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Influence of Interrupted Childhood Biographies on Health Development: Evaluation of the Scientific Literature on the Example of Being Taken into Care*

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Abstract

Background: An interrupted family history, as is the case after taking someone into care, can complicate collecting family anamnesis data. In addition, the interrupted family history itself could be considered part of a person's risk profile. **Aim and methods:** Literature analysis was conducted to examine whether there are scientific studies on health development after placement in out-of-home-care in order to recognise any existing medical characteristics that may be relevant for internal medical care. **Results:** There are few scientific publications on the health development of people after being placed in out-of-home-care. Direct reactions to the stress of being taken into custody include nausea and fever. However, effects that go beyond the acute situation and last into adulthood have also been described, such as AD(H)D, asthma, diabetes, cancer, hypertension and cardiovascular diseases (myocardial infarction, stroke), epilepsy and increased overall mortality in adulthood. Studies show that not only previous experience but also the stress of being taken into care is triggers for this. **Conclusion:** Information about a previous institutionalisation can hence be important for internal medical practice. The available scientific literature shows heterogeneous study methodology and no group of people with experience of out-of-home-placement has yet been scientifically accompanied for a long time period. Further studies on this could help to better weigh up the consequences of omitting and conducting an intervention for child/youth protection as well as to improve the medical care for this group of people.

*This publication is a pre-publication of partial results from the dissertation of Manuela Loderer submitted at the Medical Faculty of the University of Munich.

Keywords

Taking into Care, Out-of-Home-Care, Interrupted Family History, Physical Outcomes, Internal Medicine

1. Introduction

In recent years, well over 30,000 children and young people, not including unaccompanied refugees under the age of 18, have been taken into care in Germany each year [1]. An interrupted family history, as is the case after being taken into care, can make it difficult to collect family anamnesis data. Furthermore, the interrupted family history itself could be considered part of a person's risk profile. The aim of this intervention to prevent harm to children and young people is counterbalanced by the potential harm caused by the intervention of taking into care. While the potentially harmful effects of maltreatment, neglect and abuse have been well researched [2] and the link between out-of-home-placement/receiving youth protection services and mental health has been scientifically proven [3], far less is known about the physical health impacts of being taken into care.

2. Aim and Methods

A literature analysis was carried out with the aim to find out what has been scientifically proven about the effects of an interrupted family history on physical health and whether consequences can be derived from this for the internal medical care of this group of people.

3. Results

In comparison to the frequency and increasing duration of child removals [1], their impact on the health was only analysed in comparatively few studies, which were heterogeneous in terms of study methods and research questions.

Table 1. Summary of the literature research with regard to the research question (source: own elaboration based on the listed literature).

Kress, L., Hansbauer, P. (2012). "Kleine Kinder in stationären Hilfen: Ergebnisse eines Praxisentwicklungsprojekts" [4]			
Participants	**Objective**	**Study design**	**Results**
9 children younger than 6 who were placed in out-of-home care	Identification of key problems and burdens in the out-of-home-placement of younger children	Nine case studies with different satisfaction ratings were selected and analysed using a questionnaire and practical workshops	In addition to various psychological reactions, psychosomatic reactions such as nausea or fever before/during/after visiting contacts were observed as a burden in out of home placement

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Fries, A. B. W., Ziegler, T. E., Kurian, J. R., Jacoris, S., Pollak, S. D. (2005). "Early experience in humans is associated with changes in neuropeptides critical for regulating social behavior" [8]			
Participants	**Objective**	**Study design**	**Results**
18 previously institutionalised children living with adoptive parents and a comparison group of 21 children living with their biological parents	Influence of early childhood social experiences on subsequent brain-dependent behavioural development (oxytocin and arginine vasopressin balance)	Evaluation and comparison of oxytocin and vasopressin levels in urine samples after physical contact with (adoptive) mother or unknown woman	A disturbed neuropeptide balance was detected, although the children had been living with their adoptive parents for an average of three years

Fries, A. B. W., Shirtcliff, E. A., & Pollak, S. D. (2008). "Neuroendocrine dysregulation following early social deprivation in children." [9]			
Participants	**Objective**	**Study design**	**Results**
18 children with residential care experience who live with their adoptive parents and a comparison group of 21 children who live with their biological parents	Investigation of the long-term neurobiological effects of early deprivation (cortisol levels)	Evaluation and comparison of cortisol levels in urine samples after physical contact with (adoptive) mother or unknown woman	After physical contact with the (adoptive) parents, the cortisol levels increased in the adoptive children while they decreased in the comparison group. Basal cortisol levels were similar in both groups.

Bos, K., Zeanah, C. H., Fox, N. A., Drury, S. S., McLaughlin, K. A., & Nelson, C. A. (2011). "Psychiatric outcomes in young children with a history of institutionalization" [5]			
Participants	**Objective**	**Study design**	**Results**
136 children under 31 months old living in institutions in Bucharest who were assigned to either a foster family or a residential home, as well as a comparison group that had never been institutionalised before	Investigation of the effects of either institutionalised care or placement in a trained foster family on attachment, attachment disorders, emotional reactivity and psychiatric symptoms. Evaluation of the electroencephalograms (EEG) of the institutionalised children.	Split into 2 groups in a randomised procedure: Children living in foster care and children living in residential care. Examination with regard to attachment, attachment disorders, emotional reactivity, psychiatric symptoms with follow-up checks after 30, 42 and 54 months. Evaluation of the EEG examinations of the 136 children from residential care	Children in out-of-home care show significantly more diagnosable psychiatric disorders than the control group The EEG of children in out-of-home care shows more theta waves and fewer alpha waves in the frontal, temporal and occipital areas. This altered activity is known from AD(H)D research and is associated with delayed cortex maturation.

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Hellbrügge, T. (1966). "Zur Problematik der Säuglings- und Kleinkinderfürsorge in Anstalten, Hospitalismus und Deprivation" [7]			
Participants	**Objective**	**Study design**	**Results**
69 people aged 17 - 23 who grew up in "Lebensborn" homes during the National Socialist era and a comparison group of the same age	Identification of abnormalities during growing up in special homes and identification of peculiarities in adolescence	Catamnestic assessments and (in-depth) psychological examinations, contrast with comparison group and evaluation of medical reports, care reports and biographical anamnesis	The following special characteristics were found: Infants: deprivation syndrome Toddlers: poor developmental status (speech delay, no eye contact, crying out of fear, blank facial expression, no contact with other children or aggressive behaviour) Adolescents: neurotic dissociality, lower intelligence, performance disorders

Zlotnick, C., Tam, T. W., & Soman, L. A. (2012). "Life course outcomes on mental and physical health: the impact of foster care on adulthood" [16]			
Participants	**Objective**	**Study design**	**Results**
70,456 surveys conducted in California in 2003 and 2005.	Comparison of the prevalence of physical and mental health problems in adults with and without a history of out-of-home care	Data analysis from the "California Health Interview Survey" of 2003 and 2005. Investigation of the connection between out-of-home care in childhood and mental and physical problems in adulthood. Consideration of demographic and socio-economic aspects	Higher rates of asthma, diabetes, hypertension and epilepsy or seizure disorders in people with experience of out-of-home care. They were more likely to be smokers. Mental health problems were more common. Correlations can also be identified after adjusting the data for demographic and socio-economic aspects. It is unclear whether a factor before or during the out-of-home placement was the cause.

Gao, M., Brännström, L., & Almquist, Y. B. (2017). "Exposure to out-of-home care in childhood and adult all-cause mortality: a cohort study" [10]			
Participants	**Objective**	**Study design**	**Results**
15,048 people born in Stockholm in 1953	Investigation of the effects of out-of-home care in childhood on all-cause mortality in adulthood	Analysis with data from the Stockholm Birth Cohort Study: Out-of-home placements up to the 19th birthday and data on mortality between 1973 and 2009 were collected and assessed. Comparison with two control groups who grew up under similar conditions but without out-of-home care.	Increased overall mortality between the ages of 20 and 56 in people with experience of out-of-home care. Even in comparison to control groups who grew up under similar conditions but without experiencing out-of-home care, people who were placed in out-of-home care had a 62% - 114% higher risk of death.

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Turney, K., & Wildeman, C. (2016). "Mental and Physical Health of Children in Foster Care." [6]			
Participants	**Objective**	**Study design**	**Results**
92 159 children (including 481 children in foster care) aged 0 - 17 living in the USA who are not in residential care.	Comparison of the physical and mental health of children in foster care with the general population. In addition, comparison of children in foster families with children living in socio-economically disadvantaged environments.	Analysis of data from the National Survey of Children's Health (NSCH) from 2011-2012. Interviewing an adult from the household about the children's physical and mental health. Recording of family circumstances and socio-economic background.	Children in foster care have more health problems compared to the general population: Depression occurred about seven times as often, AD(H)D and hearing problems occurred about three times as often. Asthma and speech and language problems were around twice as common, Compared to children who are socio-economically disadvantaged, children in foster care are more likely to have mental health problems. Physical problems occur disproportionately frequently.

Alastalo, H., Raikkonen, K., Pesonen, A. K., Osmond, C., Barker, D. J., Kajantie, E., Heinonen, K., Forsen, T. J., & Eriksson, J. G. (2009). "Cardiovascular health of Finnish war evacuees 60 years later." [17]			
Participants	**Objective**	**Study design**	**Results**
320 people separated from their families as a result of the war and 1683 people without experience of out-of-home placement	Investigation of the long-term effects of family separation on cardiovascular health and type 2 diabetes in adulthood	Interview and clinical examination of participants (glucose levels, cholesterol, HDL, LDL, triglycerides, apolipoprotein A and B, lipoprotein (a), BMI, blood pressure)	In adulthood, those who had been separated were more likely to have cardiovascular disease, type 2 diabetes and high blood pressure. Those who had been separated the longest were the most frequently affected. Elevated values for lipoprotein(a), but no abnormalities were found for cholesterol, HDL, LDL, triglycerides, apolipoprotein A and B as well as BMI, waist circumference and gender

Ahrens, K. R., Garrison, M. M., & Courtney, M. E. (2014). "Health outcomes in young adults from foster care and economically diverse backgrounds." [15]			
Participants	**Objective**	**Study design**	**Results**
Group 1: 596 people with experience of out-of-home care in childhood Group 2: 456 people without experience of out-of-home care with a low economic background Group 3: 1461 people without experience of out-of-home care with a high economic background	Examination of the health of young adults with experience of out-of-home care regarding cardiovascular risk factors and other chronic abnormalities. Comparison with the health of young adults without experience of out-of-home care from economically insecure and secure backgrounds.	Data analysis from two US birth cohorts with socioeconomic data and health data (from late adolescence and early adulthood)	For most of the health-concerning results: Increase from "economically high" to "economically low" to "external accommodation", even after adjustment for covariates. Group 1: worst general state of health at both times of the study. Comparison of group 1 with group 3: Among those in out-of-home care, high blood pressure, smoking, seizure disorder, ADHD, asthma, presence of a cardiovascular risk factor and other chronic illness were more common. Diabetes was disproportionately common. No group differences for dyslipidaemia Comparison of group 2 with group 3: only asthma and smokers more frequent, and no other noticeable differences

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Batty, G. D., & Hamer, M. (2021). "Public care during childhood and biomedical risk factors in middle age: the 1970 British cohort study." [20]			
Participants	**Objective**	**Study design**	**Results**
371 people with experience of out-of-home care up to their 16th birthday and 8210 people without experience of out-of-home care	Investigation of the relationship between out-of-home care in childhood and biomarkers in adulthood	Clinical examination of participants aged 46 to 48 years (blood pressure, height, weight, blood values: lipids, CRP, glycated haemoglobin)	Slightly poorer values for BMI, systolic blood pressure, HDL, glycated haemoglobin, CRP and triglycerides in those living elsewhere. After adjustment for health and socio-economic background from childhood, no differences were found. The biomarkers analysed do not appear to have any influence on the existing relationship between out-of-home care and mortality

de Mestral C, Bell S, Hamer M, Batty G. D. (2020). "Out-of-home care in childhood and biomedical risk factors in middle-age: National birth cohort study." [19]			
Participants	**Objective**	**Study design**	**Results**
322 people with experience of out-of-home care before their 16th birthday and 7690 people without experience of out-of-home care	Searching for causes for poorer health in adulthood after former out-of-home-care: Investigation of the influence of out-of-home care on biomedical factors in adulthood	Analysis of the 1958 UK birth cohort with a survey of the socio-economic and health background in childhood as well as interviews and examinations in middle adulthood (42 and 44/45 years)	After adjusting the health data for gender, 4 of 19 analysed factors were conspicuous: fibrinogen, cortisol, forced expiratory volume in 1 second and forced vital capacity. After adjustment for cofactors (poverty and health in childhood): essentially no longer detectable correlation between out-of-home care in childhood and biomarkers in adulthood. The physiological pathway leading to poorer health in adulthood does not appear to include the biomarkers analysed here

Viner, R. M., & Taylor, B. (2005). "Adult health and social outcomes of children who have been in public care: population-based study." [12]			
Participants	**Objective**	**Study design**	**Results**
343 people with and 16,224 people without experience of out-of-home care before their 17th birthday	Investigating the long-term impact of public welfare on socioeconomic status, education, social and health outcomes	Study of 16,567 people from a UK birth cohort born 1970, analysing parental interviews and self-reports at 5, 10, 16 and 30 years of age	The socio-economic and health status was worse after state care: there was more poor general health.

Continued

Hjern, A., Brännström, L., Vinnerljung, B., Frank, P., & Batty, G. D. (2023). "Cardiovascular disease in individuals with a history of out-of-home care: a Swedish national cohort study." [13]

Participants	Objective	Study design	Results
24,637 people with and 838,789 people without experience of out-of-home-care	Investigation of the influence of out-of-home care on cardiovascular health in adulthood	Cohort study on the years of birth 1972-1981, analysing data from various national Swedish registers. The data of the study participants were analysed from the age of 18 to 39 - 48 years with regard to cardiovascular diseases, deaths and socio-economic background	Adjusted for the cofactors age and education of the mother: twice the risk of cardiovascular disease (stroke, myocardial infarction) in adulthood in people with experience of out-of-home care. Link between out-of-home care and death from a cardiovascular event more prominent in women than in men. Clear correlation between out-of-home care and overall mortality. Higher risk of cardiovascular problems if the out-of-home care occurred after the 11th birthday. Duration of out-of-home care without influence.

Schneider, R., Baumrind, N., Pavao, J., Stockdale, G., Castelli, P., Goodman, G. S., & Kimerling, R. (2009). "What happens to youth removed from parental care?: Health and economic outcomes for women with a history of out-of-home placement." [11]

Participants	Objective	Study design	Results
368 women with experience of out-of-home care and 9240 women without experience of out-of-home care	Evaluation of mental and physical health problems, educational status and economic hardship in women with experience of out-of-home care.	Analysis of data collected by telephone as part of the "California Women's Health Survey'.	Physical health: more reports of moderate/poor health, more smokers, more overweight people. No abnormalities in alcohol consumption

Xie, T., de Mestral, C., & Batty, G. D. (2021). "Association of public care in childhood with social, criminal, cognitive, and health outcomes in middle-age: five decades of follow-up of members of the 1958 birth cohort study." [18]

Participants	Objective	Study design	Results
420 people with experience of out-of-home care before their 16th birthday and 10740 people without experience of out-of-home care.	Investigating the disadvantageous effects of out-of-home care in middle age with regard to social, criminal and health issues.	Analysis of data from the UK birth cohort of 1958 with information on childhood from parental interviews and data on adulthood by interviewing the subjects at the age of 42 and conducting a cognitive test at the age of 50.	3 out of 8 somatic health aspects were noticeable: Physical disabilities 3 times as frequent, general health was worse and a cancer diagnosis was significantly more frequent (factor >1.5). No clear correlations regarding obesity, diabetes, high blood pressure, hospitalisation and accidents.

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Brännström, L., Vinnerljung, B., & Hjern, A. (2020). "Outcomes in Adulthood After Long-Term Foster Care: A Sibling Approach." [14]			
Participants	**Objective**	**Study design**	**Results**
533 people with at least 5 years of experience in out-of-home care before their 13th birthday and their 616 siblings or half-siblings on their mother's side who were not in out-of-home care.	Investigating the effects of long-term out-of-home care on later life.	Data analysis of a Swedish birth cohort (1973-1982) on siblings of whom one was in out-of-home care, regarding education, social and health at the age of 30 - 39 years.	Those in out-of-home care had poorer scores in terms of disability pension (reason for disability unknown) and mortality

The literature analysis revealed 17 relevant publications with information on the physical consequences of being taken into care/interrupted childhood biographies, which are summarised in **Table 1** with regard to the research question.

From the scientific studies presented in the table, the following relationships between placement in care and somatic abnormalities could be derived:

The physical abnormalities described during separation, out-of-home care and during childhood/adolescence are as follows:

- Nausea and fever [4]
- psychiatric symptoms [5]
- ADHD, asthma, obesity, hearing problems and vision problems [6]
- Deprivation syndrome (initially protesting and crying, later apathy, decline in activity, feeding difficulties and regression in development, lack of resistance to infections in young children and poor speech and mental skills) with impacts into adolescence [7]
- Abnormalities in EEG examinations of institutionalised children that indicate delayed cortex maturation [5]
- deviant hormone concentrations in urine samples of children with a history of institutionalisation [8] [9]

The effects on physical health in adulthood have been described in the literature as follows:

- increased overall mortality [10]
- generally poorer health [11] [12]
- higher mortality rates [10] [13] [14]
- more frequent occurrence of asthma [15] [16]
- more frequent occurrence of diabetes [15]-[17]. One of the studies found no abnormalities with regard to diabetes [18]
- more frequent cancer diagnoses [18]
- more frequent occurrence of epilepsy and seizure disorders [15] [16]
- more frequent occurrence of arterial hypertension in adulthood [15] [17] and

abnormalities with regard to cardiovascular diseases (stroke, myocardial infarction) [13] [17]. One of the studies found no clear link to high blood pressure [18]

A specific biomarker that is clearly responsible for chronic diseases and increased mortality in adulthood after the experience of being placed in an out-of-home care setting has not yet been identified [19] [20]. Beyond that, etiology for the increased health issues both in childhood and adulthood is largely unknown. In terms of higher rates of AD(H)D correlations with the detected abnormalities in EEG-activity are known from ADHD research [5].

By examining the results with control groups that grew up under similar conditions but were not separated from the family of origin, it was possible to find an indication that the observations are not only due to potentially traumatising experiences in the family of origin, but also due to the additional stress in the care setting [6] [10] [14].

4. Discussion

Child protection interventions, especially the most invasive of which is taking children into care, are carried out in an attempt to do good to children and young people and to avert the known detrimental effects of child abuse and neglect. In this occasion, child protection is based on standards whose effects have not been fully evaluated. The conducted evaluation of the scientific studies shows that there are medical peculiarities in the lives of people who have been taken into care. In the period of separation, out-of-home care with visiting contacts and during adolescence somatic abnormalities such as nausea, fever, AD(H)D, asthma, hearing problems, vision problems and psychiatric symptoms are described. While immediate reactions (e.g. nausea) occur directly [4], the time until other symptoms appear is not reported. Various somatic abnormalities were found not only during the period of out-of-home-placement, but also well into adulthood [4]-[18]. This means that there is evidence to assume that even many years after separation there is no full recovery of health. From an internal medicine perspective, the health abnormalities found in the literature research in adulthood, such as diabetes [15]-[17], asthma [15] [16], high blood pressure [15] [17], epilepsy/seizure disorders [15] [16], also raise the question of whether the intervention of being taken into care leads to a change in health history that should be taken into account by doctors.

As studies suggest that children who are taken into care have poorer health outcomes in adulthood than control groups from socioeconomically comparable families [6] [10] [15] [16], and this has been shown to be due not only to previous family experiences but also to the stress of being taken into care [6] [7], both the potential harm of inaction and the potential harm of hasty intervention need to be weighed up before a child is taken into care.

This assessment is particularly difficult due to the lack of knowledge about the consequences of being taken into care. Most of the abnormalities during out-

of-home care were found in studies with young children under six years of age [4] [5] [8] [9]. However, it is not known which age group is most likely to have short- and long-term health problems, especially because many studies do not differentiate between age groups. There is no study that scientifically monitors a group of people who has been taken into care or was separated from their caregivers over a longer period of time. Therefore, there is a great need for scientific monitoring of children and adolescents before, during and after being taken into care into adulthood in order to be aware of the possible impact of being taken into care and to be able to guarantee long-term medical and psychological support.

From an internist's point of view, it can be deduced that the collection of medical and family history can be complicated not only by an interrupted family history, as some information may not be available to the person, but that the interrupted family history itself can also constitute important anamnestic information.

5. Study Limitations

There are existing only a few scientific publications on the health development of people after being placed in out-of-home-care. The available scientific literature shows heterogeneous research methodology which aggravates comparing study results. No group of people with experience of out-of-home-placement has yet been scientifically accompanied for a longer period of time. It is therefore difficult and often not possible to differentiate whether the abnormalities described are due to circumstances prior to the separation from the familiar environment and caregivers or to the separation/custody itself, or whether other factors come into question. This results in a need for further research.

Some publications do not aim to analyse the physical effects of taking children into care and the information on taking children into care is only taken from marginal notes.

Some publications also do not explicitly analyse the consequences of taking children into care and include placements where the reason for separation from the parents is unknown as well as placements for protection from wartime attacks.

6. Conclusion

The analysis of the studies indicates that being taken into care has physical effects that are noticeable both directly and in adulthood. Direct reactions to the stress of being taken into custody can be nausea and fever. However, effects that go beyond the acute situation and persist into adulthood have also been described, such as AD(H)D, asthma, diabetes, cancer, hypertension and cardiovascular diseases (myocardial infarction, stroke), epilepsy and increased overall mortality in adulthood. Studies show that this is not only triggered by previous experiences, but also by the stress of being taken into care.

Conflicts of Interest

This publication contains results from the thesis of Manuela Loderer "Einfluss unterbrochener Kindheitsbiographien auf die gesundheitliche Entwicklung der Betroffenen. Auswertung der wissenschaftlichen Literatur am Beispiel von Inobhutnahme-Erlebnissen" at the Medical Faculty of the Ludwig Maximilians University of Munich (submitted). Manuela Loderer and Ursula Gresser report no conflicts of interest.

References

[1] Destatis (2022) Statistiken der Kinder- und Jugendhilfe, Vorläufige Schutzmaßnahmen 2021 vom 27.07.2022, Statistisches Bundesamt.

[2] Blesken, M., Franke, I., Freiberg, J., Kraft, M., Kurylowicz, L., Rohde, M. and Schwier, F. (2019) AWMF S3+ Leitlinie Kindesmisshandlung, -missbrauch, -vernachlässigung unter Einbindung der Jugendhilfe und Pädagogik (Kinderschutzleitlinie), Langfassung 1.0., Kinderschutzleitlinienbüro.

[3] McKenna, S., Donnelly, M., Onyeka, I.N., O'Reilly, D. and Maguire, A. (2021) Experience of Child Welfare Services and Long-Term Adult Mental Health Outcomes: A Scoping Review. *Social Psychiatry and Psychiatric Epidemiology*, **56**, 1115-1145. https://doi.org/10.1007/s00127-021-02069-x

[4] Kress, L. and Hansbauer, P. (2012) Kleine Kinder in stationären Hilfen: Ergebnisse eines Praxisentwicklungsprojekts, EREV Schriftenreihe 1/2012, 53. Jahrgang, Schöneworth Verlag.

[5] Bos, K., Zeanah, C.H., Fox, N.A., Drury, S.S., McLaughlin, K.A. and Nelson, C.A. (2011) Psychiatric Outcomes in Young Children with a History of Institutionalization. *Harvard Review of Psychiatry*, **19**, 15-24. https://doi.org/10.3109/10673229.2011.549773

[6] Turney, K. and Wildeman, C. (2016) Mental and Physical Health of Children in Foster Care. *Pediatrics*, **138**, e20161118. https://doi.org/10.1542/peds.2016-1118

[7] Hellbrügge, T. (1966) Zur Problematik der Säuglings- und Kleinkinderfürsorge in Anstalten, Hospitalismus und Deprivation. In: Asperger, H. and Bierich, J.R., Eds., *Handbuch der Kinderheilkunde*, *Band* 3 *Soziale Pädiatrie*, Springer, 384-404.

[8] Fries, A.B.W., Ziegler, T.E., Kurian, J.R., Jacoris, S. and Pollak, S.D. (2005) Early Experience in Humans Is Associated with Changes in Neuropeptides Critical for Regulating Social Behavior. *Proceedings of the National Academy of Sciences*, **102**, 17237-17240. https://doi.org/10.1073/pnas.0504767102

[9] Fries, A.B.W., Shirtcliff, E.A. and Pollak, S.D. (2008) Neuroendocrine Dysregulation Following Early Social Deprivation in Children. *Developmental Psychobiology*, **50**, 588-599. https://doi.org/10.1002/dev.20319

[10] Gao, M., Brännström, L. and Almquist, Y.B. (2017) Exposure to Out-of-Home Care in Childhood and Adult All-Cause Mortality: A Cohort Study. *International Journal of Epidemiology*, **46**, 1010-1017. https://doi.org/10.1093/ije/dyw295

[11] Schneider, R., Baumrind, N., Pavao, J., Stockdale, G., Castelli, P., Goodman, G.S., *et al.* (2009) What Happens to Youth Removed from Parental Care?: Health and Economic Outcomes for Women with a History of Out-of-Home Placement. *Children and Youth Services Review*, **31**, 440-444. https://doi.org/10.1016/j.childyouth.2008.09.011

[12] Viner, R.M. and Taylor, B. (2005) Adult Health and Social Outcomes of Children Who Have Been in Public Care: Population-Based Study. *Pediatrics*, **115**, 894-899. https://doi.org/10.1542/peds.2004-1311

[13] Hjern, A., Brännström, L., Vinnerljung, B., Frank, P. and Batty, G.D. (2023) Cardiovascular Disease in Individuals with a History of Out-of-Home Care: A Swedish National Cohort Study. Preprint. https://doi.org/10.1101/2023.01.20.23284828

[14] Brännström, L., Vinnerljung, B. and Hjern, A. (2020) Outcomes in Adulthood after Long-Term Foster Care: A Sibling Approach. *Child Maltreatment*, **25**, 383-392. https://doi.org/10.1177/1077559519898755

[15] Ahrens, K.R., Garrison, M.M. and Courtney, M.E. (2014) Health Outcomes in Young Adults from Foster Care and Economically Diverse Backgrounds. *Pediatrics*, **134**, 1067-1074. https://doi.org/10.1542/peds.2014-1150

[16] Zlotnick, C., Tam, T.W. and Soman, L.A. (2012) Life Course Outcomes on Mental and Physical Health: The Impact of Foster Care on Adulthood. *American Journal of Public Health*, **102**, 534-540. https://doi.org/10.2105/ajph.2011.300285

[17] Alastalo, H., Räikkönen, K., Pesonen, A., Osmond, C., Barker, D.J.P., Kajantie, E., *et al.* (2009) Cardiovascular Health of Finnish War Evacuees 60 Years Later. *Annals of Medicine*, **41**, 66-72. https://doi.org/10.1080/07853890802301983

[18] Xie, T., de Mestral, C. and Batty, G.D. (2020) Association of Public Care in Childhood with Social, Criminal, Cognitive, and Health Outcomes in Middle-Age: Five Decades of Follow-up of Members of the 1958 Birth Cohort Study. *Journal of Epidemiology and Community Health*, **75**, 289-296. https://doi.org/10.1136/jech-2020-214737

[19] de Mestral, C., Bell, S., Hamer, M. and Batty, G.D. (2019) Out-of-Home Care in Childhood and Biomedical Risk Factors in Middle-Age: National Birth Cohort Study. *American Journal of Human Biology*, **32**, e23343. https://doi.org/10.1002/ajhb.23343

[20] Batty, G.D. and Hamer, M. (2020) Public Care during Childhood and Biomedical Risk Factors in Middle Age: The 1970 British Cohort Study. *American Journal of Epidemiology*, **190**, 176-178. https://doi.org/10.1093/aje/kwaa079