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Swedish population-based study of pupils showed that foster children had increased risk for ill-health, negative lifestyle and school failure

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Short title: Foster children risk ill-health

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Abstract

Aim The aim of this population-based study was to explore if foster children were at higher risk for health problems compared to children of the same age not in foster care.

Methods Data for 13,739 pupils aged 10, 13 and 16 years were derived from the Pupil Health Database in the county of Värmland, Sweden, from the school years 2012/2013 and 2013/2014, which includes data on school performance, health, lifestyle and social relations based on interviews with school nurse.

Results Of all pupils, 1.2% was placed in foster care. Children in foster care had an increased risk for ill-health, a negative lifestyle and school failure. Girls in foster care had an increased risk for mental health problems compared to other girls. There was a tendency in the same direction for boys in foster care. Finally, foster children had an increased risk of expressing a more negative view on life.

Conclusion The study underscores earlier knowledge about foster care children's generally inferior health and well-being. The current population-based study emphasises that health, risk behaviour and school performance should be considered together.

Key words: foster children, health problem, life-style, population-based study, school performance.

Key Notes

- Children in foster care are a vulnerable group with an increased risk of developing health problems; however there are few population-based studies.
- Foster children were at higher risk for expressing different health problems, a negative lifestyle and school failure.
- Foster children's generally inferior health and well-being emphasises that health, risk behaviour and school performance should be considered together in future research.

INTRODUCTION

It is a great intervention in a child's life to be taken into custody by society and placed in foster care or in an institution. Reasons for placements in Sweden are normally parental neglect of younger children and own negative behaviour like drug abuse or anti-social behaviour among the teenagers (1). International studies have shown that the number of children taken into custody by society varies between countries. There are fewer children in custody in the Nordic countries compared to for example USA, where 6% are in care (2). The corresponding proportion in Sweden is 4% of all children under 18 taken into custody at least once during their childhood. However, at any one point in time only less than 1% are in care because the majority of placements are short, often less than a year (3,4). Teenagers are more often taken into custody than younger children (4).

It has been shown both internationally and in Sweden that children in out-of-home care have more health problems than other children. In an American study 60% of children in out-of-home care had at least one psychiatric diagnosis during their life time and of them 62% were diagnosed before they were placed in foster care (5). In another study of youth 13-17 years of age about one fourth of the foster care children had conduct disorder, anxiety or depression (6).

In a Norwegian study every second child 6-12 years of age in out-of-home care met the criteria for a psychiatric diagnosis (7). The strongest predictor for a psychiatric diagnosis was the number of different types of maltreatment experienced by the child (5,7). The most common diagnosis was emotional disorders (24%), behavioural disorders (22%) and Attention Deficit Hyperactivity Disorder (ADHD) (19%). In a Danish study 20% of the children placed out-of-home had a psychiatric diagnosis compared to 3% in children in general. Intellectual disability and autism were the most common diagnoses (8).

Swedish studies show that children in foster care are less healthy and have reduced well-being compared to other children (9,10). They were more often in care for self-inflicted

injuries and were using substantially more psycho-pharmaceuticals than other children. Premature death was five times more common in these children (11).

Moreover it has been shown that children in foster care are experiencing less psycho-social support than other young people (10). They are at high risk of both academic failure as well as developing more ill-health as adults (12). Young adults, who earlier have been placed in foster care, are more prone than others to receive economic support, probably as a consequence of incomplete schooling, psycho-social problems and addiction (13).

Swedish children in foster care have had less check-ups by preventive dental and health care compared to other children (14,15) although all Swedish pupils have the same right by law to these services with regular health examinations (16). Half of the children had health problems that were not cared for (14).

Children in foster care are consequently a vulnerable group. However, as far as we know, these aspects of health have not been reported previously in Europe in a population-based study. The aim of this study was therefore to explore whether children in foster care were at higher risk for chronic health problems, mental health problems and a negative lifestyle than children not in foster care. Focus was on comparisons between girls in foster care versus girls not in foster care and boys in foster care versus boys not in foster care.

METHODS

Study population

The current sample constituted of 15,871 pupils aged 10 years (grade 4), 13 years (grade 7) and 16 years (grade 1 upper secondary school). Table 1 shows that 13,739 (87%) participated in this study whereof 49% were girls and 51% were boys. Among the participants 9% were born in another country than Sweden. The external drop-out was 8% among the 10 year olds, 16% among the 13 year olds and 17% among the 16 year olds. The internal dropout was low (0-1%).

Data Collection and instruments

Data were derived from the Pupil Health Database in the county of Värmland, Sweden, compiled from 16 municipalities during the two school years 2012/2013 and 2013/2014. A Swedish school year starts in August and ends in June the following year. Data have been collected each year since 2009 in connection with health examinations by the school nurse and there are de-identified data from about 9,000 pupils each year in the ages 6, 10, 13 and 16 years.

A preformed questionnaire was used as background information for a dialogue about the pupil's health. The questions were of a salutogenic character based on questionnaires earlier used by the school health services in Sweden and from the Instrument Five to Fifteen, a Nordic instrument for investigating child development and behaviour (17). The questions were also based on The Strengths and Difficulties Questionnaire validated for use to assess Swedish children's mental health (18). The questionnaire has been continuously validated for its intelligibility by almost 20,000 pupils and 90 school nurses. Questions that were difficult to understand have been removed or reformulated. This validation started in 2009. After 2012 no further alterations have been necessary. In the database it is registered if the child is placed in foster care, but not at which age or for how long time placed in foster care.

After responding the child hands the questionnaire over to the school nurse. The answers are then directly validated at the health dialogue and misunderstandings are corrected jointly. A minor group of children with reading or writing disabilities are assisted by the school nurse. There is also a parental questionnaire which is delivered to the school nurse in a closed envelope.

Health variables

Back-ground factors and chronic health problems

The questionnaire contains questions about age, country of birth and family situation. The

questionnaire for the parents and for the 16 years old pupils also contains questions about diagnosed chronic health problems and regular contacts with health and dental services.

Mental health

Mental health was measured by 11 psychological and psychosomatic symptoms. Questions covered insomnia problems, poor night sleep, negative feelings such as feeling bad, sad or anxious and duration of these feelings. Extrovert behaviour was measured through questions about anger or bad mood. For introvert behaviour there were questions on psychosomatic symptoms such as headache, stomach pain, dizziness and back/neck/shoulder pain. The emotional well-being part contained questions concerning self-esteem and dissatisfaction with their body.

Lifestyle

Lifestyle was assessed by questions about breakfast habits, physical activity and use of tobacco, alcohol and drugs.

Vulnerability and view on life

Vulnerability was measured by questions formulated as if someone had hurt the child in such a way that the child got really frightened. Their current view on life was measured by a visual analogue scale 0-10 where 10 indicated best ever and zero the worst ever.

Re-coding of variables

The answers were dichotomised accordingly: "Corresponds very well, well or fairly well" = yes, and "corresponds badly or not at all" = no. "Every day or often" = yes, and "seldom or never" = no. "Never, have tried once or twice in a month" = no, while "every day, a number of times in a week or a month" = yes. For the visual analogue scale were 0-7 = negative and 8-10 = positive, as 75% of the answers fell between 8-10 with a mean of 8.3 and SD 1.7.

Biostatistical analysis

Univariate tests (chi-square), multivariate logistic regression analyses and stratified logistic regression analyses expressed as adjusted odds ratio (aOR) with a 95% confidence interval adjusted for age, country of birth, schoolmates' friendliness and diagnosed chronic health problems were performed. Trends in number of reported psychological and psychosomatic symptoms according to foster care were tested by linear-by-linear association. All analyses were considered statistically significant with a p-value of <0.05. Statistical analyses were performed in SPSS version 20.0 (IBM Corp., Armonk, New York). Data were analysed specifically in total and by age. Ages 10 and 13 were summarized due to low number of pupils. Focus was on comparisons between girls in foster care versus all other girls and boys in foster care versus all other boys.

Ethical aspects

The study was approved by the Research Ethical Review Board in Uppsala (Dnr 2013/160).

RESULTS

In the study population 171 children (1.2%) were placed in foster care, 33 pupils (0.7%) aged 10, 47 pupils (1.1%) aged 13 and 91 pupils (2.0%) aged 16. There was a slight overrepresentation of boys. Children born abroad were overrepresented in foster care compared to Swedish born children (3.5% vs. 1%, $p < .001$). Most of the foreign-born were from non-European countries (Table 1).

(Table 1 here)

Among 16 year olds substantially fewer children in foster care studied a preparatory programme for higher academic studies compared to their school peers (girls 27.9% vs. 60%, $p < 0.001$ and boys 16.7% vs. 41.3%, $p < 0.001$). Children in foster care more often studied introductory programmes (girls 18.6% vs. 6.1%, $p < 0.001$ and boys 27.1% vs. 6.0%, $p < 0.001$) shown in Table 2.

(Table 2 here)

Diagnosed chronic health problems

Table 3 shows that children in foster care were at increased risk of having ADHD/ADD, autism/Asperger's syndrome and intellectual disability compared to children not in foster care. There were strong and significant associations for girls, while for boys the adjusted ORs generally were lower but significant. On the other hand, children in foster care did not show an increased risk of dyslexia, allergy, asthma and overweight. Children in foster care had significantly more contacts with health services but not with dental care, not shown in table.

(Table 3 here)

Mental health

Girls in foster care reported significantly more multi-psychological and psychosomatic symptoms than girls not in foster care when expressed as 1-2 symptom(s) (aOR 2.00, 95% CI: 1.00-3.99) and 3 or more symptoms (aOR 3.33, 95% CI: 1.68-6.60). There was a tendency in the same direction for boys, however not statistically significant.

It was particularly notable that girls in foster care were at higher risk for low self-esteem (aOR 2.70, 95% CI: 1.62-4.51) and dissatisfaction with their body (aOR 1.82, 95% CI: 1.11-2.99) than other girls. For boys there were no significant associations found.

Lifestyle

Table 4 shows that girls in foster care were at higher risk for binge drinking, physical inactivity and inferior breakfast habits than other girls. Both girls and boys in foster care were at higher risk for being daily smokers and drug users.

(Table 4 here)

Vulnerability and view on life

Girls in foster care were at increased risk for being exposed to vulnerability than girls not in foster care (aOR 3.97, 95% CI: 2.42-6.53). This difference was not found when comparing

boys. Both girls and boys in foster care were at higher risk for expressing a more negative view on life than other girls and boys.

DISCUSSION

This population-based study reports that children in foster care were at higher risk for several health problems, negative lifestyle and mental health problems compared to children not in foster care. The present study found that girls in foster care were at higher risk of multiple psychological and psychosomatic symptoms compared to other girls. This difference was not found among boys. However, there are few studies on how boys perceive their health.

Randel et al (19) reported that boys differentiate between 'mind and body' when dealing with strong emotions. Schrock and Schwalbe (20) argued that boys in subordinate positions try to enhance their masculinity. To reveal fear, anxiety and a weak position is considered effeminate. Randell et al (21) suggested that managing emotions is vital for well-being. Humphreys et al (22) found that high-quality foster care emphasizing responsive caregiving reduced the impact of deprivation on callous-unemotional trait development for boys.

The current study underscores earlier knowledge about foster care children's generally inferior health and well-being with higher presence of neuro-psychiatric disabilities, use of tobacco and drugs and worse school performance in comparison to other children (7,8,23,24). The increased risk of chronic health problems found in children in foster care can partly be explained by neuro-psychiatric disabilities. The current study has emphasised that health, risk behaviour and school performance should be considered together. An unexpected and important finding was that children in foster care to a lesser extent were diagnosed as dyslectic. An American study by Pears et al (25) concerning pre-school children in foster care showed that more than half of these children were at risk for developing dyslexia. Furthermore, Maguire et al (26) reported that dyslexia was more common in emotionally neglected children. There could be a reason to believe that children in our study have not been well enough examined for dyslexia, and if so probably have not

got enough support for reading skills. These problems are depended on recognition. It is possible that foster children run a risk of having health problems that have not been recognised, considering that parental action is of importance in the health seeking process leading to a diagnosis. Parental and professional neglect could well be the reason why the risk ratios of the more subtle disability of dyslexia is so much lower than that of the more obvious neuro-psychiatric disorders. Thus, the presented results may well be underestimations of the real risks.

The finding that girls in foster care were at higher risk for the two negative lifestyle factors “physical inactivity” and “not having breakfast” could be an indicator of poor quality of the foster home as an aspect that needs to be considered in interventions to improve the health of children in foster care. On the other hand, the symptoms could be expected to be influenced also by the conditions in the home before entering care as well as in the current foster home.

The differences we found between girls in foster care and other girls were not found between boys. However, in a study of trauma exposure and PTSD among older adolescents in foster care Salazar et al (27) found that boys were more likely to experience interpersonal violence and environmental trauma. On the other hand girls were more likely to experience sexual trauma. In the current study it was found that girls was at higher risk of exposure to hurtful actions making them frightened but we cannot argue that this result was due to sexual trauma since this was not studied.

The current cross-sectional study does not answer the question if the placed children's health problems depends on or is a cause of the placement. The results only show an association between being placed in foster care and some defined health problems.

Limitations and strengths

Since the study found differences between boys and girls we also evaluated the interaction effect between sex and foster care on the health outcomes by adding an interaction term in

the logistic regression model. The interaction effect was statistically significant (two-sided p-value <0.05) when the dependent variable was psychological and psychosomatic symptoms (e.g., anxiety, headache and stomach pain) and lifestyle. However, the interaction effect was not statistically significant when the dependent variable was a neuro-psychiatric disorder (e.g., autism and ADHD). In conclusion, the association between being in foster care and some psychological and psychosomatic symptoms as well as some lifestyle factors did depend on the sex of the individual.

Testing socio-economic status as a confounder was not possible in this study since no relevant data concerning the biological parents' socio-economic status was available. Moreover, there were no data on parents' health status since this can be risk-factors for children's well-being. Also, there was no data on duration of foster care, if the child had changed foster care family or if any of the children were unaccompanied refugee minors. However, at the time of the current study, it is known that refugee children in the studied schools were very few. The relatively high proportion of foreign-born children in foster care in this rural region probably reflects that they often originate from bigger cities outside the region. A possible limitation of the study is the low number of children in foster care.

The main strength of the study was the population-based design with indicators based on interviews. A further strength was that the survey is built upon well validated questionnaires and that it continuously have been assessed by the pupils for its intelligibility.

The reason for the higher drop-out in 16 year olds was mainly due to administrative reasons. In some of the municipalities the nurses just did not have enough time to meet all pupils due to high work load. A second reason was a low rate of health visits with pupils with high absence and for pupils moving in or out of the municipality during the school year. Finally the questionnaire was only available in Swedish, which made it difficult for newly arrived immigrants with no skills in the Swedish language. The school nurses' general experience is that pupils dropping out from the health examinations are the ones with most health

problems. This indicates that the differences between the groups in the current study probably were underestimated.

CONCLUSION

Children in foster care were generally unhealthier than other children. Both girls and boys were at higher risk of chronic health problems and for daily smoking, use of drugs and school failure. When girls in foster care were compared to other girls we found that they were at higher risk for psychological and psychosomatic symptoms. This difference was not found for boys.

Future research on children in foster care needs to focus on children's strategies and reactions in difficult life situations. There is also a need for deeper knowledge about the school situation for children in foster care as well as thorough investigations including plausible dyslexia and traumatisation.

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Conflict of interest statement

The authors declare no conflict of interest.

Abbreviations

ADHD Attention Deficit Hyperactivity Disorder

ADD Attention Deficit Disorder

CI Confidence Interval

aOR Adjusted Odds Ratio

SD Standard deviation

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Table 1. Description of the study population of 13,739 pupils in three different ages.

Variable	N (%)					
	In foster care			Not in foster care		
	Girls	Boys	Total	Girls	Boys	Total
Total	78 (45.6)	93 (54.4)	171 (1.2)	6,739 (49.7)	6,829 (50.3)	13,568 (98.8)
Grade						
4 th grade primary school (10 years old)	12 (15.4)	21 (22.6)	33	2,327 (34.5)	2,434 (35.6)	4,761
7 th grade lower secondary school (13 years old)	23 (29.5)	24 (25.8)	47	2,207 (32.7)	2,127 (31.1)	4,334
1 st grade upper secondary school (16 years old)	43 (55.1)	48 (51.6)	91	2,205 (32.7)	2,268 (33.2)	4,473
Migration status						
Native Swedish	58 (74.4)	71 (76.3)	129	6,160 (91.4)	6,236 (91.3)	12,396
Immigrants/ Foreign-born	20 (25.6)	22 (23.7)	42	579 (8.6)	593 (8.7)	1,172

Table 2 Description of 4,564 pupils in the upper secondary school programme (16 years old)

School programme	N (%)						
	All children		In foster care		Not in foster care		
	Total	Girls	Boys	Total	Girls	Boys	Total
Introductory programme *	292 (6.4)	8 (18.6)	13 (27.1)	21 (23.1)	135 (6.1)	136 (6.0)	271 (6.1)
Vocational programme	1,922 (42.1)	22 (51.2)	20 (41.6)	42 (46.1)	729 (33.0)	1151 (50.7)	1,880 (42.0)
Higher education preparatory programme	2,278 (49.9)	12 (27.9)	8 (16.7)	20 (22.0)	1,322 (60.0)	936 (41.3)	2,258 (50.5)
Programmes for pupils with learning disabilities	72 (1.6)	1 (2.3)	7 (14.6)	8 (8.8)	19 (0.9)	45 (2.0)	64 (1.4)

* Pupils not qualified to other upper secondary school programmes (28).

Table 3. Association between being in foster care and chronic health conditions/disabilities expressed as adjusted odds ratio (aOR) with 95% Confidence Interval (CI) with children not in foster care as reference and stratified for sex, in 13,739 pupils.

Chronic health conditions/disabilitiesAdjusted ¹Odds Ratio (95% CI)

	Prevalence	Total population	
	N (%)	Girls	Boys
Chronic conditions/ disabilities	4,905 (35.7)	2.13 (1.35-3.37)	1.47 (0.97-2.23)
ADHD/ADD*	568 (4.1)	9.37 (5.14-17.05)	5.55 (3.41-9.02)
Autism/Asperger	405 (2.9)	6.44 (2.85-14.53)	5.48 (3.18-9.45)
Intellectual disability	98 (0.7)	8.73 (2.98-25.61)	11.17 (5.00-24.98)
Dyslexia	715 (5.2)	0.69 (0.21-2.20)	0.33 (0.08-1.34)
Allergy	2,492 (18.1)	1.11 (0.62-1.99)	0.80 (0.44-1.46)
Asthma	1,075 (7.8)	1.32 (0.60-2.89)	0.53 (0.19-1.45)
Overweight	3,428 (25.0)	0.94 (0.55-1.60)	1.04 (0.65-1.65)

¹Adjusted for age/grade and country of birth. *Attention Deficit Hyperactivity Disorder/Attention Deficit Disorder.

Table 4. Association between being in foster care and lifestyle factors in 13,739 pupils expressed as adjusted odds ratio (aOR) with 95% Confidence Interval (CI) with children not in foster care as reference and stratified for sex.

Life style factors	Adjusted ¹ Odds Ratio (95% CI)						
	Prevalence ²	Total population ¹		13 years old		16 years old	
	N (%)	Girls	Boys	Girls	Boys	Girls	Boys
No breakfast	1,733 (12.6)	2.01 (1.22-3.39)	0.99 (0.54-1.82)				
Physical inactive	2,524 (18.5)	1.75 (1.06-2.87)	0.96 (0.57-1.61)				
Daily smoker ²⁾	370 (4.2)	3.86 (1.99-7.50)	2.96 (1.34-6.56)	26.80 (5.68-126.34)	-	2.88 (1.40-5.93)	3.05 (1.37-6.78)
Tested alcohol ²⁾	3,644 (41.0)	1.07 (1.07-3.73)	0.66 (0.38-1.13)	5.44 (2.22-13.37)	0.27 (0.04-1.99)	1.11 (0.57-2.17)	0.77 (0.42-1.41)
Been intoxicated ²⁾	2,095 (23.8)	1.95 (1.06-3.59)	1.09 (0.60-1.97)	11.65 (3.73-36.45)	-	1.33 (0.72-2.48)	1.28 (0.62-2.06)
Tested drugs ²⁾	159 (1.8)	5.01 (2.11-11.90)	3.90 (1.58-9.62)	-	-	5.49 (2.30-13.09)	4.17 (1.68-10.33)

¹ Adjusted for age/grade, country of birth, schoolmates' friendliness and chronic conditions/ disabilities. ² For ages 13 years and 16 years only.