

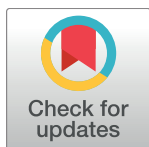
RESEARCH ARTICLE

Pet keeping in childhood and asthma and allergy among children in Tianjin area, China

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OPEN ACCESS

Citation: Luo S, Sun Y, Hou J, Kong X, Wang P, Zhang Q, et al. (2018) Pet keeping in childhood and asthma and allergy among children in Tianjin area, China. PLoS ONE 13(5): e0197274. <https://doi.org/10.1371/journal.pone.0197274>

Editor: Manlio Milanese, Ospedale S. Corona, ITALY

Received: July 6, 2017

Accepted: April 30, 2018

Published: May 16, 2018

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Data Availability Statement: The minimal anonymized dataset can be found in the paper and its Supporting Information files. Qualifying researchers may apply for further data from the CCHH-Tianjin study whose authors may be contacted at yuexiasun@tju.edu.cn.

Funding: This study was funded by the National Key Research and Development Program of China (2017YFC0702700) (<http://www.most.gov.cn/>) and the National Natural Science Foundation of China (21207097) (<http://www.nsf.gov.cn/>) to YXS. The funders had no role in study design, data collection

Abstract

This study aims to find out the relationship between pet keeping in childhood and asthma and allergy among children aged 0–8 years old in Tianjin, China. Parental or guardians reports of 7360 children were analyzed. 1490 (21.6%) families kept pets at the time of the survey (current), among them 4.0% cats, and 14.7% dogs. For the first year of life of children (early), 1196 (18.4%) families kept pets, and among them 3.2% cats, and 13.7% dogs. Exposure to a pet in early childhood significantly increased the risk of current wheeze, current dry cough, and diagnosed rhinitis. 17.9% of parents reported an avoidance behavior, i.e., had removed or refrained a pet due to asthma or allergy in the family. After adjustment for avoidance behavior, the negative effect of pet keeping on children's health became even more obvious, with e.g. an AOR of 3.37 (1.58–7.19) for diagnosed asthma, 3.60 (2.07–6.27) for diagnosed rhinitis, 1.92 (1.31–2.81) for diagnosed eczema. A dose-response relationship between pet keeping at current and current wheeze, current eczema and diagnosed eczema was found. In conclusion, pet exposure in early life of children in Tianjin is a risk factor for asthma and allergies among children aged 0–8 years old.

Introduction

The impact of pet keeping on the development of allergic diseases is discussed [1]. Some studies support the view that pet keeping in early life decreases the risk of asthma and allergies in children. For example, Hesselmar et al [2] found that exposure to pets during the first year of life decreased the risk of allergic rhinitis at 7–9 years and of asthma at 12–13 years. Ownby et al [3] even found that children exposed to two or more dogs or cats had the lowest prevalence of any skin prick test compared with children exposed to less pets. On the other hand, some studies found that pet keeping in early life of children is significantly positively associated with symptoms in later life. For example, Wahn et al [4] found that children who exposure to higher cat allergen (150 ng/gm vs 64 ng/gm) were more likely to get allergy. Lombardi et al [5] found exposure to cat in the first year of life significantly increased the risk of current wheeze. A Swedish study found that the protective effects of pet exposure were due to avoidance behavior [6], i.e., allergic families intend to remove or refrain from pets.

and analysis, decision to publish, or preparation of the manuscript.

Competing interests: The authors have declared that no competing interests exist.

Most of early studies are based on Western populations or populations of industrialized regions. Some studies also have been conducted in Asia. In 1999, Zheng et al [7] conducted a case-control study in Beijing, China and found that dog or cat keeping was an important risk factor for children's asthma. In 2001, Salo et al [8] conducted a study in Wuhan, China, and revealed that keeping pets at current was positively associated with persistent cough and wheeze; exposure to pets in early life significantly increased the risk of diagnosed asthma. In order to study associations between the home environment and children's asthma and allergies, a national study "China, Children, Health and Home (CCHH)" has been conducted since 2010. This paper aims to find out the relationship between early exposure to pets and allergic symptoms among children in Tianjin, China.

Methods

Since April 2013, randomly selected kindergartens, daycare centers and primary schools were invited to participate in this study. With the help from the teachers, questionnaires were distributed to parents of children aged 0–8 years old.

The questionnaire was developed from the Dampness in Buildings and Health (DBH) study in Sweden [9], which has been used in many countries and cities respectively [10]. However, questions on building characteristics were modified to better reflect the Chinese housing styles. The questions on children's asthma and allergy are identical to core questions used in ISAAC (International Study on Asthma and Allergy of Child) study [11]. The good validity and reliability of the questionnaire were tested and reported in previous Chinese studies [12–13]. The entire questionnaire is shown in S1 and S2 Files. It consists of questions on children's background information, life styles, home environment and health. Children's health outcomes are wheeze in the last 12 months (current wheeze), dry cough in the last 12 months (current dry cough), diagnosed asthma, rhinitis in the last 12 months (current rhinitis), diagnosed rhinitis, eczema in the last 12 months (current eczema), and diagnosed eczema. With regard to pet keeping, parents were asked whether their family kept pets in the current home and/or in the first year of life of children; and if so, what type of pets: dog, cat, rodent (rabbit, hamster), bird, fish?

In this study, the database was divided into four groups of different pet keeping behavior (pet keeping all the time, never, at birth but not current, not at birth but current) to assess the avoidance behavior as Bornehag et al did in Sweden [6]. Moreover, parents were also asked to describe their avoidance behaviors: whether they removed or refrained to have a pet due to asthma or allergy among their families.

Statistics

Logistic regression models were used to evaluate the association of pet exposure with asthma and allergies among children. In the multivariate analyses we adjusted for gender, age, total household income, family allergic history, location, dampness and avoidance behavior. A *p*-value of less than 0.05 was accepted to be of significance. All statistical analyses were performed with the SPSS (version 22).

Ethical statement

Ethical approval was obtained from the Research Office at Tianjin University. Our participants provided verbal informed consent to participate in this study. This study is anonymous questionnaire survey. It involves no risk to the subjects. The study could not practicably be carried out with written consent. Completed surveys were used to reflect participant consents. These

surveys were stored in a lock cabinet. Research Office at Tianjin University approved this consent procedure.

Results

7865 parents answered the questionnaire survey, with a response rate of 78%. Ages were not reported for 204 children, and 295 children were outside 0 to 8 age boundary. Therefore, our final analysis was of 7366 children, among which 3539 resided in inner city, 1483 in suburban, 1755 in rural areas. Demographic information, health outcomes and exposure to pets are summarized in [Table 1](#). The highest prevalence of asthma and allergies was reported by people living in city, followed by suburban and rural areas. Pet keeping had an opposite trend. The highest rate of pet keeping was reported from rural areas. However, people living in city had fish as pets more often. Dog is the most popular pet.

In this study, children who had pets at birth but not currently showed the highest prevalence of diagnosed asthma, current rhinitis, current eczema and diagnosed eczema, while children who had pets currently but not at birth showed the highest prevalence of current wheeze and current dry cough. Children who had pets all the time showed the highest prevalence rate of diagnosed rhinitis ([Table 2](#)). [S1 Table](#) shows the prevalence of allergic symptoms for different "avoidance behavior". The highest prevalence of allergic symptoms appeared in the group with an avoidance behavior (followed by the group that had pets at home currently, and the group neither having pets nor having avoidance behavior). And it also revealed that the influence of behavior is more clear in urban areas.

[Table 3](#) shows there is no "protective" effect of neither pet keeping currently nor pet keeping early for asthma and allergies. It indicated that pet keeping especially cats exposure was a significant risk factor for diagnosed asthma and diagnosed eczema. The effect of keeping pets became even more negative after adjusting for avoidance behavior ([Table 4](#)).

In order to explore whether there is a dose-response relationship between the number of pets and allergic diseases, furry pets including cats, dogs, rodents and birds were reclassified into two categories: one furry pet, two or more furry pets. Respectively, in current life, 12.9% families had one furry pet, while 4.5% had at least two furry pets. The dose response relationship between the number of furry pets and asthma and allergy in current home is showed in [Fig 1](#). It indicates that pet keeping in current home have a clear dose-responses with current wheeze, current eczema and diagnosed eczema. After stratifying for rural, suburban and urban areas, we found that the dose-response relationship only exists in rural and urban areas ([S2 Table](#)).

Discussion

Our study investigated the pet exposure in Chinese homes with a big sample size of 7366 children and a good response rate of 78%. We found that pet keeping is a risk factor for children's health. This is consistent with the findings from the scientific literature review [14]. Most of earlier studies were based on Western populations [15–18], however, some studies from other part of Asia or China have been published in recent year [8, 19–21]. Studies either based on Western populations or based on Asian populations [4, 5, 20] revealed that there are dose-response relationships between pet exposure and allergic sensitizations. Bornehag et al [6] found that the greater number of different types of pets, the higher risk for children to have allergic symptoms. Our study confirmed the dose-response relationship of pet keeping in current homes with current eczema and diagnosed eczema, but not for pet keeping at birth.

There are studies based on western populations that support the view that keeping animals in early life of children will protect against the allergic symptoms [22–27]. In a cross-sectional study, Bornehag et al [6] showed that current pet keeping was 'protective', but mainly because

Table 1. Demographic information, health outcomes and exposure to pets of the investigated population, n (%).

		Home location			
		Total	Rural	Suburban	Urban
Demographic information					
Gender					
	Male	3780 (51.9)	916 (52.9)	756 (51.5)	1801 (51.5)
	Female	3499 (48.1)	815 (47.1)	712 (48.5)	1699 (48.5)
Age					
	0–2 years old	225 (3.1)	65 (3.7)	44 (3.0)	102 (2.9)
	3–5 years old	3238 (44.0)	751 (42.8)	677 (45.7)	1549 (43.8)
	6–8 years old	3903 (53.0)	939 (53.5)	762 (51.4)	1888 (53.3)
Members of family have asthma or allergies		948 (14.1)	113 (7.0)	164 (11.7)	625 (18.4)
Dampness in home		1370 (23.0)	363 (26.8)	318 (25.6)	637 (20.7)
Total income (RMB)					
	<30 thousand	1123 (17.4)	482 (31.8)	249 (18.7)	288 (8.9)
	30–50 thousand	1516 (23.5)	619 (40.8)	370 (27.7)	434 (13.5)
	50–100 thousand	1863 (28.9)	342 (22.5)	429 (32.1)	989 (30.7)
	100–200 thousand	1381 (21.4)	58 (3.8)	201 (15.1)	1071 (33.2)
	>200 thousand	572 (8.9)	16 (1.1)	86 (6.4)	444 (13.8)
Health outcomes					
Current wheeze		333 (4.9)	41 (2.5)	56 (4.1)	199 (5.9)
Current dry cough		937 (13.6)	148 (8.9)	171 (12.0)	556 (16.2)
Diagnosed asthma		302 (4.4)	40 (2.4)	44 (3.1)	193 (5.7)
Current rhinitis		2002 (29.8)	324 (20.3)	363 (26.4)	1221 (36)
Diagnosed rhinitis		636 (9.5)	72 (4.4)	110 (7.9)	416 (12.4)
Current eczema		998 (14.9)	198 (12.4)	189 (13.7)	558 (16.5)
Diagnosed eczema		2624 (39.1)	460 (29)	501 (36.2)	1552 (45.8)
Pets exposure					
Keeping pets at time of survey (current)		1490 (21.6)	678 (40.8)	279 (19.5)	458 (13.3)
	Cat	224 (4.0)	135 (12.1)	31 (2.6)	49 (1.6)
	Dog	929 (14.7)	526 (34.9)	180 (13.5)	178 (5.6)
	Rodent	111 (2.0)	46 (4.5)	12 (1.0)	50 (1.6)
	Bird	141 (2.5)	50 (4.8)	33 (2.8)	54 (1.8)
	Fish	341 (5.9)	39 (3.7)	76 (6.2)	207 (6.5)
Keeping pets in the first year of life (early)		1196 (18.4)	509 (32.8)	257 (19.0)	377 (11.5)
	Cat	177 (3.2)	85 (7.5)	33 (2.9)	49 (1.7)
	Dog	845 (13.7)	421 (28.8)	187 (14.6)	206 (6.6)
	Rodent	53 (1.0)	16 (1.5)	11 (1.0)	22 (0.8)
	Bird	83 (1.5)	25 (2.3)	18 (1.6)	37 (1.3)
	Fish	175 (3.2)	18 (1.7)	39 (3.4)	106 (3.5)

<https://doi.org/10.1371/journal.pone.0197274.t001>

of an avoidance behaviour. In Sweden, there was a public awareness regarding the risks of pet keeping for allergies (due to a national campaign about allergies in 1996), which can explain the high avoidance behaviour. In China and Bulgaria [18], the knowledge among the general population is probably much lower. So, most of parents know little about the risks of pet keeping for children asthma and allergies, and the percentage of people who had an avoidance behaviour was low (In this study 11.0% parents reported an avoidance behaviour towards pets, and in Bulgaria 3.3% had “got rid of” and 10.6% “refrained” from having pets, compared to Sweden 27.3% reported an avoidance behaviour).

Table 2. Prevalence (n, %) of asthma and allergy among children with different pets keeping status.

	Prevalence, n (%)			
	Group I ^a , n = 4707	Group II ^b , n = 342	Group III ^c , n = 740	Group IV ^d , n = 598
Current wheeze	212 (4.7)	22 (6.9)	25 (3.6)	32 (5.8)
Current dry cough	611 (13.4)	64 (19.5)	86 (12.0)	67 (11.8)
Diagnosed asthma	209 (4.6)	13 (3.9)	33 (4.7)	21 (3.7)
Current rhinitis	1362 (30.2)	92 (29.1)	210 (30.4)	144 (26.1)
Diagnosed rhinitis	437 (9.8)	25 (7.7)	59 (8.3)	57 (10.3)
Current eczema	642 (14.3)	47 (14.6)	128 (18.4)	96 (17.4)
Diagnosed eczema	1811 (40.4)	117 (35.8)	296 (42.0)	214 (39.2)

^aGroup I: Never have pets.

^bGroup II: Having pets at current, but not early.

^cGroup III: Having pets at early, but not currently.

^dGroup IV: Having pets all the time.

<https://doi.org/10.1371/journal.pone.0197274.t002>

Dander, urine and saliva from pets are potential allergens, which can be carried by pet hair, cloth, indoor furniture for several months. Through the quantitative assessment of exposure to dog (Can f 1) and cat (Fel d 1) allergens, Ingram et al [28] revealed that the high prevalence of IgE antibody to cat and dog allergens were positively associated with the presence of cat and/or dog allergens in the houses. The result in our study is consistent with finding that the presence of pet increased the risk of asthma and allergy.

Limitations

There are some limitations in this study. Information about children's health, pet keeping, and environment of residence in this study were collected by questionnaires, why there may be some recall bias. However, the strong associations between keeping pets, pet avoidance behaviour, and different health outcomes as shown in this study, cannot be explained by such bias.

Table 3. Adjusted odds ratios of pet keeping for asthma and allergies among children^a.

	Current wheeze	Current dry cough	Diagnosed asthma	Current rhinitis	Diagnosed rhinitis	Current eczema	Diagnosed eczema
No pets keeping (reference)	1	1	1	1	1	1	1
Pet keeping currently	1.28(0.81–2.04)	1.04(0.76–1.43)	1.13(0.69–1.83)	0.99(0.77–1.28)	1.21(0.85–1.72)	1.25(0.92–1.70)	1.24(0.98–1.58)
Cat	1.47(0.62–3.50)	1.01(0.58–1.74)	3.12(1.58–6.16)	1.12(0.74–1.70)	1.49(0.79–2.84)	1.76(1.09–2.85)	1.42(0.97–2.07)
Dog	1.37(0.85–2.22)	1.02(0.76–1.38)	1.28(0.79–2.06)	1.07(0.85–1.34)	1.27(0.89–1.81)	1.33(1.00–1.76)	1.22(0.99–1.50)
Rodent	2.22(0.98–5.07)	1.34(0.74–2.45)	2.74(1.29–5.82)	1.08(0.65–1.79)	1.56(0.78–3.14)	1.55(0.87–2.77)	1.42(0.88–2.28)
Bird	1.20(0.43–3.40)	0.97(0.50–1.85)	1.10(0.39–3.12)	1.11(0.68–1.80)	1.58(0.80–3.12)	1.33(0.73–2.42)	1.30(0.83–2.05)
Fish	1.35(0.78–2.32)	0.78(0.52–1.18)	0.71(0.36–1.43)	1.02(0.76–1.38)	1.43(0.96–2.14)	1.66(1.18–2.32)	1.37(1.03–1.81)
Pet keeping early	1.70(1.07–2.71)	1.32(0.96–1.84)	0.85(0.48–1.53)	0.91(0.69–1.20)	1.06(0.71–1.57)	0.96(0.68–1.36)	1.00(0.77–1.30)
Cat	2.57(1.18–5.62)	1.39(0.81–2.40)	2.86(1.41–5.82)	1.27(0.81–1.99)	1.87(0.99–3.54)	1.60(0.94–2.73)	1.16(0.76–1.77)
Dog	1.59(1.00–2.51)	1.12(0.84–1.50)	0.82(0.48–1.42)	0.95(0.76–1.20)	1.17(0.82–1.68)	1.29(0.98–1.70)	1.06(0.86–1.30)
Rodent	2.01(0.59–6.93)	2.29(1.04–5.06)	3.80(1.37–10.53)	0.51(0.21–1.20)	1.28(0.42–3.87)	1.53(0.64–3.65)	0.73(0.35–1.53)
Bird	4.56(2.00–10.37)	1.69 (0.84–3.38)	3.04(1.24–7.50)	0.58(0.28–1.19)	1.51(0.61–3.73)	1.67(0.81–3.44)	0.77(0.41–1.45)
Fish	2.08(1.07–4.03)	0.87(0.50–1.52)	0.43(0.13–1.39)	0.89(0.58–1.34)	1.44(0.83–2.50)	1.36(0.85–2.18)	1.02(0.69–1.50)

^aNo pet keeping was set as reference. Odds ratio was adjusted for gender, age, total income, family allergic history, home location and home dampness.

<https://doi.org/10.1371/journal.pone.0197274.t003>

Table 4. Adjusted odds ratio of pet keeping for asthma and allergy among children when an avoidance behavior is adjusted^a.

	Current wheeze	Current dry cough	Diagnosed asthma	Current rhinitis	Diagnosed rhinitis	Current eczema	Diagnosed eczema
No pet keeping (reference)	1	1	1	1	1	1	1
Pet keeping currently	2.13(1.02–4.47)	1.32(0.80–2.16)	3.37(1.58–7.19)	1.72(1.16–2.54)	3.60–2.07–6.27)	2.53(1.57–4.08)	1.92(1.31–2.81)
Cat	1.95(0.72–5.29)	1.14(0.61–2.15)	6.34(2.75–14.65)	1.84(1.14–2.97)	4.24(2.02–8.88)	3.30(1.86–5.87)	2.10(1.35–3.28)
Dog	1.83(0.92–3.66)	1.17(0.76–1.80)	2.57(1.29–5.10)	1.73(1.24–2.40)	3.63(2.17–6.06)	2.64(1.74–4.00)	1.78(1.30–2.43)
Rodent	3.03(1.15–7.95)	1.51(0.76–2.98)	5.89(2.38–14.53)	1.75(1.00–3.07)	4.38(1.99–9.64)	3.19(1.66–6.13)	2.05(1.21–3.50)
Bird	1.60(0.51–5.09)	1.10(0.53–2.26)	2.28(0.72–7.26)	1.81(1.05–3.10)	4.44(2.05–9.64)	2.71(1.39–5.30)	1.94(1.16–3.23)
Fish	1.82(0.87–3.82)	0.86(0.51–1.45)	1.53(0.65–3.60)	1.66(1.13–2.43)	4.00(2.32–6.88)	3.35(2.14–5.27)	2.00(1.39–2.88)
Pets keeping early	1.96(1.18–3.25)	1.44(1.02–2.04)	1.05(0.57–1.94)	1.01(0.76–1.36)	1.26(0.83–1.91)	1.04(0.72–1.50)	1.02(0.77–1.34)
Cat	2.92(1.31–6.49)	1.48(0.85–2.58)	3.17(1.54–6.53)	1.38(0.88–2.18)	2.30(1.21–4.37)	1.56(0.89–2.71)	1.15(0.75–1.77)
Dog	1.70(1.05–2.75)	1.19(0.88–1.62)	0.91(0.52–1.60)	1.00(0.79–1.27)	1.38(0.95–2.00)	1.31(0.98–1.75)	1.06(0.86–1.32)
Rodent	2.42(0.69–8.51)	2.40(1.08–5.36)	4.54(1.61–12.85)	0.56(0.24–1.34)	1.68(0.54–5.19)	1.63(0.68–3.93)	0.72(0.34–1.52)
Bird	5.53(2.39–12.80)	1.82(0.90–3.70)	3.80(1.52–9.49)	0.63(0.30–1.30)	1.90(0.76–4.71)	1.57(0.74–3.37)	0.76(0.40–1.44)
Fish	2.71(1.33–5.50)	0.92(0.52–1.64)	0.55(0.17–1.83)	0.98(0.64–1.51)	1.94(1.09–3.47)	1.48(0.91–2.42)	1.02(0.68–1.53)

^aNo pet keeping was set as reference. Odds ratio was adjusted for gender, age, total income, family allergic history, home location, home dampness and avoidance behavior.

<https://doi.org/10.1371/journal.pone.0197274.t004>

The lack of data on other contact accesses to pets' allergens (e.g. by contacting with pets allergens outside home (like daycares, schools) or contacting with allergens transferred by visitors) is another limitation of our study. However, allergen exposure through other accesses may not change the strong association between pets keeping at home and children's health. Identification and quantification on pet allergens (Fel d 1, Can f 1) in indoor environment should be investigated in further studies.

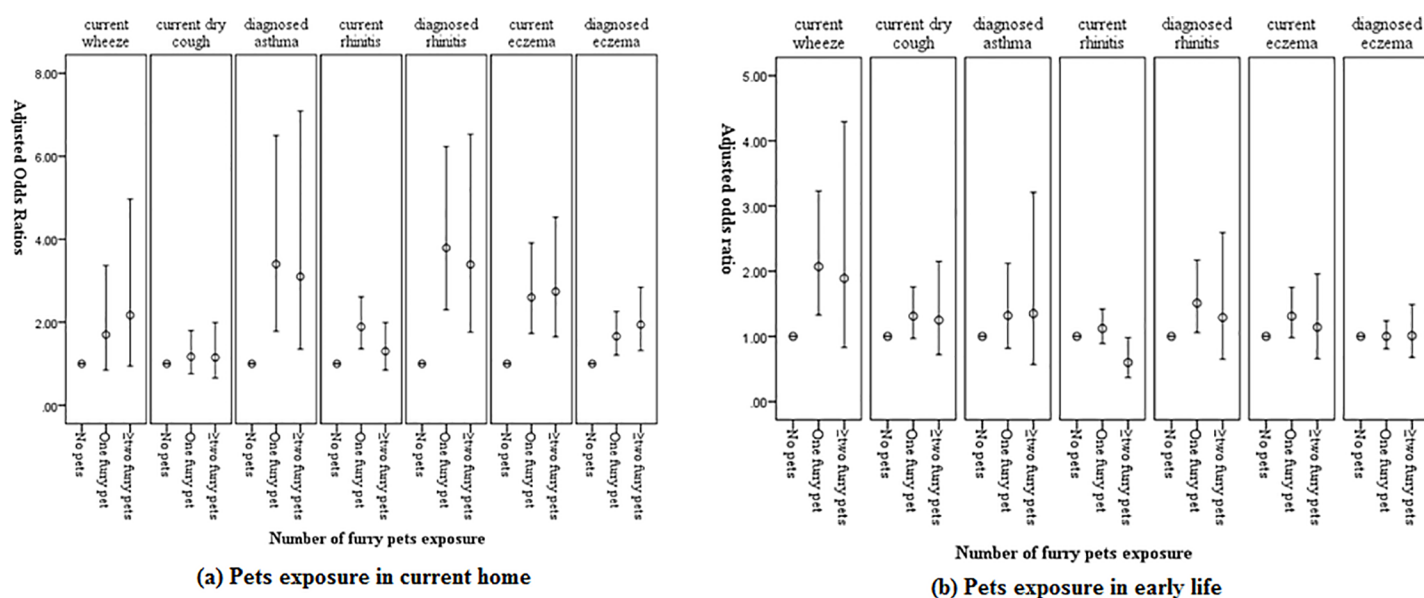


Fig 1. The dose-response relationship between pets keeping in home and allergies among children. ¹Odds ratios are adjusted for gender, age, total household income, family allergic history, home location, home dampness and avoidance behavior. ² Furry pet: cats, dogs, rodents and birds.

<https://doi.org/10.1371/journal.pone.0197274.g001>

Conclusions

This study assessed the relationship between pet keeping in childhood and asthma and allergy in children aged 0–8 years old. The highest prevalence of asthma and allergies was reported by people living in a city. However, pet keeping had an opposite trend. The highest rate of pet keeping was reported by people from rural areas. For all participants, pet keeping in childhood was positively associated with asthma and allergy, and the children who had pets at current home had 2–3 times higher prevalences of diagnosed asthma, rhinitis and eczema.

Supporting information

S1 File. Questionnaire (Chinese version).

(DOC)

S2 File. Questionnaire (English version).

(DOC)

S1 Table. Prevalence (%) of asthma and allergy among children with different avoidance behaviors.

(DOCX)

S2 Table. Adjusted odds ratio of the number of furry pets keeping and asthma and allergy among children.

(DOCX)

S1 Dataset.

(SAV)

Acknowledgments

We would like to thank all the participating families.

Author Contributions

Conceptualization: Yuexia Sun, Jan Sundell.

Data curation: Yuexia Sun, Jing Hou.

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Funding acquisition: Yuexia Sun.

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Methodology: Yuexia Sun, Jan Sundell.

Project administration: Yuexia Sun.

Supervision: Yuexia Sun, Jan Sundell.

Writing – original draft: Shugang Luo.

Writing – review & editing: Yuexia Sun, Jan Sundell.

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S1 File. Questionnaire (Chinese version)



编号: _____

中国室内环境与儿童健康

课题组

儿童健康与住宅空气品质研究

儿童哮喘、过敏性疾病与室内空气品质调查

天津大学

家 长 书

各位家长：

您好！

调查表明，现代人平均有超过 80%的时间在室内，且 65%的时间是在家里。大部分研究表明室内空气污染的程度远远高于室外环境！哪类人群是经常停留在室内并容易受到室内空气污染的严重影响呢？是儿童、孕妇、老人和慢性病病人。因此，室内空气污染对儿童的危害不容忽视！

室内装修、室内家具、杀虫喷雾剂、化妆品、厨房的油烟以及寄生于室内装修材料、生活用品和螨虫、霉菌及细菌等有害物质不仅单独对处于发育期儿童的健康产生极大的影响，它们的相互作用还会加重对儿童健康的危害。

保护孩子的健康，不仅是您的责任，也是我们科研人员的义务和责任。为此，国内多所顶尖高校、科研院所、医疗机构众多教授、博士、硕士、医生成立了中国室内环境与儿童健康课题组，涉及儿童医学、室内空气品质、环境分析等多个领域。专业的科研人员将有针对性的深入分析居住环境对儿童健康的威胁程度，研究居住环境对儿童健康的影响，保障孩子健康成长。

现在您手中这份问卷就是关于您孩子的居住环境和身体健康状况的一个调查。我们将会通过您填写的资料，分析居住环境中威胁孩子健康的潜在因素，研究影响孩子健康成长的环境因子，根据孩子的居住环境和历史健康状况对孩子未来的健康状况进行预判，有针对性的寻找减少孩子患病可能性的途径与方法。我们将以深厚的理论知识为后盾，减少您的孩子在以后生活中可能存在的健康隐患，为他们的健康成长保驾护航。本次调查采用不记名方式，调查结果统一由学校进行保密处理，数据信息仅做科研使用，所有发表的科研成果中将不会涉及您孩子和家庭的任何信息。

因此，为了您孩子的健康，我们真诚的希望，您能够百忙之中抽出时间填写这些问题，向我们真实展现您的居住环境和孩子的健康状况。我们相信，在您和我们的共同努力之下，您的孩子的明天一定会更好。

最后，再一次衷心感谢您对我们科研工作的帮助与支持！

中国室内环境与儿童健康课题组

2013 年 4 月 8 日

中国-儿童-家庭-健康

儿童哮喘、过敏性疾病与室内空气质量调查

关于这项研究的详细介绍参见引言部分。如果家中 1-8 岁孩子超过 1 位，请填写年龄最小的孩子的信息。

基本资料：

孩子性别：_____； 出生日期：_____年_____月_____日；

孩子目前体重：_____（斤）； 孩子出生时的体重：_____（斤）；

孩子目前身高：_____（厘米）； 孩子出生时的身高：_____（厘米）

I. 关于儿童和家庭背景资料

关于“孩子出生日期及常规性母乳喂养”的问题

1、孩子是否在预产期 1 周前后内出生：	☐ 是 ☐ 比预产期提前出生，1 周 < 提前时间 < 2 周 ☐ 比预产期提前出生，2 周 < 提前时间 < 3 周 ☐ 比预产期提前出生，提前时间 > 3 周 ☐ 比预产期滞后出生，1 周 < 滞后时间 < 2 周 ☐ 比预产期滞后出生，2 周 < 滞后时间 < 3 周 ☐ 比预产期滞后出生，滞后时间 > 3 周 ☐ 不知道
2、孩子出生方式：	☐ 自然分娩 ☐ 剖腹生产
3a、是否母乳喂养小孩(全母乳或部分母乳)：	☐ 是 ☐ 否，如果否，跳至第 4 题
3b、如果是，母乳喂养持续多长时间：	☐ < 3 个月 ☐ 3-6 个月 ☐ 6-12 个月 ☐ > 12 个月
3c、如果是，有多长时间为 <u>全母乳</u> 喂养（不添加其他辅食）：	☐ < 2 个月 ☐ 2-4 个月 ☐ 5-6 个月 ☐ > 6 个月
4、孩子 <u>最常使用</u> 的尿布片类型：	☐ 尿布 ☐ 尿不湿 ☐ 其他
5、孩子使用什么样的奶瓶：	☐ 不锈钢 ☐ 陶瓷 ☐ 玻璃 ☐ 塑料 ☐ 其他_____
6a、您的孩子是否使用过安抚（安慰）奶嘴？	☐ 是 ☐ 否，如果否，跳至问题 7
6b、如果安抚奶嘴掉到地上或沾上灰尘等脏东西，您如何清洁后放回孩子嘴里？	☐ 用嘴吮吸干净 ☐ 用纸/布擦拭 ☐ 用清水冲洗 ☐ 用沸水消毒 ☐ 使用专门的清洁用品 ☐ 其他_____

关于“儿童和家庭成员健康状况”的问题

7、有多少位未满9周岁的孩子长期住在家里（包括被调研的小孩）：	☐ 1位 ☐ 2位 ☐ 3位 ☐ 4位或更多
8、有多少位9-18周岁的青少年儿童长期住在家里：	☐ 无 ☐ 1位 ☐ 2位 ☐ 3位 ☐ 4位或更多
9、有多少位18周岁以上的人长期住在家里：	☐ 无 ☐ 1位 ☐ 2位 ☐ 3位 ☐ 4位或更多
10、母亲的文化教育程度：	☐ 小学 ☐ 初中 ☐ 高中 ☐ 本科 ☐ 硕士 ☐ 博士
11、父亲的文化教育程度：	☐ 小学 ☐ 初中 ☐ 高中 ☐ 本科 ☐ 硕士 ☐ 博士
12、母亲从事的职业：	☐ 农业 ☐ 工业 ☐ 商业 ☐ 教育业 ☐ 服务业 ☐ 其他 _____
13、父亲从事的职业：	☐ 农业 ☐ 工业 ☐ 商业 ☐ 教育业 ☐ 服务业 ☐ 其他 _____
14、以下哪项代表了家庭所有成员去年全年的总收入情况，包括工资收入、生意净收入、租金、养老金、股息、利息、社会保险的付款以及其他收入：	☐ <3万人民币 ☐ 3-5万人民币 ☐ 5-10万人民币 ☐ 10-20万人民币 ☐ 20-40万人民币 ☐ 40-80万人民币 ☐ 80-200万人民币 ☐ >200万人民币

关于“日间托儿所”的问题

15、孩子在上小学之前，是待在家里还是送去日间托儿所：	☐ 日间托儿所，>20时/周 ☐ 日间托儿所，10-20时/周 ☐ 日间托儿所，<10时/周 ☐ 与父母一起呆在家里 ☐ 与祖父母一起呆在家里 ☐ 由保姆在家里照看 ☐ 之前送去日托儿所，现在在家
16、如果曾待在日间托儿所，孩子多大的时候被送去：	☐ <1周岁 ☐ 1-2周岁 ☐ 2-3周岁 ☐ 3-4周岁 ☐ >4周岁
17、孩子所在日托所是什么类型：	☐ 私立托儿所 ☐ 公立托儿所
18、孩子所在托儿所的 <u>班级</u> 里 <u>总共</u> 有多少孩子：	☐ <10个 ☐ 10-30个 ☐ >30个

II. 关于儿童及家庭成员的健康状况

关于“儿童哮喘”的问题

19a、 <u>过去任何时候</u> ，孩子是否曾出现过呼吸困难，发出像哮喘一样的声音：	☐ 是 ☐ 否，如果否，跳至 24 题
19b、如果是，孩子多大的时候第一次出现这种呼吸困难的症状：	☐ <1 岁时 ☐ 1-2 岁时 ☐ 3-4 岁时 ☐ 5-6 岁时 ☐ >6 岁时
20a、 <u>过去 12 个月里</u> ，孩子是否有过呼吸困难，发出像哮喘一样的声音：	☐ 是 ☐ 否，如果否，跳至 24 题
20b、如果是，在什么情况下出现这种症状（可多选）：	☐ 感冒的时候 ☐ 锻炼身体时 ☐ 笑或哭时 ☐ 玩耍或室外运动时 ☐ 与动物接触时 ☐ 其他_____
21、 <u>过去 12 个月里</u> ，有几次出现上述呼吸困难的问题？	☐ 从来没有 ☐ 1-3 次 ☐ 4-12 次 ☐ >12 次
22、 <u>过去 12 个月里</u> ，上述呼吸困难问题是否干扰了孩子的晚间睡眠？	☐ 从来没有 ☐ 平均而言，<1 周 1 次 ☐ 平均而言，≥1 周 1 次
23、 <u>过去 12 个月里</u> ，上述呼吸困难问题是否严重到限制了孩子的言语，比如：每次呼吸间隔只能说出 1-2 个词？	☐ 是 ☐ 否
24、 <u>过去 12 个月里</u> ，在没有感冒或胸腔感染的情况下，孩子是否有夜晚干咳超过两周的现象：	☐ 是 ☐ 否
25、是否由于上述呼吸困难或夜间干咳问题，带您孩子去看医生？	☐ 是 ☐ 否
26、孩子是否被医生确诊过患有哮喘：	☐ 是 ☐ 否
27、孩子是否患过喉炎（呼吸困难且伴有犬哮一样的咳嗽）：	☐ 是 ☐ 否
28、孩子是否患过肺结核？	☐ 是 ☐ 否
29a、您的孩子是否被医生确诊过患有肺炎：	☐ 是， ☐ 否，如果否，跳至 30a 题
29b、如果是，第一次患肺炎孩子多大？	_____岁
29c、如果是，目前为止总共患过几次：	☐ 只有 1 次 ☐ 2-3 次 ☐ 4 次及以上

关于“儿童鼻炎”的问题

30a、 <u>过去任何时候</u> ，孩子在没有感冒的情况下是否曾有打喷嚏、鼻塞、流鼻涕的问题：	☐ 是 ☐ 否，如果否，跳至 34 题
30b、如果是，第一次出现这种情况是在孩子多大的时候：	☐ 1 岁以前 ☐ 1-2 岁 ☐ 3-4 岁 ☐ 5-6 岁 ☐ 6 岁以后
31a、 <u>过去 12 个月里</u> ，您的孩子在没有感冒的情况下是否有打喷嚏、鼻塞、流鼻涕的问题：	☐ 是 ☐ 否，如果否，跳至 34 题
31b、 <u>过去 12 个月里</u> ，上述打喷嚏、鼻塞、流鼻涕的问题出现在哪些月份(可多选)？	☐ 1 月 ☐ 2 月 ☐ 3 月 ☐ 4 月 ☐ 5 月 ☐ 6 月 ☐ 7 月 ☐ 8 月 ☐ 9 月 ☐ 10 月 ☐ 11 月 ☐ 12 月
32、 <u>过去 12 个月里</u> ，上述打喷嚏、鼻塞、流鼻涕的问题多大程度上干扰了孩子的日常活动？	☐ 从来没有 ☐ 稍微，有一些 ☐ 中等程度 ☐ 很大程度
33、 <u>过去 12 个月里</u> ，上述打喷嚏、鼻塞、流鼻涕的问题是否 <u>伴随有眼睛刺痒、流眼泪</u> 的现象？	☐ 是 ☐ 否
34、孩子是否被诊断出患有花粉症或过敏性鼻炎：	☐ 是 ☐ 否
35a、 <u>过去 12 个月里</u> ，孩子感冒过几次：	☐ 从来没有 ☐ 1-2 次 ☐ 3-5 次 ☐ 6-10 次 ☐ >10 次 ☐ 不知道
35b、孩子感冒通常出现在哪些季节（可多选）：	☐ 春 ☐ 夏 ☐ 秋 ☐ 冬
35c、孩子一次感冒通常持续多久：	☐ <2 周 ☐ 2-4 周 ☐ >4 周
36、您的孩子是否患过耳炎：	☐ 否 ☐ 是，1-2 次 ☐ 是，3-5 次 ☐ 是，>5 次

关于“儿童湿疹”的问题

37a、 <u>过去任何时候</u> ，孩子是否出现过湿疹症状，如皮肤发红、刺痒，出现皮疹，继之皮肤发糙、脱屑或出现水泡，脂水渗溢：	☐ 是 ☐ 否，如果否，跳至 39 题
37b、如果是，第一次出现这种情况是在孩子多大的时候：	☐ 1 岁以前 ☐ 1-2 岁 ☐ 3-4 岁 ☐ 5-6 岁 ☐ 6 岁以后
37c、如果是，上述皮肤问题是否出现在肘关节，膝关节，踝关节，臀部，面部等部位？	☐ 是 ☐ 否
38a、 <u>过去 12 个月里</u> ，孩子是否有上述皮肤问题：	☐ 是 ☐ 否，如果否，跳至 39 题
38b、 <u>过去 12 个月里</u> ，孩子是否由于上述皮肤问题而夜晚无法入睡：	☐ 从未 ☐ 每周不到一次 ☐ 每周一次或更多
39、孩子是否被医生确诊过患有湿疹：	☐ 是 ☐ 否

关于“儿童对食物的反应”的问题

40a、是否有过食物引起的湿疹、荨麻疹、腹泻、嘴唇或眼睛肿胀等过敏症状：	☐ 是 ☐ 否 ☐ 不知道
40b、如果是，以下哪种食物引起（可多选）：	☐ 牛奶或奶制品 ☐ 鸡蛋 ☐ 鱼 ☐ 花生 ☐ 坚果类，杏仁 ☐ 海产品类 ☐ 蔬菜，如番茄、土豆、芹菜等 ☐ 面粉（如小麦、大麦、黑麦、荞麦等） ☐ 豆类（如大豆、豌豆等） ☐ 水果（如苹果、芒果等） ☐ 其他食物

关于“儿童使用抗生素治疗”问题

41a、孩子是否接受过抗生素治疗，如青霉素等(可多选)：	☐ 否，从未 ☐ 是，0-12 个月时 ☐ 是，12-24 个月时 ☐ 是，比 24 个月大时
41b、若为是，使用抗生素的原因为：	_____
42、如果孩子在 0-12 个月时接受过抗生素治疗，那么共接受过几次：	☐ 1 次 ☐ 2 次 ☐ ≥3 次

关于儿童慢性“现代性”疾病的问题

43、孩子是否被确诊过患有以下疾病？

	是否由医生诊断出？		是否使用药物？		什么时候被确诊？
	是	否	是	否	
糖尿病					
轻微脑功能障碍					
注意力缺陷多动障碍					
自闭症					
阿斯伯格综合症 ¹					
抽动秽语综合征 ²					
隐睾症、尿道下裂					

注：1. 阿斯伯格综合症，是一种主要以社会交往困难，局限而异常的兴趣行为模式为特征的神经系统发育障碍性疾病；相较于其他泛自闭症障碍，仍相对保有语言及认知发展。阿斯伯格症患者经常出现肢体互动障碍和语言表达方式异常等状况，但并不需要接受治疗。

2. 抽动秽语综合征，也称妥瑞氏症，是指以不自主的突然的多发性抽动以及在抽动的同时伴有爆发性发声和秽语为主要表现的抽动障碍。

关于“家庭其他成员健康”的问题

44a、家庭成员中是否存在哮喘或过敏性问题:	☐ 是 ☐ 否, 如果否, 跳至 45 题
44b、如果“是”, 请问是来自哪位家庭成员的什么样的问题(可多选):	父亲: ☐ 哮喘 ☐ 鼻炎 ☐ 湿疹 母亲: ☐ 哮喘 ☐ 鼻炎 ☐ 湿疹 孩子的兄弟姐妹: ☐ 哮喘 ☐ 鼻炎 ☐ 湿疹
45、在过去 12 个月里, 家庭成员各感冒过几次:	父亲: ☐ 0 次 ☐ 1-2 次 ☐ 3-4 次 ☐ ≥5 次 ☐ 不知道/不适用 母亲: ☐ 0 次 ☐ 1-2 次 ☐ 3-4 次 ☐ ≥5 次 ☐ 不知道/不适用 兄弟姐妹: ☐ 0 次 ☐ 1-2 次 ☐ 3-5 次 ☐ 6-10 次 ☐ >10 次 ☐ 不知道/不适用

关于“孩子父亲或母亲健康”的问题

46、请问如下 47 题是由谁来回答的:	☐ 母亲 ☐ 父亲 ☐ 其他_____	
47、在 <u>过去的 3 个月</u> 里您是否有以下症状 (请对所有问题做出答复):		
疲劳, 乏力:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
感觉头重:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
头痛:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
恶心, 眩晕:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
注意力难以集中:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
眼睛发痒、有灼烧或刺痛感:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
鼻子刺痛、堵塞或流鼻涕:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
喉咙嘶哑、干燥:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否

咳嗽:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
面部皮肤干燥、红晕:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
头皮或耳朵起屑刺痒:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否
手部皮肤干燥、发痒、发红:	☐ 是, 经常 (每周) ☐ 是, 有时 ☐ 否, 从不	如果是, 您认为是否和居住环境有关: ☐ 是 ☐ 否

III. 关于儿童的居住环境状况

这章的大部分问题是关于儿童主要住处情况, 即孩子多数时间的居住场所。如果孩子目前跟爷爷、奶奶(或姥姥、姥爷)住在一起, 请回答孩子爷爷、奶奶(或姥姥、姥爷)的住处情况。同时, 我们也想了解孩子出生后早期居住地的环境情况。

48、自从孩子出生后, 孩子是否一直居住在目前住处:	☐ 是 ☐ 否 (若为否, 居住时期开始于哪一年? ____)
49a、孩子是否每个月有超过 10 天在其他住处住宿:	☐ 是 ☐ 否
49b、如果是, 孩子跟谁一起居住:	_____

关于“孩子目前住处的周围环境”的问题

50、您的住处位于哪里:	☐ 城市中心 ☐ 郊区 ☐ 农村 ☐ 其他
51、住处是否临近高速公路或交通干线:	☐ 是 ☐ 否
52、住处是否临近牲畜养殖地(如奶牛、猪、马等)	☐ 是 ☐ 否

关于“孩子目前住处建筑类型”的问题

53、目前孩子住在什么样的房子中:	☐ 平顶平房 ☐ 坡顶平房 ☐ 别墅或排房 ☐ 多层楼房 (7 层及以下) ☐ 高层楼房 (7 层以上)
54、请估算房子大小(平方米):	☐ ≤40 ☐ 41-60 ☐ 61-75 ☐ 76-100 ☐ 101-150 ☐ >150
55、请估算房龄 (年):	☐ <10 ☐ 10-20 ☐ 20-30 ☐ 30-40 ☐ 40-50 ☐ >50 ☐ 不知道
56、现有住宅墙体外有没有保温层:	☐ 有 ☐ 没有 ☐ 不知道
57、您现在的住处是租赁的吗:	☐ 是 ☐ 否

关于“孩子的房间”的问题

(所谓孩子的房间是指该儿童日夜大部分时间活动的场所)

58、孩子大部分时间睡在哪个房间（只能选一项）：	☐ 孩子自己的房间 ☐ 和兄弟姐妹分享房间 ☐ 和父母或祖父母睡一个房间 ☐ 其他_____
59、孩子房间的朝向？	☐ 东 ☐ 西 ☐ 南 ☐ 北 ☐ 其他_____

关于“目前住处内部装修”的问题

(请注意，油毡地板较硬，不能用针刺透；而 PVC 地板较软，能刺透。)

60、不同功能房间铺设地板的材料：	孩子的房间	☐ 油毡地板 ☐ (PVC) 聚氯乙烯 ☐ 地毯 ☐ 纯木地板 ☐ 复合木地板 ☐ 水泥地板 ☐ 石头/瓷砖 ☐ 其他/不知道
	父母的房间	☐ 油毡地板 ☐ (PVC) 聚氯乙烯 ☐ 地毯 ☐ 纯木地板 ☐ 复合木地板 ☐ 水泥地板 ☐ 石头/瓷砖 ☐ 其他/不知道
	客厅	☐ 油毡地板 ☐ (PVC) 聚氯乙烯 ☐ 地毯 ☐ 纯木地板 ☐ 复合木地板 ☐ 水泥地板 ☐ 石头/瓷砖 ☐ 其他/不知道
	厨房	☐ 油毡地板 ☐ (PVC) 聚氯乙烯 ☐ 地毯 ☐ 纯木地板 ☐ 复合木地板 ☐ 水泥地板 ☐ 石头/瓷砖 ☐ 其他/不知道
61a、孩子睡觉的房间的墙面材料（可多选）：	☐ 墙面漆，涂料 ☐ 乳胶漆 ☐ 壁纸 ☐ 石头/瓷砖 ☐ 木质板 ☐ 纺织品 ☐ 石灰（大白） ☐ 其他	
61b、孩子睡觉的房间的窗户类型：	☐ 木框 ☐ 铝框 ☐ 塑钢窗	
61c、孩子睡觉的房间窗户的玻璃类型：	☐ 单层玻璃 ☐ 双层玻璃 ☐ 双层充气玻璃	
62a、孩子父母房间的墙面材料（可多选）：	☐ 墙面漆，涂料 ☐ 乳胶漆 ☐ 壁纸 ☐ 石头/瓷砖 ☐ 木质板 ☐ 纺织品 ☐ 石灰（大白） ☐ 其他	
62b、孩子父母房间的窗户类型：	☐ 木框 ☐ 铝框 ☐ 塑钢窗	
62c、孩子父母房间窗户的玻璃类型：	☐ 单层玻璃 ☐ 双层玻璃 ☐ 双层充气玻璃	

关于“目前住处采暖及通风”的问题

63a、冬季住所采用什么样的采暖形式：	☐ 电暖器 ☐ 暖气片 ☐ 地板采暖 ☐ 空调采暖 ☐ 煤炉 ☐ 火炕 ☐ 其他 ☐ 无供暖
63b、冬季您住处的舒适度如何：	☐ 正合适 ☐ 太热 ☐ 太冷
64a、夏季住所采用什么样的降温方式：	☐ 空调 ☐ 风扇 ☐ 开窗通风 ☐ 其他
64b、夏季您住处的舒适度如何：	☐ 正合适 ☐ 太热 ☐ 太冷
65、住宅通风系统（可多选）？	☐ 开门窗通风，住宅内没有排风扇 ☐ 开门窗通风，并且厨房有排风扇（口） ☐ 开门窗通风，并且厕所有排风扇（口） ☐ 开门窗通风，并且卧室有排（送）风扇 ☐ 机械通风 ☐ 其他
66、您一般采用哪种燃料做饭：	☐ 煤 ☐ 秸秆/木材 ☐ 天然气 ☐ 电 ☐ 其它_____

关于“对目前住处翻新修整和扩展”的问题

67a、是否对您的住所进行过翻新和扩展：	☐ 是 ☐ 否，跳至 68 题 ☐ 不知道，跳至 68 题	
67b、如果是，什么时候对其进行的翻新或修整：	☐ 1-2 年以前 ☐ 3-4 年以前 ☐ 5-6 年以前 ☐ 7-8 年以前 ☐ 9-10 年以前	
67c、如果是，是否是由于房子出现潮湿和发霉的问题：	☐ 是 ☐ 否 ☐ 不知道	
68、对于下列房间，孩子出生前 6 个月或孩子出生后 1 年内是否更换过房间的地板材料：	孩子的房间	☐ 是 ☐ 否 ☐ 不知道
	父母的房间	☐ 是 ☐ 否 ☐ 不知道
	其他房间	☐ 是 ☐ 否 ☐ 不知道
69、对于下列房间，孩子出生前 6 个月或孩子出生后 1 年内是否对该房间重新粉刷过：	孩子的房间	☐ 是 ☐ 否 ☐ 不知道
	父母的房间	☐ 是 ☐ 否 ☐ 不知道
	其他房间	☐ 是 ☐ 否 ☐ 不知道

关于“目前住处是否潮湿”的问题

70、下列房间的地板、墙面及天花板是否有可见的发霉迹象：	孩子的房间	☐ 是	☐ 否	☐ 不知道
	父母的房间	☐ 是	☐ 否	☐ 不知道
	其他房间	☐ 是	☐ 否	☐ 不知道
	浴室	☐ 是	☐ 否	☐ 不知道
71、下列房间的地板、墙面及天花板是否有可见的由于潮湿而造成的污斑或褪色：	孩子的房间	☐ 是	☐ 否	☐ 不知道
	父母的房间	☐ 是	☐ 否	☐ 不知道
	其他房间	☐ 是	☐ 否	☐ 不知道
	浴室	☐ 是	☐ 否	☐ 不知道
72、您是否怀疑您住处的地板内、墙及天花板内存在潮湿发霉的问题，即便房间表面没有明显的迹象：		☐ 是	☐ 否	☐ 不知道
73、下列房间的地板材料是否有褪色、变黑或剥离的迹象：	孩子的房间	☐ 是	☐ 否	☐ 不知道
	父母的房间	☐ 是	☐ 否	☐ 不知道
	其他房间	☐ 是	☐ 否	☐ 不知道
	浴室	☐ 是	☐ 否	☐ 不知道
74、对于下列房间，是否有过水管爆裂等造成的水损问题：	孩子的房间	☐ 是	☐ 否	☐ 不知道
	父母的房间	☐ 是	☐ 否	☐ 不知道
	其他房间	☐ 是	☐ 否	☐ 不知道
	浴室	☐ 是	☐ 否	☐ 不知道
75、对于下列房间，冬季时，在窗户的内侧底部是否有凝水现象：	孩子的房间	☐ 否，从来没有过 ☐ 是，高度<5 厘米 ☐ 是，5-25 厘米 ☐ 是，>25 厘米 ☐ 不知道		
	父母的房间	☐ 否，从来没有过 ☐ 是，高度<5 厘米 ☐ 是，5-25 厘米 ☐ 是，>25 厘米 ☐ 不知道		
	客厅	☐ 否，从来没有过 ☐ 是，高度<5 厘米 ☐ 是，5-25 厘米 ☐ 是，>25 厘米 ☐ 不知道		

关于“目前住处是否有异味”的问题

76a、下面气味问题（76b）由谁回答？		☐ 父亲 ☐ 母亲 ☐ 其他人_____
76b、在过去的 3 个月 里，您是否被住所内的下述任何（一种或多种）气味所烦扰：	通风不良引起的不新鲜气味	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	令人不愉快的气味	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	辛辣刺鼻的气味	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	发霉的气味	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	烟草的气味	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	感觉空气干燥	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	感觉空气潮湿	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有

关于“孩子出生后早期居住地”的问题

（若孩子出生后一直住在目前的住宅内，请**跳过**问题 77，78，79；若孩子出生后曾换过住宅，请回答问题 77，78，79，对孩子出生后早期居住地的环境进行描述。）

77、孩子房间的地板覆盖材料：		☐ 油毡地板 ☐ (PVC) 聚氯乙烯 ☐ 地毯 ☐ 纯木地板 ☐ 复合木地板 ☐ 水泥地板 ☐ 石头/瓷砖 ☐ 其他/不知道
78、在 <u>孩子早期居住的房间内</u> ，您是否注意到：	房间地板、墙面及天花板有可见的发霉或潮湿的迹象	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	房间的地板材料有褪色、变黑或剥离的迹象	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	房间有过水管爆裂等造成的水损问题	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	房间窗户的内侧底部有凝水或水汽现象：	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有
	怀疑地板内、墙及天花板内存在潮湿发霉的问题，即便房间表面没有明显的迹象	☐ 是，经常（每周） ☐ 是，有时 ☐ 否，从来没有

79、在孩子早期居住的 房间内,是否出现 过下述任何(一种或 多种) 气味:	通风不良引起的不新鲜气味	☐ 是	☐ 否
	令人不愉快的气味	☐ 是	☐ 否
	辛辣刺鼻的气味	☐ 是	☐ 否
	发霉的气味	☐ 是	☐ 否
	烟草的气味	☐ 是	☐ 否
	感觉空气干燥	☐ 是	☐ 否
	感觉空气潮湿	☐ 是	☐ 否

关于“动物饲养与接触”的问题

80a、目前,您的住处是否饲养动物或宠物:	☐ 是 ☐ 否, 如果否, 跳至 81a 题
80b、如果是, 您饲养什么动物, 共几只:	☐ 猫_____ ☐ 狗_____ ☐ 啮齿目动物 (如兔子、仓鼠、天竺鼠等) ☐ 鸟类_____ ☐ 鱼、爬行动物_____ ☐ 其他毛皮类动物_____
81a、在孩子 1 岁期间, 是否饲养动物或宠物:	☐ 是 ☐ 否, 如果否, 跳至 82 题
81b、如果是, 您饲养什么动物, 共几只:	☐ 猫_____ ☐ 狗_____ ☐ 啮齿目动物 (如兔子、仓鼠、天竺鼠等) ☐ 鸟类_____ ☐ 鱼、爬行动物_____ ☐ 其他毛皮类动物_____
82、您是否由于家庭成员的过敏性疾病而放弃继续饲养某些动物/宠物:	☐ 是 ☐ 否
83、您是否由于家庭成员的过敏性疾病而拒绝或克制饲养某些动物/宠物:	☐ 是 ☐ 否
84、孩子 1 岁期间是否经常接触到牲畜 (如: 牛、马、羊、猪等):	☐ 是 ☐ 否
85、母亲怀孕期间是否经常接触到牲畜 (如: 牛、马、羊、猪等):	☐ 是 ☐ 否

关于“住处清洁”的问题

86a、您多长时间对孩子的房间清扫一次：		☐ 每天 ☐ 一周两次 ☐ 一周一次 ☐ 两周一次 ☐ 一月一次 ☐ 很少
86b、您是否由于家庭成员的过敏性疾病而改变过日常清洁习惯：		☐ 是 ☐ 否 ☐ 不知道
86c、您清洁孩子房间地面的方法(可多选)：		☐ 用扫帚扫 ☐ 用拖把 ☐ 用吸尘器 ☐ 其他_____
86d、您清洁地面时是否使用清洁剂：		☐ 是 ☐ 否
87、您平均多久开窗通风一次：		☐ 每天 ☐ 一周两次 ☐ 一周一次 ☐ 两周一次 ☐ 一月一次 ☐ 很少
88、您多久晒一次被褥：		☐ 经常 ☐ 有时 ☐ 从不
89、您或您的家人使用以下几种产品的频率：	加湿器	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	离子发生器	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	臭氧发生器	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	空气净化器	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	空气清新剂	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	厨房清洁剂（洗洁精，除污剂）	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	浴室或洗衣清洁剂（洗衣液、马桶液）	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	家具清洁产品（如抛光，打蜡）	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	杀虫剂	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用
	燃烧蜡烛或焚香	☐ 每天 ☐ 一周几次 ☐ 一月几次 ☐ 一年几次 ☐ 更少 ☐ 从来不用

关于“家庭成员吸烟”的问题

90a、家庭成员中是否有人吸烟（住在一起的）：		☐ 是，母亲 ☐ 是，父亲 ☐ 是，兄弟姐妹 ☐ 是，其他人 ☐ 否，如果否，跳至 91 题
90b、如果是，他们一般会在住处的什么地方吸烟（可多选）：		☐ 阳台或平台 ☐ 居室内
90c、如果是在居室里，他们 <u>总共</u> 每天吸烟多少支：		☐ <10 支/日 ☐ 10-20 支/日 ☐ >20 支/日 ☐ 不知道
91、孩子 1 岁期间父母亲中谁有吸烟的习惯：	母亲	☐ 是 ☐ 否
	父亲	☐ 是 ☐ 否
92、怀孕期间父母亲中谁有吸烟的习惯：	母亲	☐ 是 ☐ 否
	父亲	☐ 是 ☐ 否

关于“孩子床上用品”的问题

	目前	1 岁时
93、孩子的枕头（多选）	☐ 海绵枕	☐ 海绵枕
	☐ 荞麦枕	☐ 荞麦枕
	☐ 羽毛枕	☐ 羽毛枕
	☐ 其他_____	☐ 其他_____
	目前	1 岁时
94、孩子的被子填充物（多选）	☐ 棉花	☐ 棉花
	☐ 纤维棉	☐ 纤维棉
	☐ 羽毛被	☐ 羽毛被
	☐ 其他_____	☐ 其他_____

IV 关于“饮食习惯”的问题

媒体经常会暗示我们的生活习惯会造成一些过敏性疾病，但是还没有数据证明这一设想，因此我们希望通过以下问题找到关于我们现代生活方式与饮食习惯之间的关系。

95、过去 12 个月里， 平均而言，孩子食用如下食物和饮料的频率：

肉类（如猪、牛、羊、鸡肉等）	☐ 很少，偶尔	☐ 每周 1-2 次	☐ 每周 3-4 次
	☐ 每周 5-6 次	☐ 每天 1 次或更多	

海鲜（鱼、贝等）	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
水果	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
蔬菜	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
豆类或谷物类（小米，黄豆等）	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
大米白面类（面条，馒头，面包等）	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
鸡蛋	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
牛奶	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次
快餐类（如 KFC 等食品）	☐ 很少，偶尔 ☐ 每周 5-6 次	☐ 每周 1-2 次 ☐ 每天 1 次或更多	☐ 每周 3-4 次

关于“孩子户外活动和电脑电视使用”的问题

96、孩子平均每天看电视或玩电脑的时间：	☐ <1 小时/天 ☐ 1-3 小时/天 ☐ 3-5 小时/天 ☐ >5 小时/天
97、孩子课余时间，每周户外活动的频率：	☐ 很少，偶尔 ☐ 1-2 次/周 ☐ 3 次或更多/周
98、谁填写的这份调查问卷：	☐ 爸爸 ☐ 妈妈 ☐ 其他人_____
99、问卷完成时间	_____年_____月_____日

您的意见或建议： _____

**关于第二阶段的入户调查
(见下页)**

关于第二阶段的入户调查

为了进一步确定您的居室环境对孩子健康的影响，我们希望您能同意我们对您的住所进行空气品质免费测试，并愿意带您的孩子到我们指定的医院做免费体检。

您是否愿意我们对您的房间做免费的检查？

☐是 ☐否

您是否愿意带您的孩子到医院做免费的体检？

☐是 ☐否

如果是，请将以下信息栏补充完整，以方便我们后期与您联系。

手机：	
家庭电话：	
邮箱：	
家庭地址：	

谢谢您的参与！

S2 File. Questionnaire (English version)

China - Child - Home - Health

A survey of the significance of the home environment for asthma and allergies among young children

A description of the study is included in the enclosed introduction letter.
If there are more than one child 0-8 years old, please fill in the information of the youngest one.

Child's gender: _____

Child's date of birth: (year)____(month)____(date)_____

Child current weight _____ Jin

Child current length _____ cm

Child's weight at birth _____ Jin

Child's length at birth _____ cm

I. Background information of the child and the family

Questions concerning the date of birth of the child and the breast-feeding routines

1. Was your child born within 1 weeks of the calculated date of birth?

- Yes
- No, more than 1 but less than 2 weeks early
- No, more than 2 but less than 3 weeks early
- No, more than 3 weeks early
- No, more than 1 but less than 2 weeks late
- No, more than 2 but less than 3 weeks late
- No, more than 3 weeks late
- Not known

2. In which way the child was given birth?

- Natural delivery
- Caesarean section

3a. Was your child ever breast-fed totally or partly?

- Yes
- No

3b. If yes, for how long?

- Less than 3 months
- 3 – 6 months

- 6-12 months
- More than one year

3c. If yes, for how long was your child breast fed without adding other foods or juices?

- Less than 2 months
- 2-4 months
- 5-6 months
- More than 6 months

4 What kind of napkins (Am. diapers) is most commonly used?

- Nappy
- Disposable nappy
- Other kind

5. What kind of milk bottle does your child use?

- Stainless steel
- Ceramics
- Glass
- Plastics
- Other_____

6a. Has your child had used pacifier?

- Yes
- No

6b. If yes, when pacifier drops down on floor or is polluted by dust, how do you clean it?

- Sucking in moth
- Wipe by paper or cloth
- Rinse by clean water
- Boiling it
- Clean by cleaning product
- Other_____

Questions concerning the family and the household

7. How many children, who have not yet turned 9, are permanently living at home (including the investigated one)?

- 1 child
- 2 children
- 3 children
- 4 or more children

8. How many children / adolescents, age 9 to 18, are permanently living at home?

- None
- 1 person
- 2 persons
- 3 persons
- 4 or more persons

9. How many persons, above the age 18, are permanently living at home?

- 1 adult
- 2 adults
- 3 adults
- 4 or more adults

10. Education level of mother

- Primary school
- Junior middle school
- Senior middle school
- Bachelor
- Master
- PhD

11. Education level of father

- Primary school
- Junior middle school
- Senior middle school
- Bachelor
- Master
- PhD

12. Occupation of mother

- Agriculture
- Industry
- Commercial and Business
- Education
- Service
- Other_____

13. Occupation of father

- Agriculture
- Industry
- Commercial and Business
- Education

- Service
- Other_____

14. Which category represents the total combined income of all members of this FAMILY during the past 12 months? *This includes money from jobs, net income from business, farm or rent, pensions, dividends, interest, social security payments and any other money income received (by members of this FAMILY who are 15 years of age or older.)*

- Less than 30,000 RMB
- 30,000-50,000 RMB
- 50,000-100,000 RMB
- 100,000-200,000 RMB
- 200,000-400,000 RMB
- 400,000-800,000 RMB
- 800,000-2,000,000 RMB
- More than 2,000,000 RMB

Questions concerning day nursery, if applicable

15. Is the child staying at home or attending day nursery?

- Attending day nursery, >20 hours per week
- Attending day nursery, 10-20 hours per week
- Attending day nursery, <10 hours per week
- Staying at home with parents
- Staying at home with grandparents
- Taking care by nanny or others at home
- Attending day nursery before, but now at home

16. If the child has stayed at day nursery, at what age did the child start to attend it?

- Younger than 1 year
- 1-2 years of age
- 2-3 years of age
- 3-4 years of age
- Older than 4 years of age

17. What kind of day nursery does the child attend?

- Private day nursery
- Public day nursery

18. How many children are taken care together with your child?

- <10 children
 - 10-30 children
 - >30 children
-

II. The child's and the family's health

Questions concerning breathing difficulties for the child

19a). Has your child ever had wheezing or whistling in the chest at any time in the past?

- Yes
- No. If No, skip to question 24

19b). If Yes, at what age did the problem first occur?

- Prior to 1 year of age
- At 1-2 years of age
- At 3-4 years of age
- At 5-6 years of age
- Past 6 years of age

20a) Has your child had wheezing or whistling in the chest in the past 12 months?

- Yes
- No. If No, skip to question 24

20b) If Yes, under which circumstances?

More than one alternative possible

- When having a cold
- During exercise
- When laughing or weeping
- When playing or being outdoors
- In contact with furred animals
- Others_____

21. In the past 12 months, how many attacks of wheezing have your child had?

- Never
- 1-3 times
- 4-12 times
- > 12 times

22. In the past 12 months, how often, on average, has your child's sleep been disturbed due to wheezing

- Never woken with wheezing
- Less than one night per week
- One or more nights per week

23. In the past 12 months, has wheezing ever been severe enough to limit your speech to only one or two words at a time between breaths?

- Yes
- No

24. In the past 12 months, has your child had a dry cough at night for more than two weeks, apart from a cough associated with a cold or chest infection?

- Yes
- No

25. Has your child been taken to a doctor due to wheezing or dry cough problem?

- Yes
- No

26. Has your child been diagnosed with asthma by a doctor?

- Yes
- No

27. Has your child had croup?

- Yes
- No

28. Has your child been diagnosed tuberculosis?

- Yes
- No

29a. Has your child been diagnosed with pneumonia by a doctor?

- Yes,
- No, if NO, skip to question 30a

29b. If Yes, the 1st diagnosed at age ____

29c. If Yes, it has occurred

- Only once
- 2-3 times
- 4 or more

Questions concerning rhinitis or eye irritations for the child

30a. Has your child ever had a problem with sneezing, or a runny, or a blocked nose when he / she did not have a cold or a flu?

- Yes
- No. If No, skip to question 34

30b. If Yes, at what age did the problems first occur?

- Prior to 1 year of age
- At 1 – 2 years of age
- At 3 – 4 years of age
- At 5-6 years of age
- Past 6 years of age

31a. In the past 12 months, has your child had a problem with sneezing, or a runny, or a blocked nose when he / she did not have a cold or the flu?

- Yes
- No, if no, skip to question 34

31b. In which of the past 12 months, did this nose problem occur? (please tick any which apply)

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

32. In the past 12 months, how much did this nose problem interfere with your child's daily activities?

- Not at all
- A little
- A moderate amount
- A lot

33. In the past 12 months, has this nose problem been accompanied by *itchy-watery eyes*?

- Yes
- No

34. Has your child been diagnosed with hay fever or allergic rhinitis by a doctor?

- Yes
- No

35a. In the past 12 months, how many times has your child had a cold?

- None
- 1-2 times

- 3-5 times
- 6 – 10 times
- More than 10 times
- Not know

35b. Which season does your child usually have common cold?

- Spring
- Summer
- Autumn
- Winter

35c. How long does usually a cold last?

- Less than 2 weeks
- 2 – 4 weeks
- More than 4 weeks

36. Has your child ever had inflammations of the ears?

- No
- Yes, 1 – 2 times
- Yes, 3 – 5 times
- Yes, more than 5 times

Questions concerning eczema for the child

37 a) Has your child ever had an itchy rash, which was coming and going for at least 6 months?

- Yes
- No. if No, skip to 39

37 b) If Yes, at what age did the problem first occur?

- Prior to 1 year of age
- At 1-2 years of age
- At 3-4 years of age
- At 5-6 years of age
- Past 6 years of age

37 c) Has this itchy rash at any time affected any of the following places: the fold of the elbows, behind the knees, in front of the ankles, under the buttocks, or around the neck, ears or eyes?

- Yes
- No

38 a) Has your child had this itchy rash at any time in the last 12 months?

- Yes
- No, if no, skip to question 39

38 b) In the last 12 months, how often, on average, has your child been kept awake at night by this itchy rash?

- Never
- Less than one night per week
- One or more nights per week

39. Has your child been diagnosed with eczema by a doctor?

- Yes
- No

Questions concerning reactions to food

40 a) Has the child at any time had allergic irritations such as eczema, nettle-rash, diarrhoea, swollen lips or eyes caused by the listed foods below?

- Yes
- No
- Not known

40 b) If Yes, which kind of foods?

- Milk or dairy products
- Eggs
- Fish
- Peanuts
- Nuts, almond
- Vegetables, e.g. tomatoes, carrots
- Flour (wheat, barley, rye, oat)
- Soya, peas, beans
- Fruit
- Seafood, e.g. crab.
- Other

Questions concerning antibiotic treatment of the child

41a. Has the child been taking medicines with antibiotic, e.g. penicillin?
More than one alternative possible

- No, never
- Yes, when 0 – 12 months old
- Yes, when 12 – 24 months old

- Yes, after 24 months old

41b. If Yes, the antibiotic is used for_____

42. If the child was taking antibiotic when 0 – 12 months old, how many treatments did he / she receive?

- 1 treatment
- 2 treatments
- 3 or more treatments

Questions concerning chronic “modern” disease of the child

43. Has your child had any of the following disease/disorders diagnosed?

	Doctor diagnosed?		Use of medicine		When diagnosed?
	Yes	No	Yes	No	
Diabetes					
MBD (Minimal Brain Dysfunction)					
ADHD (Attention Deficit Hyperactivity Disorder)					
Autism					
Asperger					
Tourette’s syndrome					
Chryptorchidism, and hypospadias					

Questions concerning the health of the rest of the family

44 a) Do asthma or allergic problems exist in the family?

- Yes
- No. If No, skip to question 45

44 b) If Yes, which kind of problems and for whom?

Biological father

- Asthma
- Allergic nose or eyes problems
- Eczema

Biological mother

- Asthma
- Allergic nose or eyes problems
- Eczema

Siblings

- Asthma
- Allergic nose or eyes problems
- Eczema

45. How many times have you had colds in your household the past year?

Father

- None
- 1 – 2 times
- 3 – 4 times
- 5 or more times
- Not known / not applicable

Mother

- None
- 1 – 2 times
- 3 – 4 times
- 5 or more times
- Not known / not applicable

Sibling

- None
- 1 – 2 times
- 3 – 5 times
- 6-10 times
- More than 10 times
- Not known / not applicable

Questions concerning health problems for one of the parents

46. Question 47 shall only be answered by one of the parents. State below which one of the parents that will answer the question.

- Mother
- Father

47. During the last 3 months, have you had any (one or more) of the following symptoms ? (Answer every question even if you have not had any symptoms!)

Fatigue

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Feeling heavy-headed

- Yes, often (every week)
- Yes, sometimes

- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Headache

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Nausea / dizziness

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Difficulties concentrating

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Itching, burning or irritation of the eyes

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Irritating, stuffy or runny nose

- Yes, often (every week)

- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Hoarse, dry throat

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Cough

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Dry or flushed facial skin

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Scaling/ itching scalp or ears

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

Hands dry, itching, red skin

- Yes, often (every week)
- Yes, sometimes
- No, never

If Yes, do you believe that it is due to your home environment?

- Yes
- No

III. The residence of the child

Most of the questions in this chapter concern the child's main residence, i.e. where the child lives the majority of the time. If child live with grandparents, please answer the residential condition of his/her grandparents. Also we would like to find out information about the residence where the child was born.

48. Has the child lived at the present residence the whole of his/her life?

- Yes
- No, lived here since_____

49a. Is the child living more than 10 days per month at another residence?

- Yes
- No

49b. If Yes, whom does child live with_____?

Questions concerning the surrounding of the present residence

50. Where is the residence situated?

- Inner city area
- Suburban
- Rural area (countryside)
- Other

51. If the residence near to high way or main road?

- Yes
- No

52. Is the residence near to a farm/property where cattle are kept?
(E.g. cows, pigs, horses)

- Yes
- No

Questions concerning the present residence

53. In which kind of house is the child living in at the moment?

- Flat roof Pingfang (bungalow)
- Sloping roof Pingfang
- Low-rise apartment (≤ 7 floors)
- High-rise apartment (> 7 floor)
- Villa or row house

54. Can you approximately estimate the size of your residence?

- Smaller than 40 m²
- 41-60 m²
- 61 – 75 m²
- 76 – 100 m²
- 101 – 150 m²
- Larger than 150 m²

55. Can you state, approximately, the age of the residence?

- Less than 10 year
- 10-20 years
- 20-30 years
- 30-40 years
- 40-50 years
- More than 50 years
- Not known

56. Are there insulation layers attached to the outer walls?

- Yes,
- No
- Do not know

57. Do you rent the current residence?

- Yes,
- No

Questions concerning the child's room (*Child's room means child have most activities here day and night*)

58. In which room does the child sleep most of his/her sleeping time?
(Choose only one alternative!)

- The child's own room
- Sharing bed room with siblings (brothers and sisters)
- Sleeping with parents or grandparents

- Others_____

59. Is the child's room directed?

- East
- West
- South
- North
- Other____

Questions concerning the construction and material of the present residence

60. State which kind of flooring material there is in the different rooms in the residence?
Mark in appropriate box with a cross for each room.

The child's room

- Linoleum
- PVC floor
- Wood
- Laminated wood
- Stones/tiles
- Cement
- Carpets
- Other / Not known

The parents' room

- Linoleum
- PVC floor
- Wood
- Laminated wood
- Stones/tiles
- Cement
- Carpets
- Other / Not known

The living room

- Linoleum
- PVC floor
- Wood
- Laminated wood
- Stones/tiles
- Cement
- Carpets
- Other / Not known

The kitchen

- Linoleum
- PVC floor
- Wood

- Laminated wood
- Stones/tiles
- Cement
- Carpets
- Other / Not known

61a. Which kind of surface layer is on the walls in the child's room?
More than one alternative possible.

- Painting
- Latex paint
- Wall paper
- Stone/tiles
- Wood
- Textile / woven fabric
- Lime
- Other

61b. What kind of windows exists in the child's room

- Wooden framed
- Aluminium framed
- PVC framed

61c. Glass in frames are:

- Single pane
- Double pane
- Double pane gas filled

62a. Which kind of surface layer is on the walls in the parents' room?
More than one alternative possible.

- Painting
- Latex paint
- Wall paper
- Stone/tiles
- Wood
- Textile / woven fabric
- Lime
- Other

62b. What kind of windows exists in the parents' room

- Wooden framed
- Aluminium framed
- PVC framed

62c. Glass in frames are:

- Single pane
- Double pane

- Double pane gas filled

Questions concerning heating and ventilation in the present residence

63a. Which type of heating is there in the residence?

- Electric (heating) radiator
- Hot water (heating) radiator
- Underfloor heating
- Warm air (central) heating
- Coal or wood stove
- Kang or firewall
- Other
- No heating

63b. During the winter, how comfortable is the temperature in your home?

- About right
- Too hot
- Too cold

64a. Which kind of cooling system is there in your residence?

- Air conditioning unit
- Electric fans
- By opening windows
- Other

64b. During summer, how comfortable is the temperature in your home?

- About right
- Too hot
- Too cold

65. Which kind of ventilation system is there in the residence (multiple choice)?

- Natural ventilation without fans
- Natural ventilation with fans in kitchen
- Natural ventilation with fans in bathroom
- Natural ventilation with fans in bedroom
- Mechanical ventilation system

66. What type of fuel do you have for cooking?

- Coal
- Biomass/wood
- Gas
- Electric
- Others_____

Questions concerning renovations and extensions done to the present building

67a Have any major renovations or extensions been done to the building?

- Yes
- No, Go to question 68
- Not known, Go to question 68

67b If Yes, when was the house rebuilt/renovated?

More than one alternative is possible.

- 1-2 years ago
- 3-4 years ago
- 5-6 years ago
- 7-8 years ago
- 9-10 years ago

67c If Yes, was the action taken due to problems with damp and mould in the building?

- Yes
- No
- Not known

68. Has the flooring material been changed in any of the rooms, stated below, during the first year of the child or during the 6 months prior to the birth of the child?

The child's room

- Yes
- No
- Not known

The parents' room

- Yes
- No
- Not known

Other room/s

- Yes
- No
- Not known

69. Have any of the rooms, stated below, been repainted during the first year of the child or during the 6 months prior to the birth of the child?

The child's room

- Yes
- No
- Not known

The parents' room

- Yes
- No
- Not known

Other room/s

- Yes
- No
- Not known

Questions concerning dampness problems, if any, in the present residence

70. Have you noticed any visible mould on the floor, walls or ceiling in any of the rooms stated below?

The child's room

- Yes
- No
- Not known

The parents' room

- Yes
- No
- Not known

Other room/s

- Yes
- No
- Not known

The bathroom

- Yes
- No
- Not known

71. Have you noticed any visible damp stains on the floor, walls or ceiling in any of the rooms stated below?

The child's room

- Yes
- No
- Not known

The parents' room

- Yes
- No
- Not known

Other room/s

- Yes

- No
- Not known

The bathroom

- Yes
- No
- Not known

72. Do you suspect any humidity/mould problem in (inside) the floor, walls or ceiling, which are not visible on (from) the inside of the residence?

- Yes
- No
- Not known

73. Are there any floor covering that are detached or discoloured/blackened in any of the rooms stated below?

The child's room

- Yes
- No
- Not known

The parents' room

- Yes
- No
- Not known

Other room/s

- Yes
- No
- Not known

The bathroom

- Yes
- No
- Not known

74. Have there been any flooding or other kinds of water damages in the rooms stated below?

The child's room

- Yes,
- No
- Not known

The parents' room

- Yes,
- No

- Not known

The other room

- Yes,
- No
- Not known

The bathroom

- Yes,
- No
- Not known

75. In the winter, does condensation or moisture occur on the inside, at the bottom, of windows (windowpanes) in any of the rooms stated below?

The child's room

- No, never
- Yes, less than 5 centimetres
- Yes, 5 – 25 centimetres
- Yes, more than 25 centimetres
- Not known

The parents' room

- No, never
- Yes, less than 5 centimetres
- Yes, 5 – 25 centimetres
- Yes, more than 25 centimetres
- Not known

The living room

- No, never
- Yes, less than 5 centimetres
- Yes, 5 – 25 centimetres
- Yes, more than 25 centimetres
- Not known

Questions to the parents concerning odour in the present residence

76a. Who responded 76b on odour perception?

- Father
- Mother
- Other_____

76b. Have you during the last 3 months been bothered by any (one or more) of the odours, stated below, in your residence?

Stuffy "bad" smell

- Yes, frequently (weekly)

- Yes, sometimes
- No, never

Unpleasant smell

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Pungent smell

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Mouldy smell

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Tobacco smoke

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Dry air

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Humid air

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Questions concerning the child's residence at birth

Below, three questions are given concerning the residence in which the child spent his / her first time after the birth. If you did not move since the child was born, please skip these questions.

77. In the child's birth residence, what kind of floor covering is used?

- Linoleum
- PVC floor
- Wood
- Laminated wood
- Stones/tiles
- Cement
- Carpets

- Other / Not known

78. In the child's birth residence, did you notice

Visible mould or damp stains on the floor, walls or ceiling

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Floor covering that were detached or discoloured/blackened

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Flooding or other kind of water damages

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Condensation or moisture on the inside, at the bottom, of windows (windowpanes) in the winter period

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

Suspected damp and mould problems in (inside) the floor, walls or ceiling, which are not visible on (from) the inside

- Yes, frequently (weekly)
- Yes, sometimes
- No, never

79. Did any (one or more) of the odours, stated below, occur in the child's birth residence?

Stuffy "bad" smell

- Yes
- No

Unpleasant smell

- Yes
- No

Pungent smell

- Yes
- No

Mouldy smell

- Yes
- No

Tobacco smoke

- Yes
- No

Dry air

- Yes
- No

Humid air

- Yes
- No

Questions concerning furred animals

80a Do you have any furred animals / pets in your present residence?

- Yes
- No. If No, skip to question 81a

80b If Yes, what kind and how many?

- Cat____
- Dog____
- Rodent (rabbit, hamster, rats, guinea pig, etc.)____
- Birds____
- Aquarium fishes, reptiles, etc.____
- Other furred animals____

81a Were there any furred animals / pets in the residence during the child's first years, i.e. in the child's birth residence?

- Yes
- No. If No, skip to question 82

81b If Yes, what kind and how many?

- Cat____
- Dog____
- Rodent (rabbit, hamster, rats, guinea pig, etc.)____
- Birds____
- Aquarium fishes, reptiles, etc.____
- Other furred animals____

82. Have you got rid off any furred animals / pets due to allergic illnesses in the family?

- Yes
- No

83. Have you refrained from procuring any furred animals / pets due to allergic illnesses in the family?

- Yes
- No

84. In your child's first year of life did he/she have regular (at least once a week) contact with farm animals (e.g. cattle, pigs, goats, sheep or poultry)?

- Yes
- No

85. Has this child's mother had regular (at least once a week) contact with farm animals (e.g. cattle, pigs, goats, sheep or poultry) while being pregnant with this child?

- Yes
- No

Questions concerning cleaning routines, etc. in the residence

86a. How often do you clean the floor in the child's room?

- Every day
- Approx. twice a week
- Once a week
- Every second week
- Once a month
- Less frequent

86b. Have your cleaning routines changed due to allergies in the family?

- Yes
- No
- Not known

86c. Which of these methods has been used to clean the floor in the child's room? *Circle all that apply.*

- Broom
- Mop
- Vacuum
- Other_____

86d. If you use wet mop, do you use detergent?

- Yes
- No

87. How often do you open window for ventilation?

- Every day
- Approx. twice a week

- Once a week
- Every second week
- Once a month
- Less frequent

88. How often do you sun-cure bed sheets?

- Often
- Sometimes
- Never

89. On average how often do you or your family members use the following products?

Humidifier

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Ionizer

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Ozone generator

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Air cleaner/purifier unit

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Fresher/room deodorizer

- Everyday
- A few times per week
- A few times per month

- A few times per year
- Less than a few times per year
- Never

Detergents used in kitchen

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Detergents used in bathroom or washing room (for laundry and/or toilet)

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Furniture polish

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Bug or insect spray

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Candles or incenses

- Everyday
- A few times per week
- A few times per month
- A few times per year
- Less than a few times per year
- Never

Questions concerning tobacco smoking

90a. Does anyone in your family smoke?

- No. If No, skip to question 91
- Yes, mother
- Yes, father
- Yes, siblings
- Yes, other person

90b. If Yes, where in the residence does/do the person/s smoke?
(More than one alternative possible)

- Outside on the balcony / patio
- Inside home

90c. If inside home, how many do people smoke cigarettes totally?

- Less than 10 per day
- 10-20 per day
- More than 20 per day
- Do not know

91. Did any of the parents smoke during the child's first year of life?

Mother

- Yes
- No

Father

- Yes
- No

92. Did any of the parents smoke during the pregnancy?

Mother

- Yes
- No

Father

- Yes
- No

Questions concerning pillows and bedding of your child

	At present	During the child's first year of life
93. What kind of pillow does or did your child use? (tick as many boxes as apply)	• Foam • Buckwheat pillow • Feather • Other_____	• Foam • Buckwheat pillow • Feather • Other_____
94. What kind of bedding does or did your child use?	• Cotton • Cellucotton	• Cotton • Cellucotton

(tick as many boxes as apply)	• Feather • Other_____	• Feather • Other_____
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IV. Questions concerning food habits

In media it is often indicated that our modern lifestyle cause allergy. No-one has yet been able to explain what is actually meant with this conception (term). For this reason we would like to make an attempt to get an understanding of how our modern lifestyles are related to our eating habits.

95. <u>In the past 12 months</u> , how often, on average, did your child eat or drink the following?	
Meat (e.g. beef, lamb, chicken, pork)	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Seafood	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Fruit	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Vegetables	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Pulses and grains	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Rice and wheat (e.g. noodles, bread, steamed bun)	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Eggs	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week

	• Once per day or more
Milk	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more
Fast food (e.g. KFC)	• Never or occasionally • 1-2 times per week • 3-4 times per week • 5-6 times per week • Once per day or more

V. Questions regarding the use of TV sets and computers in the house

96. During a normal week, how many hours a day (24 hours) does your child watch television?

- Less than 1 hour
- 1-3 hours
- 3-5 hours
- 5 hours or more

97. Outside school hours, how many times a week does your child engage in outdoor physical activities?

- Never or occasionally
- Once or twice per week
- Three or more times a week

98. Who filled out the questionnaire?

- Father
- Mother
- Other_____

99. This survey is completed at (year)____(month)____(day)_____

Further comments:_____

To further investigate the influence of your indoor environment on child's health, we would like to inspect your residence and do medical exam for your child.

Would you like to take the home inspection?

- Yes
- No

Would you like to take your child to the hospital for free medical examination?

- Yes
- No

If “yes”, please inform us your contact information:

Mobile phone: _____

Home address: _____

Home phone: _____

E-mail_____

Thank you for your participants!

S1 Table. Prevalence (%) of asthma and allergy among children with different avoidance behaviors

	Categories of avoidance behaviors											
	Total			Rural			Suburban			Urban		
	A ^a	B ^b	C ^c	A	B	C	A	B	C	A	B	C
Current wheeze	7.2	4.7	4.5	2.9	2.8	2.4	5.0	3.6	4.2	9.1	6.9	5.1
Current dry cough	16.0	11.9	13.3	8.2	8.2	9.4	11.0	12.7	11.6	20.4	16.4	14.9
Diagnosed asthma	8.9	4.2	3.8	3.5	2.9	2.2	4.9	3.8	2.9	12.3	6.1	4.6
Current rhinitis	39.2	28.8	28.1	25.1	23.2	16.3	31.3	26.9	25.3	49.2	38.0	33.0
Diagnosed rhinitis	18.2	9.5	7.7	5.4	6.0	2.5	11.2	9.0	7.0	25.6	14.7	9.6
Current eczema	21.2	18.1	12.6	18.2	15.6	8.0	16.0	20.2	11.2	24.1	19.9	14.2
Diagnosed eczema	46.2	39.9	38.0	30.4	34.6	23.9	41.0	38.0	34.9	55.8	48.9	43.4

^aA: No current pet, due to avoidance behavior.

^bB: Having pets at current home.

^cC: No current pet, but not due to avoidance behavior.

S2 Table. Adjusted odds ratio of the number of furry pets keeping and asthma and allergy among children^a, stratified by locations

		Current wheeze	Current dry cough	Diagnosed asthma	Current rhinitis	Diagnosed rhinitis	Current eczema	Diagnosed eczema
	No pet keeping (Reference)	1	1	1	1	1	1	1
					Rural			
	One furry pet ^b	----	0.48(0.16-1.41)	----	2.31(1.13-4.71)	9.44(1.91-46.53)	6.95(2.68-18.05)	2.50(1.27-4.90)
	Two or more furry pets	----	0.47(0.15-1.51)	----	1.52(0.69-3.36)	8.66(1.63-46.11)	4.37(1.55-12.32)	3.09(1.52-6.28)
					Suburban			
Currently	One furry pet	0.64(0.12-3.34)	0.98(0.37-2.61)	2.21(0.47-10.40)	1.27(0.62-2.58)	2.16(0.72-6.46)	1.82(0.72-4.62)	0.96(0.49-1.89)
	Two or more furry pets	2.02(0.38-10.72)	1.01(0.30-3.40)	1.15(0.11-12.30)	0.40(0.12-1.31)	2.85(0.72-11.27)	3.24(1.10-9.53)	0.94(0.40-2.25)
					Urban			
	One furry pet	2.06(0.86-4.90)	1.67(0.96-2.90)	5.21(2.32-11.73)	1.78(1.13-2.81)	3.92(2.08-7.38)	1.86(1.04-3.31)	1.75(1.13-2.71)
	Two or more furry pets	3.03(0.91-10.15)	2.03(0.89-4.59)	4.74(1.41-15.97)	2.12(1.05-4.31)	2.66(0.92-7.70)	2.89(1.24-6.72)	1.80(0.91-3.59)

S2 Table (Conntinued)

		Current wheeze	Current dry cough	Diagnosed asthma	Current rhinitis	Diagnosed rhinitis	Current eczema	Diagnosed eczema
	No pet keeping (Reference)	1	1	1	1	1	1	1
					Rural			
	One furry pet	1.63(0.57-4.71)	0.90(0.50-1.62)	1.80(0.75-4.32)	1.09(0.73-1.64)	1.78(0.82-3.85)	2.14(1.31-3.51)	1.39(0.97-2.00)
	Two or more furry pets	-----	1.16(0.02-1.24)	1.11(0.23-5.31)	0.73(0.36-1.51)	1.48(0.41-5.40)	2.14(0.96-4.77)	1.19(0.65-2.17)
					Suburban			
Early	One furry pet	1.94(0.73-20.36)	0.90(0.46-1.78)	0.51(0.11-2.29)	0.90(0.54-1.51)	1.65(0.76-3.58)	0.93(0.48-1.81)	0.56(0.34-0.92)
	Two or more furry pets	3.99(0.79-20.36)	1.65(0.52-5.20)	3.90(0.78-19.41)	0.16(0.02-1.21)	5.19(1.59-16.94)	0.73(0.16-3.26)	0.64(0.24-1.70)
					Urban			
	One furry pet	2.13(1.18-3.85)	1.77(1.19-2.65)	1.25(0.62-2.51)	1.25(0.87-1.78)	1.33(0.81-2.20)	1.04(0.66-1.63)	0.99(0.71-1.39)

Two or more furry pets	2.57(0.95-6.95)	2.15(1.06-4.36)	0.95(0.22-4.10)	0.62(0.30-1.27)	0.56(0.17-1.90)	0.85(0.35-2.08)	1.09(0.58-2.06)
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^aNo pet keeping was set as reference. Odds ratio was adjusted for gender, age, total income, family allergic history, home dampness and avoidance behavior.

^bFurry pet: cats, dogs, rodents and birds.