and if one of the parents stayed at home to look after the sick child (yes/no).

Based upon the completed diaries, the frequency of URTI was assessed by total number of infection days. An infection day was defined when at least two or more symptoms occurred. The total number of infection days was counted for each participating child (0-30 days) (Chatchatee, et al., 2014). Besides infection days, symptom-free days were counted. A symptom-free day was defined as a day without any of the aforementioned symptoms. The total number of symptom-free days could also range from (0-30). With regard to the frequency of infection episodes the total number of infection episodes was assessed. An infection episode (0-4) was defined as having at least 2 subsequent days of an infection or longer. Duration of symptoms was defined by the total days of a symptoms presence. In addition for every symptom, the total number of days (0-30) was counted.

Demographics

The questionnaire consisted of multiple questions related to the child's characteristics. Parents filled in the child's gender (boy or girl), age in months, pregnancy duration in weeks, child-birth vaginal (yes/no), birthweight in grams, first food type with answer possibilities 'breast or bottle feeding' and duration of breastfeeding in months. Multiple questions were asked about the family situation. Parents filled in the number of persons at home and the number of siblings. Regarding marital status answer possibilities were 'living together and in a relationship or married, living together without a relationship or married, divorced or single parent or living together with a new partner'.

Demographics concerning the parents themselves were age (in years), education level with answering options 'Primary Education, Secondary Education, Intermediate Vocational Education, Higher Professional Education or Science Education'. Regarding current job situation answer possibilities were 'temporary part time job, temporary fulltime job (> 32 hours per week), permanent job part time, permanent job fulltime (> 32 hours per week), unemployed, looking for a job, study, conscious at home or long-term illness'. Answer options regarding education level and current job situation were regrouped afterwards. The new variables regarding education level consisted of 'both Secondary Education [SE] or both Intermediate Vocational Education [IVE], both Higher Professional Education [HPE] or both Science Education [ScE], one parent IVE and one parent higher, both parents HPE or higher'. The answer possibilities concerning current job situation were regrouped in 'both fulltime, one parent fulltime and one parent parttime, both parttime, one parent at home fulltime'.

Parenting

To ask parents questions about parenting the questionnaire 'Comprehensive Early Childhood Parenting Questionnaire (CECPAQ)' was used. The CECPAQ gives insight in multiple parenting aspects concerning

children in the age of 1 to 4 years (appendix F). The questionnaire is a 54-item measure, for our study we use five aspects: support, stimulation, structure, harsh discipline and positive discipline.

Support (13 items, α = 0,87) refers to which extent parents are supportive, agree to and are concessive to the child's needs and it consists of the subjects sensitivity, responsiveness and affection. For example: "When my child is having a hard time, I am able to help him/her". All items are assessed on a 6-point Likert scale, 1 = never and 6 = always. The total score of the subscale support was computed through summing up the scores of the thirteen items, with a minimal score of 13 points and a maximal score of 78 points. A high score signifies a higher grade of support and a low score signifies a lower grade (Verhoeven, Deković, Bodden & van Baar, 2016). Every parenting scale is computed similarly only the minimal and maximal score of points are different for each scale.

Stimulation (13 items, α = 0,88) refers to which extent parents involve their child in learning activities. Included subjects are activities, exposure and toys, for example: "I take my child outside to play, walk, or cycle". All thirteen items are assessed on a 6-point Likert scale, 1 = never and 6 = always. The score of the subscale stimulation is computed by summing up the scores of the thirteen items, with a minimal score of 13 points and a maximal score of 78 points.

Structure (8 items, α = 0,85) consists of how parents take care of an appropriate environment and external structure for their child. Three subjects are included: consistency, laxness and over reactivity. Four items are estimated on a 6-point Likert scale, 1 = never and 6 = always. Eight items were rated by a 6-point scale between two statements. The two statements are formulated by one effective and one ineffective response to the submitted parenting situation. For example: "When my child misbehaves.. (A) I handle it without getting upset; (B) I get so frustrated or angry that my child can see I am upset" (1= statement A fits the most and 6= statement B fits the most). The aspect structure is computed by summing up the scores of the twelve items, with a minimal score of 12 points and a maximal score of 72 points.

Harsh discipline (11 items, α = 0,82) measures to what extent parents use harsh, assertive disciplinary techniques, including three subjects, psychological control, physical punishment and verbal punishment. Eleven items are assessed on a 6-point Likert scale, 1 = never and 6 = always and one item was rated by a 6-point scale between two statements, for example: "When my child misbehaves.. (A) I raise my voice or yell; (B) I speak to my child calmly" (1 = statement A fits the most and 6 = statement B fits the most). The subscale harsh discipline is computed by summing up the scores of the twelve items, with a minimal score of 12 points and a maximal score of 72 points.

Positive discipline (4 items, α = 0,85) indicates how parents use disciplinary techniques to support positive child behavior, through the subjects induction and praising. Four items are assessed on a 6-point Likert scale, 1 = never and 6 = always, for example the question: "I explain to my child why certain rules must be followed". The score of the aspect positive discipline is computed through summing up the scores of the four items, with a minimal score of 4 points and a maximal score of 24 points. The online questionnaire was pre-tested with parents to determine if the questions were understood as they were intended.

<u>Known risk factors</u>

Included risk factors were birth order, child day care attendance and passive smoking. The variable birth order consisted of the answer options only child, youngest child, middle child and oldest child. The answer options youngest child and middle child were regrouped before the analyses were carried out, into the item having older siblings. Regarding child day care parents could answer 'no day care, 1 day a week, 2 days a week, 3 days a week, 4 days a week or 5 days a week'. Passive smoking included

if mother had smoked during pregnancy (yes/no) and the current smoking status of parents (yes/no). The answer options regarding current smoking status was regrouped afterwards into 'both parents smoke, one of the parents smokes and both parents do not smoke'.

Data analysis

For the first and second question, descriptive statistics of the study group and parenting characteristics were explored. Continuous variables were presented as mean with standard deviation (SD), categorical variables were presented as number with corresponding percentage. To analyse differences between the URTI group and control group Chi-square test or Fisher's Exact Test when appropriate were applied for categorical variables (gender, child-birth, breastfeeding, birth order, number of persons at home, number of siblings, family situation, level of education, current job situation, smoking during pregnancy and current smoking status). The Independent Sample T-test was used to analyse differences between both groups for the following continuous variables: age of the child, parents age, pregnancy duration and birth weight.

Also descriptive statistics of the URTI characteristics were examined. Variables were presented as median with interquartile range (IQR) in case of non-parametric data. The Mann-Whitney U test was used to analyse differences between both groups for continuous variables with non-parametric data (number of infection days, number of symptom-free days and number of infections episodes, number of days of cough, fever (≥ 38.5 °C), cold nose, runny nose, sore throat, wheezy breathing and earache).

To answer the third question, Spearman's rho was performed when one of the variables is not normally distributed. The analysis were carried out for the total group whether parenting aspects were significantly associated with the URTI characteristics. We intended to do a regression analysis however based on the results, there was no reason for testing regression analysis because of the absence of strong relations between the variables.

Results

Description of the study group

In Table 1, we present the characteristics of the study group. The mean age of the total group of children was 32,9 months (*SD* = 12,7) and 56% of the children were boys (*n* = 35). In the majority of children, the family situation consisted of four persons (62% of the total group, *n* = 39) and parents were living together in a relationship or were married (94% of the total group, *n* = 59).

Table 1.
Characteristics of the study group

Demographics	Total group (N=63)		URTI group (N=31)		Control group (N=32)		P-value
Child							
Gender, n (%) Boy	35	(56)	19	(61)	16	(50)	0,367[1]
Age in months, mean (SD)	32,9	(12,7)	34,7	(12,8)	31,1	(12,6)	0,272[2]
Duration pregnancy in weeks, mean (SD)	38,8	(1,9)	38,5	(2,3)	39,2	(1,4)	0,113[2]
Child-birth vaginal, n (%)	52	(84)	23	(68)	29	(91)	0,135[1]
Birthweight in kilogram, mean (SD)	3,4	(0,6)	3,3	(0,7)	3,4	(0,5)	0,362[2]
Breastfeeding, n (%)	37	(59)	16	(52)	21	(66)	0,259[1]
Duration of breastfeeding in months, mean (SD)	3,7	(4,3)	3,4	(4,4)	4,0	(4,4)	0,519[3]
Family situation							
Number of persons at home, n (%)							
Two persons	1	(2)	0	(0)	1	(3)	0,014*[3]
Three persons	18	(29)	4	(13)	14	(44)	
Four persons	39	(62)	24	(77)	15	(47)	
Five persons	4	(6)	2	(7)	2	(6)	
Six person	1	(2)	1	(3)	0	(0)	
Number of siblings, n (%)							
No siblings	18	(29)	4	(13)	14	(44)	0,019*[3]
One sibling	40	(64)	24	(77)	16	(50)	
Two siblings	4	(6)	2	(7)	2	(6)	
Three siblings	1	(2)	1	(3)	0	(0)	
Birth order, n (%)							
Only child	18	(29)	5	(16)	13	(41)	0,037*[1]
having older siblings	29	(46)	19	(61)	10	(31)	
Oldest child	16	(25)	7	(23)	9	(29)	
Family situation, n (%)							
Parents living together (relationship or married)	59	(94)	29	(94)	30	(94)	0,492[3]
Parents living together (without relationship)	1	(2)	1	(3)	0	(0)	
Divorced or single parent	3	(5)	1	(3)	2	(6)	
Child day care attendance, n (%)							
No day care	14	(23)	9	(30)	5	(16)	0,486[3]
1 day a week	11	(18)	5	(17)	6	(19)	
2 days a week	13	(21)	5	(17)	8	(25)	
3 days a week	13	(21)	4	(13)	9	(28)	
4 days a week	8	(13)	5	(17)	3	(9)	
5 days a week	3	(5)	2	(7)	1	(3)	

1= group differences were tested with Chi-Square Test; 2= group differences were tested with Independent Sample T-test; 3= group differences were tested with Fisher's Exact Test.
* P-value is significant at the 0,05 level (2-tailed).

No differences were found in the distribution of gender and age of the child between the groups. Most of the child-births were vaginal and the mean birthweight did not differ between the groups. The comparison of the URTI group with the control group showed a significant difference in the number of persons at home. Between both groups there was a significant difference in the number of persons at home (p = 0,014). In the majority of children of the URTI group, the family situation consisted of four or more persons. The majority of children of the control group consisted out three or four persons at home.

Also there was a significant difference between both groups in the number of siblings. 77% of the children of the URTI group had one sibling (*n* = 24) and 50% (*n* = 16) of children in the control group had one sibling and 44% (*n* = 16) had no siblings.

Known risk factors

The risk factor birth order showed a significant difference between both groups (p = 0,037). No significant differences were found in the variables child day care attendance, smoking during pregnancy and current smoking status (Table 1 and 2).

Table 2.
Characteristics of parents of the study group

Demographics	Total group (N=63)		URTI group (N=31)		Control group (N=32)		P-value
Average age of both parents in years, mean (SD)	33,8	(5,3)	33,4	(4,7)	34,2	(5,9)	0,442[1]
Level of education, n (%)							
Both SE or both IVE	1	(2)	0	(0)	1	(3)	0,060[2]
Both HPE or both ScE	2	(4)	0	(0)	2	(7)	
One parent IVE and one parent higher	33	(58)	18	(69)	15	(48)	
Both parents HPE or higher	21	(37)	8	(31)	13	(42)	
Current job situation, n (%)							
Both fulltime	9	(16)	2	(23)	7	(8)	0,160[2]
One parent fulltime and one parent parttime	43	(78)	21	(88)	22	(71)	
Both parttime	2	(4)	0	(0)	2	(2)	
One parent at home fulltime	1	(2)	1	(4)	0	(0)	
Smoking during pregnancy, n (%)	7	(11)	5	(16)	2	(6)	0,269[2]
Current smoking status, n (%)							
Both parents smoke	8	(13)	6	(20)	2	(6)	0,310[2]
One of the parents smokes	11	(18)	5	(17)	6	(19)	
Both parents do not smoke	43	(69)	19	(63)	24	(75)	

Note: SE= Secondary Education; IVE= Intermediate Vocational Education; HPE= Higher Professional Education; ScE= Science Education.
1= group differences were tested with Independent Sample T-test; 2= group differences were tested with Fisher's Exact Test.
* P-value is significant at the 0,05 level (2-tailed).
** P-value is significant at the 0,01 level (2-tailed).

Descriptive statistics of URTI

The results about the descriptive statistics of URTI (Table 3) demonstrated that infections and symptoms differed significant between the groups as expected. Children of the URTI group had a higher frequency of infection days and infection episodes. Also the number of days with symptoms cough, fever (≥ 38.5 °C), cold nose, runny nose and earache were significant higher in the URTI group.

Table 3.
Descriptive statistics of URTI

	Total group (N=63)		URTI group (N=31)		Control group (N=32)		P-value
	median	(IQR)	median	(IQR)	median	(IQR)	
Frequency in days (0-30)							
Presence of							
infection days	5,5	(0,0-16,0)	16,0	(12,0-20,0)	0,0	(0,0-3,0)	<0,001**[1]
symptom-free days	18,5	(10,0-29,0)	10,0	(5,0-14,0)	29,0	(23,0-30,0)	<0,001**[1]
infection episodes	1,0	(0,0-2,0)	2,0	(1,0-3,0)	0,0	(0,0-1,0)	<0,001**[1]
Number of days with							
cough	6,0	(0,0-16,3)	16,0	(7,0-20,0)	0,0	(0,0-3,0)	<0,001**[1]
fever (≥ 38.5 °C)	0,0	(0,0-1,3)	1,0	(0,0-4,0)	0,0	(0,0-0,0)	0,001**[1]
cold nose	2,0	(0,0-9,8)	9,0	(4,0-16,0)	0,0	(0,0-1,0)	<0,001**[1]
runny nose	4,0	(0,0-10,3)	9,0	(5,0-18,0)	0,0	(0,0-3,0)	<0,001**[1]
sore throat	0,0	(0,0-0,3)	0,0	(0,0-3,0)	0,0	(0,0-0,0)	0,011*[1]
wheezy breathing	0,0	(0,0-1,0)	0,0	(0,0-5,0)	0,0	(0,0-0,0)	0,001**[1]
earache	0,0	(0,0-0,0)	0,0	(0,0-3,0)	0,0	(0,0-3,0)	<0,001**[1]

1= group differences were tested with Mann-Whitney U Test.
* P-value is significant at the 0,05 level (2-tailed).
** P-value is significant at the 0,01 level (2-tailed).

Scores on the Parenting dimensions

The Parenting dimensions did not differ between both groups, Table 4 demonstrates the results. There were no significant differences between the Parenting dimensions of the control group and the URTI group.

Parenting dimensions	Total group (N=63)			URTI group (N=31)			Control group (N=32)			P-value
	mean	(SD)	range	mean	(SD)	range	mean	(SD)	range	
Support (range= 13-78)	66,5	(5,9)	45 - 77	66,1	(5,9)	45 - 75	67,0	(5,9)	49 - 77	0,559[1]
Stimulation (range= 13-78)	63,4	(7,9)	41 - 78	62,1	(9,2)	41 - 78	64,5	(6,4)	46 - 75	0,245[1]
Structure (range= 12-72)	25,4	(7,4)	14 - 57	26,1	(8,5)	14 - 57	24,7	(6,3)	15 - 41	0,441[1]
Positive discipline (range= 14-24)	20,6	(2,9)	10 - 24	20,7	(3,1)	10 - 24	20,4	(2,7)	11 - 24	0,691[1]
Harsh discipline (range= 12-72)	19,9	(6,1)	11 - 39	19,5	(6,0)	11 - 33	20,3	(6,3)	11 - 39	0,631[1]

[1] Group differences were tested with independent sample t-test.

Predicting URTI with demographics between parenting and URTI

In the correlation matrix (Table 5) the inter correlations between the Parenting dimensions and URTI variables are displayed. It can be noted that the correlations between the Parenting dimensions and URTI variables were very low or low in relation. The correlation between positive discipline and wheezy breathing showed a low positive significant relation (r = 0,29, p = 0,05). Results gave no reason for testing regression analysis because of the absence of strong relations between the variables.

Table 5.

Correlation matrix URTI and Parenting dimensions (N=63)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Support															
2. Stimulation	0,28*														
3. Structure	-0,54**	-0,41**													
4. Positive discipline	0,58**	0,26	-0,31*												
5. Harsh discipline	-0,19	-0,36**	0,61**	-0,03											
6. Cough	-0,16	-0,17	0,22	-0,13	0,04										
7. Fever	-0,05	-0,19	-0,01	-0,23	-0,14	0,49**									
8. Cold nose	-0,18	-0,21	0,08	-0,16	-0,12	0,52**	0,38**								
9. Runny nose	-0,16	-0,15	0,09	-0,01	0,07	0,62**	0,35**	0,35**							
10. Sore throat	-0,06	0,20	-0,06	0,01	-0,05	0,26*	0,30*	0,36**	0,28*						
11. Wheezy breathing	0,02	0,20	-0,18	0,29*	0,10	0,48**	0,30*	0,29*	0,43**	0,49**					
12. Earache	-0,19	-0,00	-0,04	-0,09	-0,19	0,28*	0,19	0,35**	0,11	0,19	-0,04				
13. Infection days	-0,15	-0,14	0,14	-0,05	-0,01	0,86**	0,48**	0,69**	0,71**	0,44**	0,54**	0,36**			
14. Symptom-free days	0,16	0,26	-0,16	0,09	0,03	-0,85**	-0,54**	-0,72**	-0,73**	-0,41**	-0,50**	-0,33**	-0,93**		
15. Infection episodes	-0,11	-0,24	0,12	0,05	-0,04	0,72**	0,35**	0,63**	0,59**	0,37**	0,39**	0,21	0,78**	-0,75**	

Correlations were tested with Spearman's rho.

* Correlation is significant at the 0,05 level (2-tailed).

** Correlation is significant at the level 0,01 level (2-tailed).

Discussion

This study aimed to investigate how parenting and known risk factors were associated with upper respiratory tract infections of children in the age of 1 till 4 years. Both groups were compared with regard to differences in aspects of parenting and risk factors and the influence on the physical health of the children.

The most important result of this study is that with regard to the Parenting dimensions support, stimulation, structure, harsh discipline and positive discipline there were no differences between the URTI and control group. The outcomes of both groups were in line with each other. Notable is that both groups had a lower mean score on structure (consisting out of consistency, laxness and overreactivity) compared to the other dimensions. By this outcome we cannot appoint that parents of both groups do not provide enough structure to their child, but it is interesting to look into other studies about their findings on the Parenting dimension structure. When we look at other studies about parental structure we see different outcomes. The research of Straus (1994) state that parents of older age set clearer rules, with more explanation about the effects of behavior to their child and more often reward good behavior than parents of a younger age. But this is not in line with the outcomes of Wade and Kendler (2000) who found that younger parents set more rules for their child. Also outcomes of parental structure related to different diseases show various results. In the study of Johnson (2013) parents of children suffering from diabetes type 1 stated that following a daily regimen positively influenced their child's health and providing more structure also increased the feeling of daily control. Most parents reported that when they are in control of the diabetes and the environment in which their child lives, they are closer to ensuring their child's survival with diabetes. A study about children with asthma showed that parents were less interested in providing structure as parenting practices in daily life. In relation with URTI, providing parental structure was associated with a protective effect on health during early childhood and resulting in fewer visits for care. Consistent with this interpretation, structure was associated with fewer children diagnosed with URTI's and with fewer treatments of URTIs. Which suggests that structure could have positive effects on children's health (Serbin, et al., 2014). These outcomes do make further research important to increase knowledge about the influence of parental structure on the frequency of URTI.

A second interesting finding is that two characteristics of the family situation, which are number of siblings and birth order, both differed significant between the groups. Birth order was one of the known risk factors which were analysed in this study. Also the aforementioned study of Koopman, et al., (2001) claims that household size and having older siblings increases the risk in the development of URTI's. When a younger child only has one older sibling, it is already a strong risk factor. As well as the findings in the study of Vinker, et al., (2003), in 79% of the families the child suffering from URTI was the youngest child of the family. And the study of Schuez-Havupalo, Toivonen, Karppinen, Kaljonen & Peltona (2017) found similar outcomes. They confirm that the presence of older siblings in the family were associated with a higher frequency of recurrent URTI's.

Two other known risk factors were analysed, which are child day care attendance and passive smoking. In our study the risk factor child day care attendance did not differ between both groups. Studies show multiple outcomes. Some studies are unsure about the association of child day care and an increased incidence of URTI's of children at preschool age, while URTI is the most frequently occurring illness in preschool children, irrespective the attendance of child day care. Brady (2005) appoints that the presence of child day care is associated with a decrease of the frequency of URTI's.

However, the study of De Hoog, et al., (2014) indicates that the frequency of URTI on the child's well-being in the first six years of life were higher in children who attended child day care, proven by the increased number of general practitioner consultations, referrals and antibiotic prescriptions among these children. Also the research of Sun & Sundell (2011), Lu, Samuels, Shi, Baker, Glover & Sanders, (2004) and Schuez-Havupalo, et al., (2017) found that child day care attendance was associated with a higher frequency of respiratory tract infections and other allergic symptoms, compared to home care. Suggesting that child day care attendance had a negative influence on health of children aged 1–8 years. Over all we can say that the opinions about the influences of child day care attendance on the presence of URTI are still divergent among studies.

With regard to the risk factor passive smoking (smoking during pregnancy and parent's current smoking status) we did expect to find significant associations between both groups. There was a slight difference in which more parents of the URTI group did smoke than parents of the control group. The results of previous studies are growing and state that smoking during pregnancy is a moderate risk factor for premature birth and serious health consequences for infants (Institute of Medicine, 2001). Cheraghi & Salvi (2009) confirmed that infants of mothers exposed to passive smoking during pregnancy, show poor lung growth and increased risk of developing asthma and respiratory tract infections. Especially after birth, children are more vulnerable to passive smoking explainable by their immature immune system and lung structures being not yet full-grown. Cheraghi & Salvi (2009) have found adequate evidence to conclude a causal relationship between parental smoking and childhood asthma and presence of symptoms such as coughs, phlegm, wheezy breathing and breathlessness. Multiple symptoms are also strongly connected with URTI which remarks the importance of passive smoking as risk factor for children who suffer from recurrent URTI's.

Limitations and directions for future research

Although this study provides a new view at the factors that influence child well-being, some limitations should be considered for further research. First, cross-sectional research is limited in its ability to draw valid conclusions about the association or possible causality by the fact that research was carried out at one time moment and did not gave an indication of the sequence of events, whether exposure occurred before, after or during the onset of the disease outcome.

Second, the number of participants in this study was small, which made it more difficult to prove significant differences between both groups. In future research the number of participants should be enlarged to increase the change on proving significant differences.

A third limitation was the use of an access code to enter the online questionnaire. Parents had to fill in their access code at the beginning of the questionnaire so the researcher could later link the data to their symptoms and infections diary. The parent could start the online questionnaire without filling in an access code. One parent forgot to fill in the access code which made it impossible to link the data to the diary. If there were more parents who had forgot to fill in the access code, then it could influence the number of useful data. In future research this can be solved by ensuring that parents are only allowed to move on to the online questionnaire after filling in the access code.

Finally, many contributing factors can play a role in child well-being and recurrent URTI's, other factors may give new insights. In this research multiple Parenting dimensions and risk factors were included. In future research, other factors could be taken into account. Based on the family well-being model other factors out of the micro layer could be added. Factors like social economic status [SES] and parental stress would be of interest. Both do influence the family emotional climate and child well-being. The effects of SES can have a reinforcing role (Bradley & Corwyn, 2002). Researchers have

argued that SES influences child well-being through three pathways: 1) insufficient offering resources as housing, nutrition, healthcare or education; 2) stress reactions caused through parenting, marriage, interpersonal life events, environmental risks, violence and neighbourhood problems and 3) parents with unhealthy behaviours such as tobacco, alcohol or drug use and no physical exercise (Bradley & Corwyn, 2002; McEwen & Seeman, 1999; McEwen & Stellar, 1993; Repetti, Taylor, & Saxbe, 2007). Also the factor parental stress may be of importance because researchers nowadays suggest that biological stress reactions of parents may be the most notable link between child well-being and contextual risk (Caserta et al., 2008; Evans, 2003; Tang, Luyten, Casalin & Vliegen, 2016). This is consistent with the study of Fowels & Walker (2009) they found that mothers who have high levels of stress in the first 6 months after birth judge their children at having poorer health 1 year later (environmental elements and maternal psychosocial characteristics in the premature postnatal period provide the context for a mother's assessment of her child's health).

Conclusion

Overall, the results of our study confirmed that there were no significant differences between both groups in the Parenting dimensions. However, the aspect structure scored low in both groups and should be further analysed to increase knowledge about the positive and negative influence on children with recurrent URTI's. Another interesting finding were that the characteristics, number of siblings, number of persons at home and the risk factor birth order, differed significant between the groups.

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Appendices

A. *Information letter day care centre, host parent and children's health clinic*
B. *Information letter participants*
C. *Informed consent*
D. *Diary symptoms and infections*
E. *Access code online questionnaire*
F. *Online questionnaire (paper version)*

Appendix A. Information letter day care centre, host parent and children's health clinic

Informatie voor het kinderdagverblijf/gastouder/GGD

Geachte heer/mevrouw,

Ik zal mij kort voorstellen. Ik ben Stephanie Koenderink, een studente van de master gezondheidspsychologie aan de Universiteit Twente. Voor mijn opleiding voer ik een onderzoek uit wat is opgezet door de Universiteit Twente en de afdeling kindergeneeskunde vanuit Ziekenhuisgroep Twente (ZGT). Voor mijn onderzoek ben ik op zoek naar ouders/verzorgers met kinderen in de leeftijd 1 tot en met 4 jaar. Graag zou ik u willen vragen of u als kinderdagverblijf mee wilt werken bij het werven van deze ouders/verzorgers! Om een beter beeld te geven van wat het onderzoek inhoudt en wat er van de ouders/verzorgers wordt verwacht heb ik dit kort voor u beschreven.

Doel van het onderzoek

Op de afdeling kindergeneeskunde wordt onderzoek gedaan naar problemen waarvoor geen duidelijke medische oorzaken gevonden kunnen worden. Waaronder infecties en steeds terugkerende bovenste luchtweginfecties op de kleuterleeftijd. Denk hierbij aan klachten zoals hoesten, koorts, verstopte neus en keelpijn. Het doel van dit onderzoek is het inzichtelijk maken of ziekte van het kind invloed heeft op de dagelijkse structuur en of de dagelijkse structuur invloed heeft op de gezondheid van het kind. Oftewel, of de medische klachten eventueel ook andere oorzaken kunnen hebben. Tijdens het onderzoek worden twee groepen benaderd. De groep met kinderen die deze klachten veelvuldig hebben zullen via de kinderarts gevraagd worden om deel te nemen aan het onderzoek. Voor de groep met kinderen die deze klachten nauwelijks tot niet hebben, ben ik op zoek naar ouders die willen deel nemen.

Wat meedoen inhoudt voor de ouder/verzorger

Als ouders/verzorgers mee willen werken, duurt het onderzoek voor hen ongeveer 1 maand. Voor het onderzoek hoeven niet beide ouders/verzorgers iets in te vullen, één ouder/verzorger is voldoende. Als u het prettig vindt, dan kan de onderzoeker bij u langs komen en u en de ouders/verzorgers uitleggen hoe het onderzoek in zijn werk gaat. Geïnteresseerde ouders/verzorgers krijgen een pakketje mee naar huis bestaande uit een informatiebrief, een toestemmingsformulier en het formulier dagboek symptomen en infecties. Dit formulier is een dagboekje wat de ouder/verzorger een maand lang bijhoudt. In het dagboek noteert de ouders/verzorger of het kind symptomen van luchtweginfecties heeft (zal 1 minuut per dag kosten). Tevens vult de ouder/verzorger een online vragenlijst in. Deze vragenlijst zal gaan over de dagelijkse structuur/routines en gewoontes van het gezin. Het invullen van de vragenlijst zal ongeveer 10 minuten duren. Wanneer de ouder/verzorger tijdens het onderzoek vragen heeft, dan kan er telefonisch contact worden opgenomen met de onderzoeker. Na deze maand komt de onderzoeker opnieuw langs en kunnen u of de ouders/verzorgers de formulieren inleveren. Alle gegevens worden vertrouwelijk behandeld.

Wat meedoen inhoudt voor het kinderdagverblijf

U als kinderdagverblijf wordt gevraagd om bij de ouders/verzorgers na te gaan of zij interesse hebben om deel te nemen. De namen van de deelnemende ouders kunnen op de invullijst deelnemende ouders/verzorgers worden genoteerd, samen met een mailadres of mobiel telefoonnummer. Via het mailadres of mobiele telefoonnummer zullen deelnemende ouders/verzorgers een link toegestuurd krijgen naar de online vragenlijst.

Als een ouder/verzorger niet mee wil doen of wil stoppen met het onderzoek

De ouder/verzorger beslist zelf of hij/zij meewerkt aan het onderzoek. Deelname is vrijwillig. Ook tijdens deelname, kan de ouder/verzorger zich bedenken en alsnog stoppen. De ouder/verzorger hoeft hiervoor geen reden aan te geven.

Einde van het onderzoek

Deelname aan het onderzoek stopt:

- als de ouder/verzorger zelf kiest om te stoppen,
- na het invullen van de vragenlijst samen met de onderzoeker.

Geen vergoeding voor meedoen

Deelname aan het onderzoek kost de ouder/verzorger niets. De ouder/verzorger wordt niet betaald voor het meedoen aan dit onderzoek.

Bovenstaande informatie geeft u een beeld van het onderzoek. Graag zou ik u als kinderdagverblijf willen vragen om mij te helpen aan ouders die het leuk vinden om deel te nemen! Wanneer u dit op prijs stelt kan ik eventueel bij u langs komen of mag u telefonisch contact met mij opnemen om het verder door te spreken. Belangrijk is dat er van u als kinderdagverblijf verder geen verplichtingen zijn ten aanzien van het onderzoek.

U kunt contact met mij opnemen door te mailen naar: s.c.koenderink@student.utwente.nl.

Alvast bedankt voor uw aandacht en hopelijk komen we tot een leuke samenwerking!

Met vriendelijke groet,

Stephanie Koenderink

Proefpersoneninformatie voor deelname aan wetenschappelijk onderzoek

Is er een relatie tussen kindgewoontes en bovenste luchtweginfecties

Geachte heer/mevrouw,

Wij vragen u om mee te doen aan een wetenschappelijk onderzoek. Meedoen is vrijwillig. Om mee te doen is wel uw schriftelijke toestemming nodig. Voordat u beslist of u wilt meedoen aan dit onderzoek, krijgt u uitleg over wat het onderzoek inhoudt. Lees deze informatie rustig door en vraag de onderzoeker uitleg als u vragen heeft.

1. Algemene informatie

Dit onderzoek is opgezet door Universiteit Twente en wordt uitgevoerd door master student gezondheidspsychologie vanuit de afdeling kindergeneeskunde van Ziekenhuisgroep Twente (ZGT).

2. Doel van het onderzoek

Op de afdeling kindergeneeskunde wordt onderzoek gedaan naar problemen waarvoor geen duidelijke medische oorzaken gevonden kunnen worden. Waaronder infecties en steeds terugkerende bovenste luchtweginfecties op de kleuterleeftijd. Denk hierbij aan klachten zoals hoesten, koorts, verstopte neus en keelpijn. Het doel van dit onderzoek is het inzichtelijk maken of ziekte van het kind invloed heeft op de dagelijkse structuur en of de dagelijkse structuur invloed heeft op de gezondheid van het kind. Oftewel, of de medische klachten eventueel ook andere oorzaken kunnen hebben.

3. Wat meedoen inhoudt

Als u meedoet, duurt het onderzoek voor u ongeveer 1 maand. U krijgt een formulier mee naar huis, waarop u een maand lang noteert of uw kind symptomen van luchtweginfecties heeft (kost 1 minuut per dag). Na deze maand stuur u het formulier en de toestemmingsverklaring terug door middel van de retourenveloppe. Aan het begin van de maand zal u een link toegestuurd krijgen naar een vragenlijst. Deze vragenlijst zal gaan over de dag structuur/routines en gewoontes van uw kind. Het invullen van de vragenlijst zal ongeveer 10 minuten duren. De onderzoeker heeft u om uw mailadres gevraagd, zodat de vragenlijst naar u verstuurd kan worden. Met de verkregen informatie zal vertrouwelijk worden omgegaan door de onderzoeker.

4. Als u niet wilt meedoen of wilt stoppen met het onderzoek

U beslist zelf of u meedoet aan het onderzoek. Deelname is vrijwillig. Als u wel meedoet, kunt u zich altijd bedenken en toch stoppen, ook tijdens het onderzoek. U hoeft niet te zeggen waarom u stopt. Wel moet u dit direct melden aan de onderzoeker. De gegevens die tot dat moment zijn verzameld, worden gebruikt voor het onderzoek.

5. Einde van het onderzoek

Uw deelname aan het onderzoek stopt als

- u zelf kiest om te stoppen
- na het invullen van de vragenlijst samen met de onderzoeker.

Na het verwerken van alle gegevens kan de onderzoeker u informeren over de belangrijkste uitkomsten van het onderzoek. Dit gebeurt ongeveer 3 maanden na uw deelname. U mag zelf aangeven of u hier interesse in heeft of niet.

6. Gebruik en bewaren van uw gegevens

Al uw gegevens blijven vertrouwelijk. De Universiteit Twente en Ziekenhuisgroep Twente bewaart uw gegevens 5 jaar.

7. Geen vergoeding voor meedoen

Deelname aan het onderzoek kost u niets. U wordt niet betaald voor het meedoen aan dit onderzoek.

8. Heeft u vragen?

Bij vragen kunt u contact opnemen met de onderzoeker. De onderzoeker, S. Koenderink is tijdens kantooruren (tussen 09.00 uur en 17.00 uur) te bereiken op het telefoonnummer: ...

9. Ondertekening toestemmingsformulier

Deelname aan het onderzoek is vrijwillig. Als u er voor kiest om deel te nemen, wordt u gevraagd om de bijbehorende toestemmingsverklaring schriftelijk te ondertekenen. Door uw schriftelijke toestemming geeft u aan dat u de informatie heeft begrepen en dat u het eens bent met deelname aan het onderzoek. Het handtekeningenblad wordt door de onderzoeker bewaard. U krijgt een tweede exemplaar van deze toestemmingsverklaring.

Dank voor uw aandacht.

Toestemmingsformulier participanten

Is er een relatie tussen kindgewoontes en recidiverende luchtweginfecties

- Ik heb de informatiebrief gelezen. Ook kon ik vragen stellen. Mijn vragen zijn voldoende beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.
- Ik weet dat meedoen vrijwillig is. Ook weet ik dat ik op ieder moment kan beslissen om toch niet mee te doen of te stoppen met het onderzoek. Daarvoor hoef ik geen reden te geven.
- Ik weet dat sommige mensen mijn gegevens kunnen inzien. Die mensen staan vermeld in deze informatiebrief.
- Ik geef toestemming voor het verzamelen en gebruiken van mijn gegevens op de manier en voor de doelen die in de informatiebrief staan.
- Ik geef toestemming om mijn gegevens op de onderzoek locatie nog 5 jaar na dit onderzoek te bewaren.
- Ik geef □ **wel**
  □ **geen** toestemming om mij na dit onderzoek opnieuw te benaderen voor een vervolgonderzoek.
- Ik wil meedoen aan dit onderzoek.

Naam proefpersoon:
Handtekening: Datum: __ / __ / __

Ik verklaar dat ik deze proefpersoon volledig heb geïnformeerd over het genoemde onderzoek. Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de proefpersoon zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker (of diens vertegenwoordiger):
Handtekening: Datum: __ / __ / __

Aanvullende informatie is gegeven door:
Naam:
Functie:
Handtekening: Datum: __ / __ / __

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* Doorhalen wat niet van toepassing is.
De proefpersoon krijgt een volledige informatiebrief mee, samen met een kopie van het getekende toestemmingsformulier

Instructies dagboek symptomen/infecties

Voor u ligt het dagboek symptomen/infecties, onderstaande instructies zullen u duidelijk maken hoe u het dagboek kan bijhouden:

- Het is de bedoeling dat u de komende 31 dagen het dagboek bijhoudt. Links bovenaan in het formulier vult u de betreffende maand in.
- Stel u begint morgen en het is 20 december dan start u op het eerste formulier op dag 20 (op het formulier staat een 1 aan de linker- en rechterkant). U vult dan de dagen in tot en met dag 19 op het tweede formulier (op het formulier staat een 2 aan de linker- en rechterkant).
- Per dag geeft u aan of uw kind symptomen heeft. Wanneer dit niet het geval is kleurt u het hokje nee in en wanneer dit wel het geval is dan kleurt u het hokje ja in.
- Wanneer u ja heeft ingevuld, dan gaat u de verschillende symptomen langs en kleurt u het hokje/hokjes in van de aanwezige symptomen.
- Onder de symptomen staan nog 4 andere onderwerpen, de eerste is bezoek aan kinderarts/onderzoeker. Hierbij geldt hetzelfde, wat van toepassing is daar kleurt u het hokje van in.
- Onderaan het formulier kunt u eventueel nog opmerkingen en/of bijzonderheden invullen waarvan u denkt dat het belangrijk is om te vermelden.

Wanneer u nog vragen heeft kunt u deze aan de onderzoeker stellen. Veel succes met het invullen van het formulier!

DAGBOEK SYMPTOMEN/INFECTIES

1

Maand:	Dag:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Had uw kind de afgelopen 24 uur symptomen van een luchtweginfectie*?	**Nee**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	**Nee**
Vul in geval van een 'ja' de symptomen hieronder in	**Ja**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	**Ja**

Vul hieronder in het geval van een bovenste luchtweginfectie *alle* symptomen in die aanwezig zijn.

Dag:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
- Hoesten	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
- Koorts (temperatuur > 38,0 graden Celsius)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
- Verstopte neus	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
- Loopneus	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
- Keelpijn	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
- Piepende of zagende ademhaling	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
- Loopoor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Bezoek kinderarts/onderzoeker	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Bezoek huisarts(en post)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Antibiotica (alle dagen van de kuur invullen)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Een van de ouders thuis van werk door ziekte kind	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

* Met een infectie van de bovenste luchtwegen bedoelen wij een combinatie van ten minste twee van de volgende symptomen: hoesten, koorts, verstopte neus, loopneus, keelpijn, piepende of zagende ademhaling en/of een loopoor.

Ruimte voor opmerkingen en/of bijzonderheden:

Toegangscode vragenlijst

Naast het bijhouden van het dagboek symptomen en infecties is het invullen van de vragenlijst het tweede onderdeel van dit onderzoek. Het gaat hierbij om een online vragenlijst en daarvoor heeft u al uw mailadres of mobiele telefoonnummer aan de onderzoeker gegeven. U zal een link ontvangen via de mail naar de vragenlijst.

Aan het begin van de vragenlijst wordt er van u gevraagd om een toegangscode in te vullen. Hier mag u de code: **co of ur + cijfer** invullen.

Vervolgens komt u bij de vragenlijst, deze wijst zichzelf uit. Bedankt!

Appendix F. Questionnaire

Vragenlijst dagstructuur en kindgewoontes

Bedankt dat u mee wilt doen aan dit onderzoek. De vragenlijst zal gaan over structuur/routines en gewoontes van u en uw kind. Het invullen van de vragenlijst zal ongeveer 10 minuten duren. Gegevens zullen anoniem verwerkt worden.

Algemene vragen

De eerste vragen zijn algemene vragen gaan over u, uw kind en uw gezin.

Zwangerschap en geboorte

1. De zwangerschapsduur tot uw kind geboren werd: ____ weken en ____ dagen

2. Gewicht bij geboorte: _____ gram

3. Wijze van bevalling:

   ☐ vaginaal

   ☐ keizersnede

4. Leeftijd kind: ____ jaar

Voeding

5. Type eerste voeding:

   ☐ borstvoeding

   ☐ flesvoeding (ga naar vraag 7)

6. Tot welke leeftijd is borstvoeding gegeven?: _____ maanden

7. Sinds welke leeftijd gewone melk?: ____ jaren en ____ weken

Omgeving

8. Aantal personen in het huis: _____ personen

9. Aantal broertjes/zusjes (uitgezonderd deelnemend kind): _____ broertjes/zusjes

10. Leeftijd kind ten opzichte van broertjes zusjes:

    ☐ jongste

    ☐ er tussenin

    ☐ oudste

    ☐ enigst kind

11. Hoeveel dagen gaat uw kind gemiddeld per week naar een kinderdagverblijf/crèche? _____ dag(en)

12. Gezinssituatie ouders/verzorgers:

☐ ouders/verzorgers samenwonend met relatie (inclusief getrouwd)

☐ ouders/verzorgers samenwonend zonder relatie

☐ ouders/verzorgers gescheiden of alleenstaande ouder

☐ ouder(s) /verzorger(s) samenwonend met nieuwe partner

☐ anders, namelijk _____

Ouder 1 / Verzorger 1

13. Leeftijd: _____ jaar

14. Hoogst gevolgde opleiding (één kiezen):

☐ basisonderwijs

☐ middelbaar onderwijs

☐ middelbaar beroepsonderwijs (MBO)

☐ hoger beroepsonderwijs (HBO)

☐ wetenschappelijk onderwijs (WO)

15. Huidig werk (één kiezen):

☐ tijdelijke baan parttime*

☐ tijdelijke baan fulltime (> 32 uur per week)*

☐ vaste baan parttime*

☐ vaste baan fulltime (> 32 uur per week)*

☐ werkloos

☐ werkzoekend

☐ studie

☐ bewust thuis

☐ langdurig ziek

* zowel als ZZP'er, als bij werkgever

16. Rookt u?

☐ ja

☐ nee

17. Gerookt gedurende de zwangerschap?

☐ ja

☐ nee

☐ niet van toepassing

Ouder 2 / verzorger 2

18. Leeftijd: _____ jaar

19. Hoogst gevolgde opleiding (één kiezen):

- ☐ basisonderwijs
- ☐ middelbaar onderwijs
- ☐ middelbaar beroepsonderwijs (MBO)
- ☐ hoger beroepsonderwijs (HBO)
- ☐ wetenschappelijk onderwijs (WO)

20. Huidig werk (één kiezen):

- ☐ tijdelijke baan parttime werkloos*
- ☐ tijdelijke baan fulltime (> 32 uur per week)*
- ☐ vaste baan parttime*
- ☐ vaste baan fulltime (> 32 uur per week)*
- ☐ werkloos
- ☐ werkzoekend
- ☐ studie
- ☐ bewust thuis
- ☐ langdurig ziek

* zowel als ZZP'er, als bij werkgever

21. Rookt u?

- ☐ ja
- ☐ nee

22. Heeft u nog toevoegingen of opmerkingen die u graag wilt benoemen?

Nu volgt het tweede deel van de vragenlijst. De volgende uitspraken zullen gaan over de dagstructuur en gewoontes van uw kind en u als ouder/verzorger. Wilt u bij elke uitspraak aangeven hoe vaak deze op u en uw kind van toepassing is? Denk niet te lang na bij een vraag, vul in wat u het eerst denkt.

Dagstructuur en gewoontes

		Nooit	Zelden / Bijna nooit	Soms wel / soms niet	Regel-matig	Vaak	Altijd
1	Als mijn kind niet lekker in zijn vel zit, dan heb ik dat in de gaten	☐	☐	☐	☐	☐	☐
2	Ik knuffel, kus en omarm mijn kind zonder speciale reden	☐	☐	☐	☐	☐	☐
3	Als mijn kind het moeilijk heeft, dan kan ik hem/haar goed helpen	☐	☐	☐	☐	☐	☐
4	Ik vertel mijn kind dat hij/zij mij gelukkig maakt	☐	☐	☐	☐	☐	☐
5	Ik weet heel goed wat mijn kind wil of voelt	☐	☐	☐	☐	☐	☐

6	Als mijn kind bang is, lukt het mij hem/haar gerust te stellen	☐	☐	☐	☐	☐	☐
7	Ik besteed aandacht aan de gevoelens van mijn kind en begrijp deze	☐	☐	☐	☐	☐	☐
8	Als mijn kind prikkelbaar is, lukt het mij hem/haar te kalmeren	☐	☐	☐	☐	☐	☐
9	Als mijn kind bang of overstuur is, begrijp ik waar dit door komt	☐	☐	☐	☐	☐	☐
10	Ik ben goed in staat de aandacht van mijn kind te trekken	☐	☐	☐	☐	☐	☐
11	Mijn kind en ik hebben warme, intieme momenten samen	☐	☐	☐	☐	☐	☐
12	Als het niet zo goed gaat met mijn kind, lukt het mij hem/haar te troosten	☐	☐	☐	☐	☐	☐
13	Ik laat mijn kind merken dat ik van hem/haar houd door hem/haar te knuffelen, kussen en omarmen	☐	☐	☐	☐	☐	☐

De komende stellingen zijn telkens twee uiteenlopende uitspraken. Geef aan welke van de twee uitspraken het beste bij u past. Hoe meer naar links, hoe beter u de linker uitspraak bij uzelf vindt passen; hoe meer naar rechts, hoe beter u de rechter uitspraak bij uzelf vindt passen.

14 **Wanneer ik nerveus of gespannen ben…**

Ben ik prikkelbaar en werk het uit op mijn kind	☐--☐--☐--☐--☐--☐	Ben ik niet meer prikkelbaar dan normaal naar mijn kind

15 **Wanneer mijn kind iets doet dat ik niet graag heb…**

Doe ik daar iets aan telkens wanneer het gebeurt	☐--☐--☐--☐--☐--☐	Laat ik het vaak maar over me heen gaan

17 **Wanneer mijn kind niet doet wat ik vraag…**

Laat ik het vaak zitten of doe ik het uiteindelijk zelf	☐--☐--☐--☐--☐--☐	Neem ik een andere maatregel

18 **Wanneer er een probleem is met mijn kind…**

Stapelen de dingen zich op en doe ik dingen die ik niet wil doen	☐--☐--☐--☐--☐--☐	Lopen de zaken niet uit de hand

19 **Wanneer ik een redelijke dreiging of waarschuwing geef…**

Voer ik deze vaak niet uit	☐--☐--☐--☐--☐--☐	Doe ik steeds wat ik zei dat ik zou doen

20 **Wanneer mijn kind zich misdraagt…**

Pak ik dat aan zonder overstuur te raken	☐--☐--☐--☐--☐--☐	Word ik zo gefrustreerd of boos dat mijn kind kan merken dat ik overstuur ben

21 **Wanneer ik zeg dat mijn kind iets niet mag doen…**

Laat ik het hem/haar toch doen ☐--☐--☐--☐--☐--☐ Blijf ik bij wat ik gezegd heb

22 **Wanneer mijn kind iets doet dat ik niet graag heb, dan beledig ik mijn kind,**

zeg ik gemene dingen of scheld ik hem/haar uit…

Nooit of zelden ☐--☐--☐--☐--☐--☐ Meestal

23 **Als mijn kind van streek is als ik 'nee' zeg…**

Bezwijk ik en geef ik toe aan mijn kind ☐--☐--☐--☐--☐--☐ Blijf ik bij wat ik zei

Omgang met gedrag van uw kind

Alle kinderen misdragen zich wel eens of doen dingen die niet mogen van hun ouders. Ouders hebben vele verschillende manieren om met dergelijk gedrag om te gaan. Hieronder staat een aantal uitspraken over hoe ouders met deze situaties om kunnen gaan. Wilt u aangeven hoe vaak deze uitspraken op u van toepassing zijn?

		Nooit	Zelden / Bijna nooit	Soms wel / soms niet	Regel-matig	Vaak	Altijd
24	Ik leg mijn kind uit waarom bepaalde regels gevolgd moeten worden	☐	☐	☐	☐	☐	☐
25	Als mijn kind ongehoorzaam is, word ik boos en verhef ik mijn stem	☐	☐	☐	☐	☐	☐
26	Als mijn kind niet aan mijn verwachtingen voldoet, zeg ik dat hij/zij zich moet schamen	☐	☐	☐	☐	☐	☐
27	Als mijn kind ongehoorzaam is, geef ik hem/haar een tik	☐	☐	☐	☐	☐	☐
28	Als mijn kind iets doet dat niet mag, straf ik hem/haar minder lang dan ik van plan was	☐	☐	☐	☐	☐	☐
29	Als mijn kind iets doet dat niet mag, kijk ik vaak boos en doe alsof hij/zij er niet is	☐	☐	☐	☐	☐	☐
30	Ik leg mijn kind uit waarom hij/zij gecorrigeerd of gestraft wordt	☐	☐	☐	☐	☐	☐
31	Als mijn kind ongehoorzaam is geweest, gebeurt het dat ik hem/haar niet corrigeer	☐	☐	☐	☐	☐	☐
32	Als mijn kind ongehoorzaam is, word ik boos en pak ik hem/haar stevig beet	☐	☐	☐	☐	☐	☐
33	Als mijn kind niet aan mijn verwachtingen voldoet, zorg ik er voor dat hij/zij zich schuldig voelt	☐	☐	☐	☐	☐	☐
34	Als mijn kind zich goed gedraagt, geef ik hem/haar een compliment of een knuffel	☐	☐	☐	☐	☐	☐
35	Als mijn kind ongehoorzaam is, weet mijn kind mij over te halen om geen straf te geven	☐	☐	☐	☐	☐	☐

36	Als mijn kind zeurt of jengelt, word ik boos en verhef ik mijn stem	☐	☐	☐	☐	☐	☐
37	Als mijn kind iets doet dat niet mag, praat ik vaak niet meer met hem/haar totdat hij/zij zich beter gedraagt	☐	☐	☐	☐	☐	☐
38	Ik leg mijn kind de gevolgen van zijn/haar gedrag uit	☐	☐	☐	☐	☐	☐
39	Als mijn kind zeurt of jengelt, geef ik hem/haar een tik	☐	☐	☐	☐	☐	☐
40	De straf die ik mijn kind geef, hangt af van mijn stemming	☐	☐	☐	☐	☐	☐
41	Ik bekritiseer mijn kind als hij/zij niet aan mijn verwachtingen voldoet	☐	☐	☐	☐	☐	☐

Spelen en leren

Wilt u bij elke uitspraak aangeven in welke mate u vindt dat deze van toepassing is op u en uw kind?

		Nooit	Bijna nooit / zelden	Soms wel / soms niet	Regel-matig	Vaak	Altijd / ledere dag
42	Ik vertel mijn kind verhaaltjes of lees voor uit een boek	☐	☐	☐	☐	☐	☐
43	Ik zing en dans met mijn kind, of luister samen met hem/haar naar muziek	☐	☐	☐	☐	☐	☐
44	Ik neem mijn kind mee naar buiten om te spelen, wandelen of fietsen	☐	☐	☐	☐	☐	☐
45	Ik moedig mijn kind aan om zelf te spelen en zijn/haar omgeving te onderzoeken	☐	☐	☐	☐	☐	☐
46	Ik laat mijn kind met andere kinderen spelen	☐	☐	☐	☐	☐	☐
47	Ik laat mijn kind met andere volwassenen (anders dan vader of moeder) spelen	☐	☐	☐	☐	☐	☐
48	Ik betrek mijn kind in dagelijkse activiteiten, zoals koken, het verzorgen van huisdieren, of planten water geven	☐	☐	☐	☐	☐	☐
49	Ik neem mijn kind mee bij het boodschappen doen	☐	☐	☐	☐	☐	☐
50	Mijn kind en ik spelen samen met kleurrijk speelgoed van verschil-lende materialen (bijv. knuffels, houten blokken, knisper-boekjes)	☐	☐	☐	☐	☐	☐
51	Mijn kind en ik spelen samen met speelgoed dat kan rollen (bijv. bal, auto's, trek-eend)	☐	☐	☐	☐	☐	☐
52	Mijn kind en ik spelen samen met blokken, lego, of ander speelgoed om mee te bouwen	☐	☐	☐	☐	☐	☐
53	Mijn kind heeft zijn/haar eigen boekjes waarmee hij/zij mag spelen, ook al gaat hij/zij hier niet voorzichtig mee om	☐	☐	☐	☐	☐	☐
54	Mijn kind en ik spelen samen met speelgoed om muziek mee te maken (bijv. trommel, fluit)	☐	☐	☐	☐	☐	☐