

VILNIUS UNIVERSITY

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# Impact of Parental Emigration on the Health of their Children Remaining in Lithuania

**SUMMARY OF DOCTORAL DISSERTATION**

Medical and Health Sciences  
Public Health (M 004)

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VILNIUS 2024

The dissertation was prepared between 2016 and 2023 at Vilnius University

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VILNIAUS UNIVERSITETAS

Justina  
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# Tėvų emigracijos įtaka Lietuvoje likusių jų vaikų sveikatai

**DAKTARO DISERTACIJOS SANTRAUKA**

Medicinos ir sveikatos mokslai  
Visuomenės sveikata (M 004)

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VILNIUS 2024

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## GLOSSARY

<b>95% CI</b>	95% Confidence Interval
<b>ASEBA</b>	Achenbach System of Empirically Based Assessment is a questionnaire set created by T. M. Achenbach for assessing competencies, strengths, adaptive functioning, behaviour, emotions, and social problems in individuals of different ages
<b>BMI</b>	Body mass index
<b>CBCL 6/18</b>	Child Behaviour Check List. It is the ASEBA Methodology Group instrument
<b>df</b>	Degrees of freedom
<b>HAZ</b>	Height for age Z-standard
<b>HBSC</b>	Health Behaviour in School-aged Children Study
<b>LBC</b>	Children left behind due to parental emigration
<b>NA</b>	Not applicable
<b>N-LBC</b>	Children not left behind due to parental emigration
<b>NR</b>	Not reported
<b>OR</b>	Odds ratio
<b>SD</b>	Standard deviation
<b>SDQ</b>	Strengths and Difficulties Questionnaire
<b>SE</b>	Standard error
<b>UNICEF</b>	United Nations International Children's Emergency Fund
<b>WAZ</b>	Weight for age Z-standard
<b>YSR 11/18</b>	Youth Self Report questionnaire. It is the ASEBA Methodology Group instrument

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# SUMMARY

## 1. INTRODUCTION

UNICEF asserts that millions of children are left behind in their home countries as one or both of their parents emigrate seeking employment, education, or simply in an attempt to create a ‘better life’, impacting the children’s health, development, family economic status, opportunities and welfare, ranging from detrimental effect to potentially positive influences (1).

According to the currently existing data, the children whose parents have emigrated and who have stayed behind in their native country are denoted by the poorer general state of health (2, 3), they are more inclined to fall ill (4) and accidentally harm themselves (5), their nutrition is usually substandard (6). After conducting a systematic literature review and meta-analysis, researchers identified that the children whose parents emigrated were facing 52% higher risks of suffering from depression, 70% higher risks of suicidal intentions, 85% higher risks of suffering from anxiety, 24% higher risks of (ab)using psychoactive substances in comparison to the children whose parents were living together with them (7). The data of a research conducted previously in Lithuania suggests that parental emigration exerted a negative impact, and that it was related with more common difficulties regarding the children’s behaviour and emotional health (8).

The United Nations Convention on the Rights of the Child stipulates that a child can fully and harmoniously develop only when growing and being raised in a family, experiencing happiness, love and understanding, while also respecting the right of the child and their parents to leave any country and return there (9). The parents, relationship with them, and the interpersonal bond with the parents are inherently important for the development of a child and the formation of a personality. This was also corroborated by the Attachment Theory, as developed by John Bowlby in 1983, which claims that, for



the successful social and emotional development of a child, close relationship with at least one caregiver is necessary (10). Consequently, considering the presently available data, it can be assumed that the emigration of either of the parents, or both of them, can be defined as one of the determining factors for the health of a child, for the exploration of which, research is required. Therefore, the present dissertation undertakes to investigate the parental emigration and its impact on the health of the children remaining in Lithuania in a more detailed way.

### 1.1. Novelty of the Research

There is evident gap of research discussing the impact of emigration on the health of a child in Europe as a region, and especially in Lithuania. It has been estimated that approximately 82% of the researches conducted in this field were performed in China (7). Lack of statistical data provided by other countries constitutes a major gap in academic research, nevertheless, it is important to highlight that the health issues of the children affected by their parents' emigration are problems of the worldwide scope (11).

Regarding previous research conducted in Lithuania, a study in the field of public health investigated the impact of parental emigration on children's health, representing the sole Lithuanian research published in an internationally indexed journal to date (8). On top of that, the evidence from the field of social sciences tends to explore the impact on health of the young children whose parents emigrated. With this bias towards the early childhood, the gap of the research of the parental emigration impact on the health of adolescents and the youth is even more prominent. It has been observed that, notably, the impact of the parent(s)' emigration is most commonly manifested in adolescents aged 13 and older, rather than in the younger children (12).

Consequently, the lack of research in the region of Europe, particularly regarding children as the target population concerning this

scientific issue, provides solid grounds for highlighting the scientific novelty of the conducted research.

## 1.2. Practical Significance of the Research

The conducted research is important for the identification of the health issues of the Lithuanian children whose parent(s) have emigrated, enabling the organization of evidently required prevention and intervention measures to address the health problems, behavioural issues and emotional difficulties in children.

First of all, in order to ensure the well-being of a child, it is relevant that the child should be granted all the opportunities to grow together with both of their parents. Those states which have ratified the United Nations Convention on the Rights of the Child respect the right of the child and his/her parents to leave any country and return there and commit to consider in a humane and urgent way the applications of a child and/or his/her parents to enter the participating country or depart from it so that achieve family reunion by passing the positive verdict (9). However, it is insufficient for allowing migrants to travel together with their families. Most commonly, the children are left behind in the native country because of the following reasons: there are hopes of prompt and immediate return; work visas do not give the rights to arrive to the country with the child(ren) or it is feared that the inviting country would fail to provide the required healthcare and education services for the child(ren) (1). It has been observed that, due to the visa-issuing policies of some countries, emigrants find it difficult to maintain their relationship with the family and children as obstacles are created for regular returns home (13). The present research shall provide scientific background for making the required political decisions which would facilitate the situation of the residents of the country to migrate with their children, and, at the location of their emigration, the children would be provided with the appropriate healthcare, education and other services of utmost importance. To

achieve this objective, not only national, but also international agreements are necessary.

Secondly, even when emigrants are provided with the appropriate conditions, part of them will choose emigration without their children. According to research, children suffering from difficulties due to separation from their parents require specific care which is different from other models of care in cases when children are completely deprived of their object of attachment (14). Therefore, the conducted research allows investigating more profoundly and in a more structured way what difficulties and issues the children of emigrants tend to experience in order to appropriately organize prevention and intervention of health issues as well as emotional/behavioural difficulties.

Finally, how well a child copes with parental emigration depends not only on the child him/herself, but also on the understanding (i.e. empathy), behaviour, and ability of the other parent or (one of) the guardian(s) remaining with the child to respond to the child's needs. This research allows assessing how the children by themselves and their parents/caregivers perceive the difficulties and health issues children are facing. This research also allows drawing conclusions about the necessary interventions for children and their parents or caregivers in coping with the difficulties they experience.

## 2. AIM AND OBJECTIVES OF THE DOCTORAL DISSERTATION

### 2.1. Aim of the Doctoral Dissertation

To assess the association between the emigration of parents with the physical and mental health of their children staying behind in Lithuania.

### 2.2. Objectives of the Doctoral Dissertation

1. To conduct systematic literature review on the physical and mental health of the children left behind due to parental emigration.

2. To identify the association between the emigration of one or both parents from Lithuania and the physical and mental health of their children remaining in Lithuania on the grounds of the data provided by the children themselves.

3. To identify the association between the emigration of one or both parents from Lithuania and the physical and mental health of their children remaining in Lithuania on the grounds of the data provided by the parents or caregivers.

4. To identify association between the demographic, social, economic and migration factors and the physical and mental health of the children leaving behind in Lithuania whose one or both parents emigrated.

5. To identify the key differences between the responses provided by the children themselves and by their parents/caregivers on the physical and mental health of children remaining in Lithuania due to parent(s)' emigration.

### 3. MATERIALS AND METHODS

#### 3.1. Methodology of Systematic Literature Review

To achieve the first objective of the doctoral dissertation, two systematic literature reviews were undertaken by following the PRISMA guidelines (15). For the systematic organization of research articles, the *Endnote vX9.3.3* bibliographic management software was utilized.

Systematic literature review on the association between international labour migration of the parent(s)'s and the mental health as well as the well-being of their children leaving behind in their native country was undertaken under the guidance and methodology of researchers representing Heidelberg University Hospital. The contribution of the doctoral candidate in conducting the systematic review involved the search for the sources, a review and editing of generalized results, and the editing of a research article. The methodology of this analysis and its results are provided in the scientific publication (16).

The second systematic literature review was performed under guidance of the author of this doctoral dissertation. In the course of this overview, it focused on analysing and synthesizing the most recent evidence on the consequences of the internal and international emigration of the parent(s) on the physical health of their children as well as the related risk and protective factors.

##### 3.1.1. Searching strategy

The search for scientific articles was conducted in the *PubMed*, *PsycINFO*, *Web of Science*, *Academic Search Complete* and *Cochrane* databases. Search was guided using the PECO (population, exposure, comparator, outcomes) concept (17). Following search strategy were applied: *left alone* OR *left behind* AND *stay at home* OR *left over* AND *child\** AND *parent\** AND *migrant\** OR *migrant household*

AND *physical\* health* OR *overweight* OR *obesity* OR *stunting* OR *vaccination* OR *breastfeed\** OR *physical\* activity*. Additionally, the reference lists of included studies and relevant systematic reviews were reviewed.

### 3.1.2. Inclusion and exclusion criteria

The following inclusion criteria were applied: 1) study population children (below age 18 years old); 2) original study; 3) one parent or both parents are living under conditions of internal or international migration; 4) the study employs quantitative methods of analysis; 5) the article was published in English. Studies with the following criteria were excluded: published before 1 January 2008; qualitative or experimental studies; mental health, well-being or educational outcomes and children living in migration together with parents. Two experts conducted a review of the titles of the articles and their abstracts/summaries. The disagreements were resolved by involving the opinion of a third expert.

### 3.1.3. Data transcription and systemization

Two experts independently from each other extracted following information from the included articles: first author; the year of publication, the geography of research, the type of research, the sample of research, the methodology of research, the distribution of the age and gender of the respondents, the definitions in use, measures of the exposures and outcomes, the key results of the research, covariates and the research limitations. The information was compared, and, when disagreement was detected, to reach the final verdict, a third expert was involved.

The researches were generalized in terms of several aspects: it was considered whether the parental migration was internal (within the borders of the native country) or international, and considering the

health outcomes of the children, the risk and prevention factors (weight and height, nutrition, health behaviour, injuries, immunization).

#### 3.1.4. Evaluation of the quality of the included studies

In order to evaluate the quality of the research, the *Quality Assessment Tool for Observational Cohort and Cross-sectional Studies* (National Heart, Lung and Blood Institute, 2014) was employed (18). The assessment tool consisted of 14 questions. The quality of the included cases was assessed by two experts. In case of disagreement between the experts, a third expert was involved. Studies were defined as ‘good quality’, ‘medium quality’, or ‘poor quality’ according to the number of ‘yes’ answers in the evaluation from 50%, 49–21%, and below 20%, respectively.

### 3.2. Methodology of Cross-Sectional Study

#### 3.2.1. Sample size

*A priori* sample size calculation showed that the estimated sample size needed for a significance criterion  $\alpha = 0.05$  and expected power of 0.8 was 950 parents/caregivers and 950 children.

A total of 1400 parents/caregivers and 1400 children were invited to participate in the study. In total, 764 parents/caregivers (response rate 54.6%) and 735 children (response rate 52.5%) agreed to participate and completed the questionnaire. The final analysis included 760 questionnaires filled by parents/caregivers and 728 questionnaires filled by children.

#### 3.2.2. Sampling

The research was conducted in 14 municipalities of the Republic of Lithuania. A total of 43 schools were invited to participate in the study, of which 24 schools agreed to participate. On the grounds of the data provided by AIKOS (an open system of information and

consulting on studies in the Republic of Lithuania), lists of the schools of each region were obtained. Out of the schools of each region, by random selection, two schools were invited to take part in the research. Only those schools which agreed to participate in the research were included into the research. Additionally, due to a higher-than-expected rejection rate, direct contact to enrol schools in the study was used. All parents/caregivers and children aged 12–17 years old from the participating schools were invited to participate in this study.

### 3.2.3. Description of the study population

Children aged 12 to 17 years old (inclusive) who were studying at the participating schools were considered the subjects of the research. In order to obtain more information on the subjects, their parents/caregivers were surveyed as well.

The following inclusion criteria were applied: 1. The school has agreed to take part in the research; 2. The research subject has agreed to take part in the research; 3. The parents/caregivers of the children have agreed that he/she would take part in the research; 4. The children were aged 12 to 17 (inclusive).

### 3.2.4. Instruments

The study used anonymous self-reported measures for parents/caregivers and their children. The questionnaires were printed on paper and filled in manually.

The parents/caregivers were filling in questionnaires about one of their children. One set of the questionnaire was composed of 3 instruments:

1. A questionnaire compiled by the researchers on the sociodemographic and emigration data;
2. *Child Behaviour Check List (CBCL 6/18)* (T.M. Achenbach, 2001). ASEBA methodology group instrument which was filled by the



parents/caregivers of a child to define the psychological functioning of one of their children.

3. A version of the *Strengths and Difficulties Questionnaire* (R. Goodman, 2005) intended for the parents of children aged 4–17 regarding formalized selection of children experiencing emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and prosocial behaviour.

The children were filling in a questionnaire on their experiences. One set of the questionnaire was intended for one child; one set was composed of 3 instruments:

1. A questionnaire compiled by the researchers on the sociodemographic and emigration data;

2. *Youth Self-Report (YSR 11/18)* (T.M. Achenbach, 2001). The ASEBA Methodology Group instrument which was filled in by adolescents themselves to describe their psychological functioning.

3. A version of the *Strengths and Difficulties Questionnaire* (R. Goodman, 2005) intended for children/adolescents aged 11–17 regarding formalized selection of children experiencing emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and prosocial behaviour.

The instruments of the ASEBA group of methodologies (CBCL 6/18 and YSR 11/18) have been translated into the Lithuanian language and standardized for use with the Lithuanian population (19). The license to copy and use CBCL 6/18 and YSR 11/18 instruments has been acquired from the ASEBA organization Vermont University Children, Youth and Family Research Center. The internal compatibility of the scales of the instruments in their Lithuanian version has been indicated as high by using the Cronbach's alpha coefficient (20).

SDQ questionnaires are free of charge. The Lithuanian versions of the questionnaires are provided with unlimited access online. The Lithuanian versions have been standardized for use in the Lithuanian population. Their reliability and validity have also been assessed by previous research (21).

### 3.2.5. Data collection

Contracts of cooperation were signed with the schools agreeing to take part in the research. Each school assigned a teacher, a school psychologist, or a social worker to be responsible for obtaining informed consent and data collection. Individual training sessions were conducted, and detailed instruction was provided to the data collectors.

The research package of parents/caregivers consisted of:

- a form of an informed person's consent;
- a research questionnaire;
- a set of envelopes for the questionnaires to be filled in.

The research package for the children consisted of:

- a form of agreement to participate;
- a research questionnaire;
- sheets of sticky notes for sticking together the filled questionnaires.

Informed consent was obtained from children and their parents or legal caregivers. The data collection process was implemented from January 22, 2022 to April 30, 2023.

### 3.2.6. Ethics, data protection and confidentiality

For conducting the research, a permit from Vilnius Regional Biomedicine Research Ethics Committee No. 2021/11-1378-861 and an extension of the permit No. 2023-LP-16 were obtained. The parents/caregivers agreeing to participate in the research and agreeing that their child would take part in the research signed the *Informed Consent* form. The children whose parents had agreed to participate in the research and who agreed to take part on their own behalf signed the *Agreement to Participate in Research* form.

The processing of the data collected in the informed Consent and Agreement to Participate in Research forms for the purpose of research by Order No. R-42 of the Rector of Vilnius University *On*

*Processing Personal Data in the Research Conducted by Vilnius University, Faculty of Medicine “Impact of Parental Emigration on the Health of Their Children Remaining in Lithuania.”*

In order to ensure the confidentiality of the data, the questionnaires were filled anonymously. The parents/caregivers were given sealed envelopes, whereas the children were given stickers, which guaranteed that the data presented in the questionnaires could not be related with the information presented in the form of informed consent and that the individual collecting the data would be unable to read the filled questionnaires.

### 3.2.7. Statistical analysis

Analysis of descriptive statistics was conducted. Categorical variables were described in absolute values and percentages. Meanwhile, quantitative normally distributed variables were described with means, standard deviations, the minimal and maximal values. For the data which did not conform to normal distribution, the variables were grouped and recoded into ordinal variables.

To identify differences between groups, parametric methods of analysis were used. For continuous variables, the t-test was used, whereas, for categorical variables, the  $\chi^2$  test was used (in case of <5 observations, the Fisher exact test was used). To define relationships between categorical variables, Cramer’s V coefficient was calculated.

With the objective of defining the associations of social, demographic and migration-related factors with the children’s health assessment, binary logistic regression was performed. The dependent variable was recoded so that it would acquire either of the two values: the health assessment ‘excellent/good’ was coded as zero (0), whereas the health assessment ‘satisfactory/bad/very bad’ was coded as one (1). The independent variables included into the final models of regression was binary and they were statistically significantly related with the dependent variable. The goodness of fit of a statistical model was evaluated by likelihood ratio of a model  $\chi^2$ , and the ratio of the

correctly classified cases, Hosmer-Lemeshow  $\chi^2$ , and McFadden R-squared determination coefficient ( $R^2$ ).

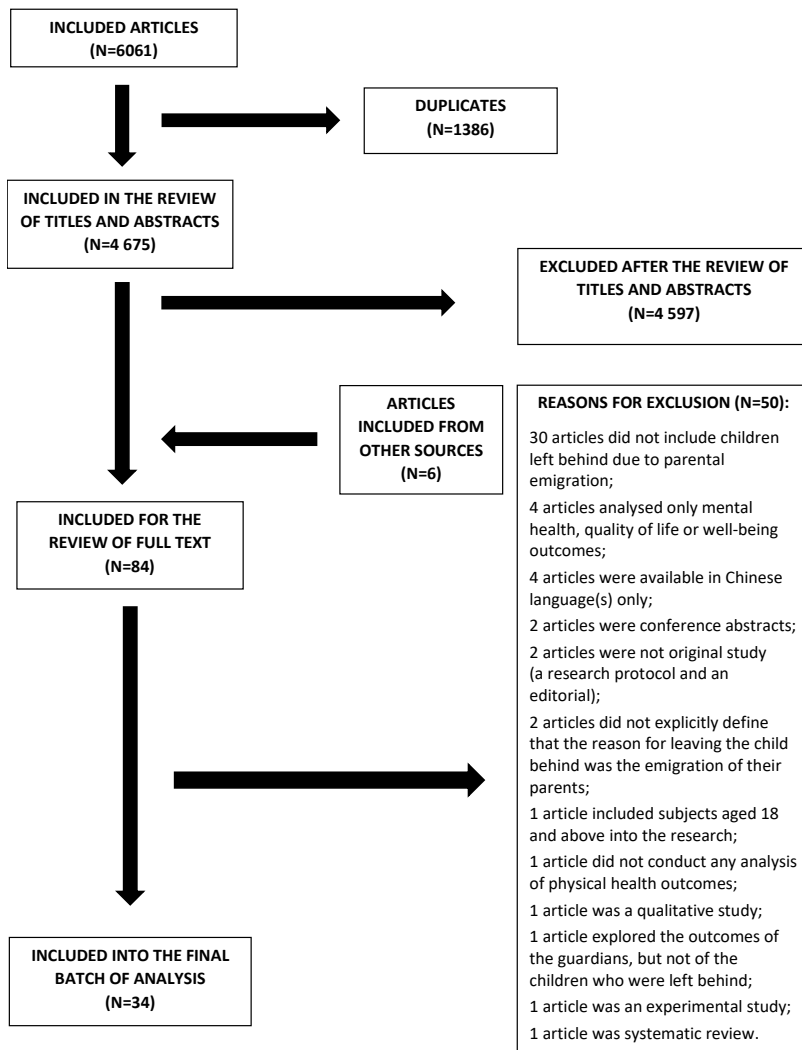
To identify the association of social, demographic and migration-related factors with mental health, binary linear regression and multiple linear regression were performed. Reduced regression models were constructed by eliminating multicollinear variables (VIF >5) and using the stepwise regression approach. The goodness of fit of the multiple linear regression models was indicated by calculating the determination coefficients ( $R^2$ ), F and  $p$  values.

The sample size was determined by employing the *OpenEpi* software package. To enter the data into the software, the *EpiData v4.6.0.6* software was used. HAZ and BAZ scores were determined by using the World Health Organization approved *AnthroPlus* software package. Statistical analysis of the data was conducted by using *STATA v15.1*. Differences were deemed to be statistically significant with a  $p$  value <0.05.

## 4. RESULTS

### 4.1. Results of Systematic Literature Review

We identified 6061 studies conforming to the key words used in the search. The final version of this analysis included 26 articles featuring cross-sectional research as well as longitudinal researches. 25 researches were conducted in China; other presently discussed researches covered Mexico, Sri Lanka, Philippines, Bangladesh, Vietnam, Ethiopia, India, Peru, Moldova and Georgia (a country in Europe). A scheme of the reasoning for the inclusion or exclusion of research articles into the presently conducted systematic analysis is presented in Figure 1.



**Figure 1.** Study selection scheme

In the course of systematic analysis, a certain impact of sociodemographic factors on the health outcomes was observed. It was noted that, in the rural areas of China, only the emigration of mother did not impact the health of a child, but the emigration of both parents had a significant negative impact on the health of the child (22). The use of alcohol and smoking were more common among those children who had both of their parents emigrated in comparison to those who had only one parent emigrant (23-25). In the studies evaluating the aspect of the age of the child, it was identified that those children whose parents emigrated in the age frame of 13–18 years old, had worse health outcomes than the younger children (12). Due to iron deficiency in their diet, children of emigrants experienced higher risks of anaemia, especially at a younger age (26, 27). The results of the researches included into this analysis indicated that, generally, females affected by the emigration of their parent(s)'s underwent a more prominent impact than males did (22). The results obtained by some researchers indicated that females impacted by their parent(s)' emigration were more inclined to smoke and binge drinking (23).

It is of importance to highlight that some researches did not indicate any significant correlation between the emigration of the parents and the child's state of health (28). On the grounds of the data of one of the studies included in this research, no evidence was found that the health of the children living together with their parents in emigration would be better than the health of the children staying behind alone after the emigration of their parent(s)' (12). Some researches included into this review did not detect any negative impact of parental emigration on the weight and height of their children (27, 29). The researches conducted by Moldovan and Georgian (a country in Europe) authors did not identify any significant relationship between parental emigration and the state of health of the child, either (36).

To conclude the conducted systematic review, it has been determined that the emigration of parent(s) within the same country was found to be related with the general state of physical health of

their children and such factors of risk as smoking, use of alcohol, insufficient physical activity, physical injury and the extent of vaccination. Articles included in this systematic analysis exploring outcomes of international emigration indicated that the parental emigration relate with the nutrition and physical activeness of their left behind children, but no information on impact was detected on physical health outcomes of the children, the involved risks or any protective factors. Detailed information regarding the type of emigration along with statistically significant effect sizes is presented in Table 1.



**Table 1.** Results of the research articles included in systematic analysis (only statistically significant outcomes are provided)

Group of outcomes	Outcome (among children left behind due to parental emigration)	Sample size (N)	Covariates <sup>2</sup>	Statistics (OR; Mean; SD; <i>p</i> ; 95% CI or other statistical information) <sup>1</sup>	Reference
<b>INTERNAL EMIGRATION</b>					
<b>Physical health</b>	More susceptible to illness	735	Parenting styles, child's age, health literacy	OR 1.628; <i>p</i> <0.05	Mo, 2015
	Childhood illness	8662	Age, gender, size of the household, income per capita, grandparents residing together, information on the village, the size of the village	OR 1.29; SE=0.164; <i>p</i> <0.05	Tong, 2015
	Pre-hypertension or hypertension	2170	Age, gender, mother's education, father's education, annual income of the household per capita	OR 7.77; 95% CI 2.05–29.4; <i>p</i> <0.01	Wen, 2016
<b>Nutrition, weight and height</b>	Lower HAZ	5413	Age, gender	OR -0.165; <i>p</i> <0.01	Lei, 2018
	Lower WAZ	5413	Age, gender	OR -0.142; <i>p</i> <0.05	Lei, 2018
	Malnutrition rate	827	NR/NA	LBC 14.83%; N-LBC 7.04%; <i>p</i> <0.01	Tao, 2016
	Lower likelihood of being breast-fed anytime in life	6136	Age, gender, ethnic origin, elder siblings, education of the caregiver, number of electric appliances at home, year of survey	OR 0.30; 95% CI 0.17–0.52	Ban, 2017

Group of outcomes	Outcome (among children left behind due to parental emigration)	Sample size (N)	Covariates <sup>2</sup>	Statistics (OR; Mean; SD; <i>p</i> ; 95% CI or other statistical information) <sup>1</sup>	Reference
	Lower likelihood of being breast-fed	1548	NR/NA	LBC (78.7%); N-LBC (82.8%); <i>p</i> <0.05	Luo, 2008
	Shorter timespan of breast-feeding	6136	Age, gender, ethnic origin, elder siblings, education of the caregiver, number of electric devices at home, year of conducting the research	$\beta$ -3.77; 95% CI -5.01– -2.53	Ban, 2017
	Duration of breast-feeding (months)	1548	NR/NA	LBC M=9.48; SD=3.58; N-LBC M=10.70; SD=3.26; <i>p</i> <0.001	Luo, 2008
<b>Health-unfavourable behaviour</b>	Consumption of alcohol	1367	Gender, age, class, one or more children in the family, academic achievements	OR 2.01; 95% CI 1.28–3.16; <i>p</i> <0.05	Jiang, 2015
	Higher smoking rate	1343	Gender, class, one or more children in the family, academic achievements	OR 5.59; 95% CI 2.38–13.15; <i>p</i> <0.001	Yang, 2016

Group of outcomes	Outcome (among children left behind due to parental emigration)	Sample size (N)	Covariates <sup>2</sup>	Statistics (OR; Mean; SD; <i>p</i> ; 95% CI or other statistical information) <sup>1</sup>	Reference
Injuries	Higher likelihood of getting injured	4479	Gender, age, average physical health, school academic achievements, one-child family, household income, parental marital status, mother's education, conflicts in the family, type of school, rejection (non-acceptance) by peers, village-type settlement	OR 1.208; SE 0.104; <i>p</i> <0.05	Hu, 2018
	More frequent injuries	3019	NR/NA	LBC 252.9/1000; 95% CI 233.0–273.0; N-LBC 119.7/1000; 95% CI 104.9–134.7; <i>p</i> <0.0001	Shen, 2009
Vaccination	Lower rates of timely vaccination	1216	NR/NA	LBC 55.7%; 95% CI 51.3–60.0; N-LBC 60.8; 95% CI 57.3–64.0; <i>p</i> =0.011	Tang, 2016
	Lower likelihood of receiving the full program of vaccination	1368	NR/NA	LBC 92.7%; N-LBC 79.9%; <i>p</i> <0.001	Ni, 2017

<b>Group of outcomes</b>	<b>Outcome (among children left behind due to parental emigration)</b>	<b>Sample size (N)</b>	<b>Covariates<sup>2</sup></b>	<b>Statistics (OR; Mean; SD; <i>p</i>; 95% CI or other statistical information)<sup>1</sup></b>	<b>Reference</b>
	Lower coverage of complete vaccination	1662	NR/NA	LBC 38.7%; N-LBC 44.2%; <i>p</i> <0.036	Tang, 2019
<b>INTERNATIONAL EMIGRATION</b>					
<b>Physical health</b>	Child's poor health (by mother's assessment)	542	NR/NA	OR 0.33; 95% CI 0.16–0.7; <i>p</i> <0.01	Edelblute, 2018
	Poorer physical health	205	NR/NA	LBC M=5.09; SD=0.78; N-LBC M=5.43; SD=0.63; <i>p</i> <0.01	Smeekens, 2012
<b>Health-unfavourable behaviour</b>	Lower physical activeness	239	Gender, age, BMI, mother's education, father's education, household characteristics	OR -0.56; <i>p</i> <0.05	Palos-Lucio, 2015

<sup>1</sup> Note: LBC – among children left behind due to parental emigration; N-LBC – among children not left behind due to parental emigration; <sup>2</sup> NR/NA – no data found or not applicable

## 4.2. Results of Cross-Sectional Study

### 4.2.1. Characterization of respondents

The final analysis included 760 questionnaires filled by parents/caregivers and 728 questionnaires filled by children aged 12–17.

The gender distribution of the children was as follows: 43.4% (N=316) males, 54.7% (N=398) females. In terms of age: 29.8% (N=217) children aged 12–13, 33% (N=240) children aged 14–15, 29.7% (N=216) children aged 16–17. The majority of the children were residing in the urban area – 57.6% (N=419), 30% (N=222) – were residing in the rural area, 5.5% (N=40) residing in a major city, 5.2% (N=38) – residing on an (isolated) farmstead. In terms of the family status, the majority of the children indicated that they had both parents – 89.6% (N=652), 8.2% (N=60) indicated that they only had a mother, 1.4% (N=10) indicated that they only had a father, 0.3% (N=2) indicated that they had neither mother nor father, 0.6% (N=4) did not present any information on their parents. The mean of the height of the children was 168.5 cm ( $\pm 10.6$  cm), whereas the average weight was 59.7 kg ( $\pm 13.5$  kg), and the BMI was 20.9 ( $\pm 3.6$ ).

When analysing the data presented in the questionnaires filled in by parents/caregivers, it was indicated that 83.7% (N=636) of the questionnaires were filled in by mothers, 6.1% (N=46) – by fathers, 1.2% (N=9) was filled by other individuals, and for 9.1% (N=69) of the cases, it was not indicated who filled the questionnaire. The majority of the parents/caregivers indicated their family status as ‘married’ – as stated in 71.6% (N=544) of the questionnaires; other indicated cases of family status were as follows: sole parent – 5.1% (N=39), cohabitation (living together not in marriage) – 8.7 (N=66), divorced – 10.8% (N=82), widow(er) – 2.4% (N=18). The family status was not indicated in 1.5% (N=11) of the parents’/caregivers’ questionnaires.

When describing emigration-related characteristics, 10.9% (N=83) of parents/caregivers indicated that they are looking after a child while one or both of the parent(s) are living in emigration, 67% (N =509) indicated that both parents or one of the parents did not emigrate, whereas as many as 22.1% (N=168) of the respondents did not submit any information on the emigration of one or both of the parent(s). What concerns the surveyed children, 15.7% (N=114) responded that one or both of their parents are living in emigration, 80.6% (N=587) claimed that their parent(s) never emigrated, and 3.7% did not present any information on the emigration of the parent(s). Concerning the families affected by emigration, it was the father who was usually the emigrating person – 83.3% (N=95), far less frequently this was the mother – 9.7% (N=11), and, in 7% (N=8) of the cases – both parents emigrated. A significant share of the respondents (65.1%, N=54) who were temporarily looking after children while their parent(s) was/were away indicated that they were receiving remittances from the parent(s) working away. 20.5% (N=17) respondents stated that they received no remittances, and 14.5% (N=12) of the respondents provided no answer to this question.

#### 4.2.2. Physical and mental health of children left behind due to parental emigration (results of analysis of the data presented in children's questionnaires)

A higher share of the children of emigrants assessed their health as satisfactory/bad/very bad in comparison to the children of non-emigrants (23.1% and 17%, correspondingly;  $\chi^2=5.91$ ,  $df=1$ ,  $p=0.015$ ), and this difference was statistically significant. A weak relationship was identified between the emigration of parent(s) and the child's health assessment (Cramer's  $V=0.09$ ). Correspondingly, statistically significantly more emigrants' children (11%) admitted suffering from any type of diseases/disabilities in comparison with non-emigrants' children (5.1%);  $\chi^2=5.62$ ,  $df=1$ ,  $p=0.018$ ; however, the relationship between diseases/disabilities and parental emigration was

found to be weak (Cramer’s  $V=0.09$ ). Among emigrants’ children, statistically significantly, the following health issues without any clear medical cause were more common in comparison with non-emigrants’ children: nausea/general weakness (40.2%; 95% CI (30.8–50.1) and 25.9% 95% CI (22.4–29.8), correspondingly,  $p<0.01$ ), vision issues (23.6% 95% CI (15.9–32.8) and 12% 95% CI (9.4–15), correspondingly,  $p<0.01$ ), vomiting (20.2% 95% CI (12.9–29.2) and 7.8% 95% CI (5.7–10.4), correspondingly,  $p<0.01$ ).

When assessing the mental health of children with the SDQ instrument, it was identified that, in comparison with non-emigrants’ children emigrants’ children had a statistically significantly higher mean score in the following scales: emotional symptoms (3.1, 95% CI (2.7–3.6) vs. 2.5 95% CI (2.3–2.7), correspondingly;  $p<0.01$ ), peer relationship problems (2.9, 95% CI (2.6–3.3) vs. 2.5, 95% CI (2.4–2.6), correspondingly;  $p<0.01$ ) and total difficulties (12.3 95% CI (11.2–13.3) vs. 10.7 95% CI (10.2–11.1), correspondingly,  $p<0.01$ ).

The values of YSR11/18 problem scales also indicated that emigrants’ children tend to experience more behavioural and emotional difficulties than non-emigrants’ children. Detailed information is presented in Table 2.

**Table 2.** YSR 11/18 problem scale value comparison between emigrants’ and non-emigrants’ children

<b>YSR 11/18 problem scale</b>	<b>Emigrants’ children (mean; 95% CI)</b>	<b>Non-emigrants’ children (mean; 95% CI)</b>	<b>t-test*</b>	<b>p</b>
<b>Anxious / Depressed</b>	7.5 (6.4–8.5)	6.0 (5.6–6.5)	-2.61	<b>&lt;0.01</b>
<b>Withdrawn / Depressed</b>	4.6 (4.0–5.2)	3.7 (3.4–3.9)	-2.68	<b>&lt;0.01</b>
<b>Somatic Complaints</b>	5.1 (4.3–5.8)	3.8 (3.5–4.1)	-3.32	<b>&lt;0.01</b>

<b>YSR 11/18 problem scale</b>	<b>Emigrants' children (mean; 95% CI)</b>	<b>Non- emigrants' children (mean; 95% CI)</b>	<b>t-test*</b>	<b>p</b>
<b>Social Problems</b>	5.4 (4.7–6.1)	4.1 (3.8–4.4)	-3.47	<b>&lt;0.01</b>
<b>Thought Problems</b>	5.5 (4.6–6.4)	4.1 (3.8–4.5)	-3.21	<b>&lt;0.01</b>
<b>Attention Problems</b>	6.3 (5.7–6.9)	5.4 (5.1–5.7)	-2.52	<b>&lt;0.01</b>
<b>Rule-Breaking Behaviour</b>	4.8 (4.1–5.6)	3.8 (3.5–4.1)	-2.86	<b>&lt;0.01</b>
<b>Aggressive Behaviour</b>	5.9 (5.5–6.3)	7.0 (6.1–7.9)	-2.36	<b>&lt;0.01</b>
<b>Internalizing</b>	17.1 (14.9–19.3)	13.5 (12.6–14.4)	-3.14	<b>&lt;0.01</b>
<b>Externalizing</b>	11.9 (10.3–13.4)	9.7 (9.1–10.3)	-2.79	<b>&lt;0.01</b>
<b>Total Problems</b>	57.7 (52.0–63.4)	47.1 (44.7–49.4)	-3.55	<b>&lt;0.01</b>

To conclude, it was identified that the children of emigrants tended to assess their health worse than the children of non-emigrant parents. On top of that, emigrants' children also suffered from more diseases/disabilities and health issues without a clear medical cause. Anthropometric measures and the frequency of classes missed due to illness were not statistically significantly different when comparing children of emigrant versus non-emigrant parents. Emigrants' children had more emotional and behavioural issues than non-emigrants' children. Statistically significant differences between emigrants' and non-emigrants' children were determined in all the scales of YSR11/18; whereas, when interpreting SDQ scales, statistically significant values were determined for emigrants' children only in the scales of emotional symptoms, peer relationship problems, and total difficulties.



#### 4.2.3. Physical and mental health of children left behind due to parental emigration (results of analysis of the data presented in parents'/caregivers' questionnaires)

When analysing the data from the parents'/caregivers' questionnaires, it was identified that a smaller share of the parents/caregivers of emigrants' children were assessing the health of the children as excellent or good in comparison to the parents/caregivers of children of non-emigrant parents; however, this difference was not statistically significant (86.8% vs. 93%, correspondingly;  $\chi^2=3.7$ ,  $df=1$ ,  $p=0.05$ ), a very weak relationship was identified between the emigration of parent(s) and the assessment of the health of their child (Cramer's  $V=0.07$ ). Any types of diseases and/or disabilities, according to parents/caregivers, were more common among emigrants' children than among non-emigrants' children (7.7% vs. 5.5%, correspondingly;  $\chi^2=0.578$ ,  $df=1$ ,  $p=0.447$ ); however, this difference was not statistically significant, either. When processing the responses provided by parents/caregivers on the children's health issues without clear medical cause, statistically significant differences were only found regarding vision issues which were more common among emigrants' children compared with non-emigrants' children (13.7% vs. 5.1%, correspondingly;  $\chi^2=7.9$ ,  $p=0.005$ ).

The mental health of the children according to data from their parents/caregivers was assessed by using the SDQ version for parents and the CBCL 6/18 questionnaire. It was determined that, according to parents/caregivers, emigrants' children had similar mean scores of the emotional and behavioural difficulties scales as non-emigrants' children. No statistically significant differences were identified in this segment of the research.

To summarize the results obtained from the answers provided by parents/caregivers on the physical and mental health of their children, it can be claimed that, in the opinion of parents/caregivers, emigrants' children had more vision issues, except for vision

deficiencies requiring corrective glasses for treatment. Other health issues, anthropometric indicators, health assessment by parents/caregivers, diseases from which the children are suffering, the frequency of school classes skipped, the emotional and behavioural issues and social competences were not found to have differences between emigrants' and non-emigrants' children.

#### 4.2.4. Impact of demographic, social and migration factors on the physical health of children

When exploring the impact of social, demographic and migration factors on children's self-reported health, it was identified that, across all the surveyed children age groups, the worse self-reported health was significantly related with the child's gender, school-related problems and other concerns the child is experiencing. Analysis of the data by gender showed that, across the entire sample, a higher share of females assessed their health as satisfactory/bad/very bad (24.9%) than males (10.2%); the differences were found to be statistically significant,  $p < 0.01$ . When researching the data by age, it was determined that, generally, children tend to give their health better scores (excellent/very good) at a younger age (aged 12–13: 84.3%) than at older age (aged 16–17: 75.6%),  $p = 0.03$ .

When analysing the data of the parents'/caregivers' questionnaires, it was identified that parents/caregivers tended to assess males' health as excellent/very good more often (94.6%) in comparison to females' (90.5%),  $p = 0.04$ . Also, better health assessment was given to children of a younger age (aged 12–13: 95.3%) in comparison to older children (aged 16–17: 88.5%),  $p = 0.03$ . The excellent/very good assessment of a child's health was also related with the family status of the parents/caregivers. Parents/caregivers who were sole/widow(er)s assessed the child's health as satisfactory/bad/very bad more frequently (15.8%) than divorced parents (11.1%) or married/cohabiting parents (7.1%),  $p = 0.04$ .

To examine the association of demographic, social and emigration-related factors on the assessment of children’s health, binary logistic regression analysis was performed. The final regression models included the variables which were found to be significantly related with the health assessment. According to children self-reported data, it was found that being a female, having school-related problems and having one or both parent(s) in emigration statistically significantly increased the likelihood to assess their health as satisfactory/bad/very bad. The analysis of the parents’/caregivers’ questionnaires showed that the likelihood of assessing children’s health as satisfactory/bad/very bad increases if child is a female and is having school-related problems. Detailed results of this analysis are presented in Table 3.

**Table 3.** Factors related with satisfactory/bad/very bad health assessment of a child

Factor	Health assessment (satisfactory/bad/very bad)			
	Child self-report <sup>1</sup>		Parents/caregivers report <sup>2</sup>	
	OR (95 %CI)	P	OR (95 %CI)	P
Gender (female)	2.4 (1.4–4.2)	0.002	2 (1.1–3.7)	0.021
Child has school-related problems (yes)	2.5 (1.5–4.5)	0.001	3 (1.3–6.5)	0.007
One or both parent(s) emigrated (yes)	2 (1.1–3.5)	0.017	-	-

<sup>1</sup> N=480, likelihood ratio  $\chi^2=36.5$ ,  $p<0.001$ , correctly classified 80.8%, Hosmer-Lemeshow  $\chi^2=4.45$ ,  $df=1$ ,  $p=0.349$ , McFadden pseudo  $R^2=0.078$ .

<sup>2</sup> N=713, likelihood ratio  $\chi^2=10.7$ ,  $df=1$ ,  $p=0.005$ , correctly classified 92.3%, Hosmer-Lemeshow  $\chi^2<0.01$ ,  $p=0.977$ , McFadden pseudo  $R^2=0.028$ .

In conclusion, the results indicated that females and children experiencing school-related problems tended to have poorer health assessment, as reported by parents/caregivers and by children themselves. However, the emigration of parents was only associated with worse health assessments as reported by the children themselves.

#### 4.2.5. Impact of demographic, social and emigration factors on the mental health of children

To identify the relationships between demographic, social, and migration factors and children's mental health, bivariable and multivariable linear regressions were used.

The results of binary linear regression indicated that a higher total score of difficulties of YSR 11/18 and SDQ questionnaires for children was associated with the gender of a child (female), the senior age of the child (aged 16–17), the worse relationships of a child with siblings (in comparison with peers), and the child having school-related problems. Besides, higher scores of the total difficulties were found to be related with the emigration of either one or both parent(s). Meanwhile, an association with a lower mean score of the total difficulties was found if a child had a higher number of intimate friends, had more frequent communication with friends outside school, and better relationship with other peers or parents (if compared with peers). Regarding the case of the SDQ questionnaire, the results show that the total score of difficulties was lower in cases a child was practicing sports and had chores/duties at home. These associations were not found to follow from the YSR 11/18-yielded values.

Considering the results of binary linear regression, models of multiple linear regression were constructed. After eliminating multicollinear variables from the model, and after stepwise elimination of insignificant variables, the final models of regression were developed. They indicated that variables significantly associated with an increased total score of difficulties in YSR 11/18 were the female gender, emigration of one or both parent(s) abroad, and having school-related problems. The increased total difficulties score of the SDQ questionnaire was significantly associated with the child's problems related with school, whereas the chores and duties at home were associated with a decrease in the score. Detailed results of multivariable regression analysis are presented in Table 4.

**Table 4.** Models of multivariable linear regression. Dependent variables YSR 11/18 and SDQ questionnaire total scores for difficulties, independent variables, demographic, social, and emigration-related factors

Independent variables	YSR 11/18 total score				SDQ total score of the questionnaire for children			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
<b>Child's gender</b>		<b>0.02</b>		<b>&lt;0.01</b>		0.29		
Male	Constant		Constant		Constant			
Female	6.5 (0.9–12.1)		8.2 (3.2–13.1)		0.5 (-0.6–1.7)			
<b>Child's age group</b>		0.53				0.84		
12–13	Constant				Constant			
14–15	-1.9 (-8.2–4.4)				-0.5 (-1.8–0.8)			
16–17	1.8 (-4.8–8.3)				-0.1 (-1.5–1.3)			
<b>Child living place</b>		0.76				0.73		
Rural	-0.9 (-6.5–4.7)				0.1 (-1.1– 1.3)			
Urban	Constant				Constant			
<b>One or both of the parents live in emigration</b>		0.11		<b>&lt;0.01</b>		0.31		
Yes	5.8 (-1.3–12.9)		8.9 (2.6–15.2)		0.8 (-0.7–2.3)			
No	Constant		Constant		Constant			
<b>Child practices some sport/ supervised physical activity</b>		0.79				0.74		

Independent variables	YSR 11/18 total score				SDQ total score of the questionnaire for children			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
Yes	1.1 (-6.7–8.8)				-0.3 (-1.9–1.4)			
No	Constant				Constant			
<b>Child has a hobby/ leisure occupation</b>		0.22				0.2		
Yes	-5.4 (-14.1–3.2)				-1 (-2.8–0.8)			
No	Constant				Constant			
<b>Child belongs to organization(s)/ club(s)/ team(s)</b>		0.05				0.43		
Yes	5.4 (0.1–10.9)				0.5 (-0.7–1.6)			
No	Constant				Constant			
<b>Child has chores/ duties at home</b>		0.34				0.06		<b>0.02</b>
Yes	-2.7 (-8.1–2.7)				-1 (-2.1–0.2)		-1.1 (-2.1– -0.2)	
No	Constant				Constant		Constant	
<b>Child's weekly frequency of interaction with friend outside of school</b>		0.06				0.23		
<1	Constant				Constant			
1–2	-9.1 (-16.6– -1.5)				-2.6 (-4.2– -1)			

Independent variables	YSR 11/18 total score				SDQ total score of the questionnaire for children			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
≥3	-5.6 (-12.6–1.7)				-1.4 (-2.9–0.1)			
<b>Child's relationship with sibling(s) (compared to peers)</b>		0.12				0.46		
No siblings	Constant				Constant			
Worse than others	12.7 (-0.5–25.9)				1.6 (-1.2–4.4)			
Equal as with others	2.7 (-5.1–10.5)				0.4 (-1.3–1.9)			
Better than others	-0.4 (-8.7–7.9)				-0.4 (-2.2–1.4)			
<b>Child has school-related problems</b>		<0.01		<0.01		<0.01		<0.01
Yes	20.7 (15.3–26.1)		21.5 (16.6–26.4)		3.2 (2.1–4.4)		3.5 (2.6–4.5)	
No	Constant		Constant		Constant		Constant	
<b>Constant</b>	36.1 (20.9–51.2)	<0.01	24.2 (16.0–32.4)	<0.01	11.4	<0.01	9.8	<0.01
<b>R<sup>2</sup></b>	0.22		0.20		0.15		0.10	
<b>Adjusted R<sup>2</sup></b>	0.20		0.20		0.11		0.10	
<b>F</b>	7.12		38.7		4.3		26.6	
<b>Model p</b>	<0.01		<0.01		<0.01		<0.01	

\* Model after elimination of multicollinear variables (VIF>5)

\*\* Model after conducting stepwise selection (stepwise elimination of insignificant regressors from the model)

Correspondingly, the associations between CBCL 6/18 and SDQ questionnaire for parents/caregivers total scores for difficulties and social, demographic and emigration-related factors were evaluated.

When assessing the results of CBCL 6/18 binary linear regression, it was identified that the increased total score for difficulties was significantly associated with such factors as the female gender, the rural living place, and the child's school-related problems, whereas a higher number of friends, better relationship with peers and parents, as well as skills of working independently were associated with a decreased total difficulties score. Differently from the CBCL 6/18 questionnaire, when evaluating the total difficulties scores of the SDQ questionnaire for parents/caregivers, it was identified that the increased total difficulties score was significantly associated only with the child's problems related with school, whereas a sport practiced by the child, a higher number of friends, better relationships with peers and parents (in comparison to peers) and skills of working independently decreased the total score for difficulties. The emigration of parent(s) did not exert any significant impact on either CBCL 6/18 or SDQ questionnaire for parents'/caregivers' total difficulty score values.

Considering the results of binary linear regression, models of multivariable regression were constructed. After including all the variables from binary regression into the model, eliminating multicollinear variables from the model, and conducting stepwise selection to eliminate insignificant variables from the model, the final models of regression were developed. They indicated that, in the case of CBCL 6/18, significant association with an increased total score of difficulties of CBCL 6/18 questionnaire were the female gender of the child, the rural living place, and the presence of school-related problems, whereas the presence of a hobby in the child's life was significantly associated with a decreased total difficulties score. The increased total difficulties score of the SDQ questionnaire was significantly associated with the school-related problems of the child, whereas a sport practiced by a child was associated with a decreased total difficulties score. Detailed information on the findings from multivariable regression models is outlined in Table 5.



**Table 5.** Models of multiple linear regression. Dependent variables CBCL 6/18 and SDQ questionnaire for parents/caregivers total scores for difficulties, independent variables, demographic, social, and emigration-related factors

Independent variables	CBCL 6/18 total score				SDQ total score of the questionnaire for parents			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
<b>Child's gender</b>		<0.01		<0.01		0.12		
Male	Constant		Constant		Constant			
Female	6.1 (1.8–10.4)		6.3 (2.2–10.5)		0.8 (-0.2–1.8)			
<b>Child's age group</b>		0.25				0.05		
12–13	Constant				Constant			
14–15	1.4 (-3.6–6.4)				-0.4 (-1.5–0.8)			
16–17	-2.9 (-8.0–2.2)				-1.2 (-2.3–0.1)			
<b>Child's living place</b>		<0.01		<b>0.02</b>		<b>0.01</b>		
Rural	5.7 (1.4–10.1)		5.2 (0.9–9.4)		1.3 (0.3–2.3)			
Urban	Constant		Constant		Constant			
<b>One or both of the parents live in emigration</b>		0.66				0.41		
Yes	1.4 (-4.9–7.7)				0.6 (-0.8–2.1)			
No	Constant				Constant			

Independent variables	CBCL 6/18 total score				SDQ total score of the questionnaire for parents			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
<b>Child practices some sport/ supervised physical activity</b>		0.21				<0.01		<0.01
Yes	-3.5 (-9.1–2.0)				-2.1 (-3.4– -0.8)		-2.2 (-3.4–1)	
No	Constant				Constant		Constant	
<b>Child has a hobby/ leisure occupation</b>		<b>0.02</b>		<b>0.02</b>		0.27		
Yes	-8.8 (-16.0– -1.6)		-8.2 (-15.1– -1.2)		-0.9 (-2.6–0.7)			
No	Constant		Constant		Constant			
<b>Child belongs to organization(s)/ club(s)/ team(s)</b>		0.89				0.99		
Yes	0.6 (-3.7–4.9)				0.1 (-0.9–1.1)			
No	Constant				Constant			
<b>Child has chores/duties at home</b>		0.66				0.32		
Yes	0.9 (-3.3–5.1)				-0.5 (-1.5–0.5)			
No	Constant				Constant			

Independent variables	CBCL 6/18 total score				SDQ total score of the questionnaire for parents			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
<b>The child's weekly frequency of interaction with friend outside of school</b>		0.59				0.62		
<1	Constant				Constant			
1-2	-1.7 (-6.7-3.4)				-0.4 (-1.5-0.8)			
≥ 3	0.8 (-4.3-5.9)				-0.3 (-1.5-0.9)			
<b>Child's relationship with sibling(s) (compared to peers)</b>		0.12				0.46		
No siblings	Constant				Constant			
Worse than others	12.7 (-0.5-25.9)				1.6 (-1.2-4.4)			
Equal as with others	2.7 (-5.1-10.5)				0.4 (-1.3-1.9)			
Better than others	-0.4 (-8.7-7.9)				-0.4 (-2.2-1.4)			
<b>Child has school-related problems</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>		<b>&lt;0.01</b>
Yes	18.9 (11.9-25.8)		19.3 (12.4-26.2)		3.6 (1.9-5.2)		3.4 (1.8-5)	
No	Constant		Constant		Constant		Constant	

Independent variables	CBCL 6/18 total score				SDQ total score of the questionnaire for parents			
	Model No. 1*		Model No. 2**		Model No. 1*		Model No. 2**	
	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p	Coefficient (95% CI)	p
<b>Constant</b>	21.5 (10.1–32.9)	<0.01	17.9 (8.6–27.3)	<0.01	9 (6.3–11.6)	<0.01	9 (7.9–10.1)	<0.01
<b>R<sup>2</sup></b>	0.12		0.10		0.11		0.07	
<b>Adjusted R<sup>2</sup></b>	0.09		0.9		0.08		0.07	
<b>F</b>	4		10.7		3.5		14.7	
<b>Model p</b>	<0.01		<0.01		<0.01		<0.01	

\* Model after elimination of multicollinear variables (VIF>5)

\*\* Model after conducting stepwise selection (stepwise elimination of insignificant regressors from the model)

To conclude the analysis results on the impact of various demographic, social and emigration-related factors, and the total difficulties scores of the mental health questionnaires, it was noticed that school-related problems experienced by a child unambiguously increased the total difficulties scores of the scales in the questionnaires designed either for children or for their parents/caregivers. The self-reported answers of children showed that the higher total difficulties score was related with the female gender and the emigration of one or both of the parent(s). Lower scores in the total difficulties scores were related with children having chores and/or duties at home. The questionnaires filled by parents/caregivers also indicated the relationship between a higher total difficulties score and the female gender of the child and the rural living place. Meanwhile, the child having a hobby and practicing a sport was related with lower total difficulties scores.

#### 4.2.6. Comparison between children left behind due to parent(s) emigration self-report and their parents/caregivers report

The answers provided by children of emigrants themselves and the answers provided by their parents/caregivers regarding the physical health of child were compared regarding the following aspects: height, weight, BMI, HAZ and BAZ scores, child health assessment, diseases, disabilities and health problems without any evident medical cause were considered. It has been identified that there were no significant differences between the answers of children of emigrants and their parents/caregivers considering given physical health indicators.

Upon conducting comparison between the values of the emotional and behavioural difficulties of CBCL 6/18 and YSR 11/18 questionnaires, it was found that the mean values for all the problem scales as presented by the children of emigrants were significantly higher than the mean values presented by their parents/caregivers, and these differences were statistically significant. Detailed information is outlined in Table 6.

**Table 6.** Comparison of the means of total problem scales: responses by children of emigrant parents (YSR 11/18) and their parents/caregivers (CBCL 6/18)

Problem scale	YSR 11/18	CBCL 6/18	t-test*	p
	Mean (95% CI)	Mean (95% CI)		
<b>Anxious / Depressed</b>	7.5 (6.4–8.5)	3.5 (2.6–4.3)	5.51	<b>&lt;0.01</b>
<b>Withdrawn / Depressed</b>	4.6 (4.0–5.2)	2.1 (1.6–2.7)	5.28	<b>&lt;0.01</b>
<b>Somatic Complaints</b>	5.1 (4.3–5.8)	3.0 (2.3–3.8)	3.69	<b>0.02</b>
<b>Social Problems</b>	5.4 (4.7–6.1)	2.2 (1.5–2.8)	6.2	<b>&lt;0.01</b>
<b>Thought Problems</b>	5.5 (4.6–6.4)	1.9 (1.1–2.7)	5.71	<b>&lt;0.01</b>
<b>Attention Problems</b>	6.3 (5.7–6.9)	3.5 (2.7–4.4)	5.35	<b>&lt;0.01</b>
<b>Rule-Breaking Behaviour</b>	4.8 (4.1–5.6)	2.1 (1.3–2.9)	4.92	<b>&lt;0.01</b>
<b>Aggressive Behaviour</b>	5.9 (5.5–6.3)	3.8 (2.8–4.8)	4.68	<b>&lt;0.01</b>
<b>Internalizing</b>	17.1 (14.9–19.3)	8.7 (6.7–10.6)	5.41	<b>&lt;0.01</b>
<b>Externalizing</b>	11.9 (10.3–13.4)	5.9 (4.2–7.6)	5.12	<b>&lt;0.01</b>
<b>Total Problems</b>	57.7 (52.0–63.4)	24.9 (18.9–30.9)	7.63	<b>&lt;0.01</b>

\*df=182

Similar results were obtained when comparing the mean scores of total problem scales of the SDQ questionnaires. The mean scores for all the total problem scales provided by children of emigrant parent(s) were statistically significantly higher in comparison to the mean scores derived from parents'/caregivers' questionnaires. Detailed information is presented in Table 7.

**Table 7.** Comparison of the means scores of SDQ problem scales: self-report of children of emigrant parent(s) versus parents'/caregivers' report

SDQ problem scale	Children self-report	Parents'/caregivers' report	df	t-test	p
	Mean (95% CI)	Mean (95% CI)			
<b>Emotional symptoms</b>	3.1 (2.7–3.6)	1.8 (1.4–2.3)	186	3.8	<0.01
<b>Conduct problems</b>	2.7 (2.4–3)	1.4 (1.1–1.7)	186	5.89	<0.01
<b>Hyperactivity/inattention</b>	3.4 (3.1–3.8)	2.4 (2–2.8)	185	3.58	<0.01
<b>Peer relationship problems</b>	2.9 (2.6–3.3)	2.2 (1.8–2.5)	186	3.08	<0.01
<b>Total difficulties</b>	12.3 (11.2–13.3)	7.8 (6.8–8.8)	185	5.86	<0.01

Differently from the values in the problem scales, the mean score of the scales of positive features (prosocial behaviour) were statistically significantly higher in the parents'/caregivers' reports (7.8; 95% CI 7.2–8.2), in comparison with children's self-report (6.4; 95% CI 6.0–6.8); df=186; t-test -4,1;  $p < 0.01$ .

In conclusion of the results obtained from emigrants' children self-report versus their parents'/caregivers' reports, it has been found that the physical health indicators were perceived similarly by the children and their parents/caregivers. A prominent difference was discovered in the self-report of the children of emigrant parent(s) and their parents'/caregivers' report on the mental health of children, which persisted when measuring this item with different instruments: children of emigrant parent(s) claimed that they were experiencing far more issues with their behaviour and emotions, and these issues were far more prominent than the answers provided by their parents/caregivers would suggest.

## 5. DISCUSSION OF RESULTS

This is one of the first studies in the academic field of public health which sought to evaluate the impact of parent(s) emigration on the health of children staying in the home country. In the course of the research, two systematic literature reviews indicated that this issue has been extensively explored worldwide, especially in China; yet, in the European countries, the lack of evidence in this field is eminently notable (11, 16, 30). Another aspect of top importance observed in the process of conducting the systematic literature reviews was that the data of different researches indicates a certain impact of the parent(s)' emigration on the health of their children; however, this impact varied between negative and positive influence (7).

### 5.1. Comparison of Conducted Study and Previous Researches Results

The data of this cross-sectional study showed that, in terms of the children's self-report data, those respondents whose parent(s) had emigrated had a worse health assessment, suffered from more diseases and disabilities than the children whose parents had not emigrated; besides, emigrants' children mentioned more somatic complaints without a clear medical cause. Regarding the data presented by parents/caregivers on the physical health of their children, no differences between emigrants' and non-emigrants' children were noticed. To the best of our knowledge, this is the first study in Lithuania which undertakes to explore the indicators of the physical health of the children whose parent(s) had emigrated.

The results of our study correlate with the findings of other researches previously conducted abroad. The data of a research conducted in the Philippines showed that those adolescents whose parent(s) was/were working overseas assessed their health as inferior in comparison to these adolescents who had both parents residing in the Philippines (3). According to the data of researches conducted in



China, parental emigration increased the incidence of childhood illness by 29% (31). The poorer health assessment of the children of emigrant parent(s) may be related with the assumption that such children may be more susceptible to unhealthy behaviour, such as overeating, consumption of alcohol, smoking or use of psychotropic substances (32). An HBSC research conducted in Lithuania and the results described in a doctoral dissertation also indicated that residing not together with both biological parents statistically significantly increases the risk of adolescent smoking (OR=2.13; 95% CI 1.78–2.54), consumption of alcoholic beverages (OR=2.13; 95% CI 1.29–1.77), use of cannabis (OR=1.65; 95% CI 1.26–2.17), and suicidal ideation (OR=1.63; 95% CI 1.2–1.7) (33).

Nevertheless, in the present research, when evaluating the data on the physical health of children, reported by their parents/caregivers, no statistically significant differences were revealed between emigrants' and non-emigrants' children. Regarding this aspect, the present research is somewhat different from some other researches conducted previously. A research conducted in Moldova and Georgia (a country in Europe) showed that mothers of the children whose fathers had emigrated abroad assessed the health of their child better than mothers in the households unaffected by emigration (34). Meanwhile, a research conducted in Mexico yielded the opposite scores. Those mothers whose husbands had emigrated to work abroad gave lower scores for the health of their child (2). According to the data of a research conducted in China, parents/caregivers less commonly referred to the health of emigrants' children as excellent in comparison to non-emigrants' children (12).

In our research, children affected by parent(s)' emigration claimed that they were suffering from more behavioural and emotional difficulties, such as depression, anxiety or withdrawal, they had more somatic complaints and social issues, including issues in communication with their peers, thought and attention focusing problems; also, they were more inclined towards rule-breaking or aggressive behaviour. The conducted research responds to and

complements the conclusions of a research conducted in Lithuania previously (8). In addition, the results of the present research correlated with many researches and systematic reviews conducted abroad previously, which suggests that the children who were affected by the emigration of their parents also underwent more behavioural and emotional difficulties; their well-being level was also inferior in comparison to non-emigrants' children (7, 16, 35, 36).

It is of importance to highlight that, in our research, when analysing the data submitted by parents/caregivers on the emotional and behavioural difficulties of children, no differences between emigrants' and non-emigrants' children were identified. Some authors did not find any relationship between the children's health or welfare and the emigration of their parents, either. To serve as an example, several researches were conducted in Georgia, where no connection was identified between the emigration of parent(s) and the higher scores in the scales of emotional and behavioural issues (37, 38). According to the data of a research conducted in the Philippines, children of emigrants were even happier in life than the children of non-emigrants (39). This confirms once more that there exist certain differences regarding the impact on the child's health and welfare if different regions of the world are compared (16, 35, 40).

When comparing the data of the present research with the data of researches previously conducted in Lithuania and described in doctoral dissertations in the field of social sciences, certain differences were determined. The results of the research by T. Lazdauskas suggest that the fraction of the children exhibiting behavioural and emotional difficulties affected by their parent(s)' emigration is not higher than the fraction of the representative sample in Lithuania; on top of that, such children even developed a certain psychological adaptation (41). The research by M. Giedraitytė also revealed similar trends by indicating that the psychosocial functioning of emigrants' children was not inferior, and these children even experienced less difficulties in general than the representative sample of Lithuania (42). Such similarity of results in those researches may be explicated by the fact

that both researches were using the data of the same sample. It is also of importance to take note that both researches were investigating the psychosocial adaptation of younger children (aged 6–11). Meanwhile, the data of the children investigated in the present research (ages 12 through 17 years old) as well as the data of the children from grade 5 to grade 12 in the Lithuanian high school system, which was explored by Prof. D. Leskauskas, indicates that parental emigration had a negative impact on the mental health of children (8). Such differences emerging between researches conducted in the same country – Lithuania – may also indicate that the mental health problems of the children who experienced emigration of their parent(s) are not prominent among younger children; meanwhile, they become more prominent at the age of adolescence. This assumption is corroborated by the research conducted by Y. Huang et al. Its data suggests that the emigration of parents in China had a significant negative impact only on the children aged 13 and above (12).

## 5.2. Impact of Social, Economic and Demographic Factors on the Health of Children Left Behind due to Parent(s)' Emigration

The fundamental social and demographic factors identified in this study which were related with the inferior health state of a child were the emigration of parent(s), the female gender, and school-related problems. According to the children self-reports, these factors significantly impacted their physical as well as mental health. From the data of the parents'/caregivers' responses, it was found that there are fewer factors significantly affecting children's health; however, worse physical and mental health were also related with the female gender and school-related problems of a child. Social and demographic factors, such as the gender, the functioning of the family (also including the parent(s)' emigration) or lack of close friends were related with more frequent emotional and behavioural issues among adolescents, thus corroborating the findings of researches conducted by other authors (16, 97).

Similar differences between the gender, which indicates that females are more vulnerable than males, have been noticed in the present research as well as in previous researches focusing on emigrants' children (94, 96, 99, 100). Some authors noted that those females whose parent(s) had emigrated tended to undertake more responsibilities at home, such as taking care of the younger siblings or dealing with the household chores in comparison to males who were not assigned these tasks (101), which may have been related with the increased stress which the females were experiencing. These results of the present research and other explorations suggest that females potentially are more vulnerable to their parents' emigration as well as to other adverse life events.

In the present study, issues related with school were significantly related with the children's health among the emigrants' and non-emigrants' children alike. The research literature defines school-related problems of children's as an excessive workload of studies, bullying, conflicts with teachers or peers (102). Researches also suggest that children facing problems at school were suffering more frequently because of psychological discomfort. They were experiencing higher anxiety levels, and more commonly had psychosomatic complaints or suffered from chronic physical and emotional exhaustion (103, 104). Even though the relationship found in the present research concerning the link between school-related problem and the mental health of the child were not specific to the population of emigrants' children, however, meta-analysis conducted in China suggested that emigrants' children incurred 1.97 times higher risks of experiencing bullying of all types or becoming a victim of the improper behaviour of their peers; moreover, emigrants' children themselves were inclined to become bullies (105). These findings suggest the necessity of conducting more detailed research on the bullying problem experienced by emigrants' children and the need to devote more attention to the well-being of children, their interrelationship and psychosocial environment at schools.

Finally, when discussing economic factors, it should be noted that, according to the data of several researches conducted abroad, the remittances sent by the emigrant parent(s) could potentially relate with better nutrition, as well as the accessibility of the more advanced healthcare services (11, 34, 36). However, the present research, aligned with systematic literature review performed together with co-authors (76), did not confirm these results and even suggested the opposite outcomes. Such differences between the sets of results could be explained by the idea that the remittances were of importance and could bear such a prominent impact only in the countries of a low and medium income.

The evaluation of social, demographic, migration and economic factors conducted in the present research confirmed the conclusion of the doctoral dissertation of T. Lazdauskas on the concept of multifactorial risk when, simultaneously, a child is experiencing different risk-involving factors, such as the emigration of his/her parent(s), the female gender, the issues experienced at school, etc., which allows anticipating the potential issues of mental health to be encountered by these children (72).

### 5.3. Differences between the Responses by Children Left behind due to Parent(s)' Emigration and their Parents/Caregivers

The present research is distinctive if compared to previously conducted researches in the sense that it collected and processed data stemming from several different sources, notably, children themselves (aged 12 to 17), and their parents/caregivers.

It has been identified that the physical health of a child was assessed highly similarly by the children themselves and their parents/caregivers; no significant differences were found.

When processing data related with the mental health of children, it was noticed that the children themselves claimed to be experiencing far more emotional and behavioural difficulties than their parents/caregivers stated. This indicates that the data provided by

the children themselves, and especially adolescents, is a source of information of top importance. Previous research confirms, and even specifically notes, that the information presented by adolescents themselves regarding the difficulties they are experiencing is more reliable than the reports by their parents or caregivers (72, 107, 108). Such findings in our study show that either the parents/caregivers fail to notice the emotional and behavioural difficulties experienced by a child, or are possibly ignoring these difficulties and thus do not want to mention them when responding to the questions of this research survey. Although findings are available that the mean correlation coefficient between the answers of children and their parents/caregivers to the ASEBA Group questionnaires was approximately 0.25 (2), yet, it should be noted that the fact that the differences between the children's and their parents'/caregivers' answers were observed notably in the questions covering the mental health of children may also be related with the still-widespread stigmatization of the mental health in Lithuania. The parents/caregivers of children still have difficulty recognizing the mental health challenges arising to their children, and, even if they do manage to recognize the challenges, they are reluctant to share this information. Another aspect which could have determined such results is that, in the present study, most questionnaires in children affected by parental emigration group were filled in by mothers who were staying at home together with the child while the father was away, in emigration. Mothers could likely have felt a certain feeling of guilt that the child was suffering from issues stemming from the fact that father had departed from Lithuania, and therefore were reluctant to share the information about the difficulties experienced by the child.

#### 5.4. Impact of Pandemic on the Research Results

The planning of this research and its implementation had started prior to the COVID-19 pandemic; however, part of the respondents were surveyed during the pandemic, while some respondents filled the

questionnaires soon after the conclusion of the pandemic. Undoubtedly, the pandemic period may have somewhat affected the results of the research.

In 2021, L. Rajmil and colleagues provided a summary of 22 researches conducted in countries with different levels of income. The generalized results of their analysis indicated that the quarantine, which was introduced during the pandemic, affected the psychological well-being of children, while also leading to a decreased physical activity (111). On the grounds of the data of researches implemented in Lithuania, during the quarantine, while studying remotely, children were having more somatic complaints as well as more difficulties with their mental health (112, 113). The generalized means of behavioural and emotional difficulties determined in the course of the present study were also elevated in comparison with the data of the representative sample in Lithuania (2).

All the measures to manage the COVID-19 pandemic, such as remote studies and the closure of schools, were being implemented uniformly throughout the country, and all the children involved in this research were touched by it. Nevertheless, in the present study, the emigrants' children reported facing more behavioural and emotional difficulties in comparison to non-emigrants' children. Such results confirms once more that the emigrants' children may be more vulnerable when facing various environmental factors.

### 5.5. Strengths and Limitations of the Research

The presently conducted research is notable because, in the course of its implementation, with the objective to grasp the problem area of the physical and mental health of the emigrants' children, two systematic literature reviews of the relevant scientific evidence were conducted whose results were presented in high quality scientific journals. As another point of strength, it can be highlighted that, in the course of the research, data was being collected and processed from multiple informants – notably, adolescents aged 12–17 and their

parents/caregivers. The data of the research was gathered in 14 different municipalities of Lithuania, thus involving children and their parents/caregivers living in a broad range of social and economic conditions. The research employed questionnaires developed by the SDQ and ASEBA methodologies which are suitable for cross-sectional research to measure the behavioural and emotional difficulties of children (114). The instruments were appropriate for the research; they have been validated and standardized for use with the population of Lithuania (79, 80).

The presently conducted study involved certain limitations which could have impacted the final results. First of all, even though the study was conducted in as many as 14 municipalities of Lithuania, however, it was impossible to form the national representative sample. As a result, the obtained results of the research involve limitations in terms of application for their use to define the general situation in the entire country. The initial plan to gather data by building a random sample was impossible due to the density of the schools involved into the study. In addition, because of the exceptionally complicated procedure of data collection, the *a priori* calculated size of the sample was not reached. The relatively low response rate can also be explained by the fact that the data was being collected during the COVID-19 pandemic when, due to higher incidence of infectious diseases, the attendance at schools was at a reduced level. This pandemic-related context could also have influenced children's emotional well-being and consequently impacted the overall study results. It should also be remarked that the study involved only those parents/caregivers and children who voluntarily agreed to take part in the research. The participation of motivated respondents could have impacted the generalized results of the research. Another limitation of this study is the fact that the analysis of anthropometric data was conducted by referring to the self-reported height and weight measures, instead of using objectively measured parameters. Also, the methodology of a cross-sectional study did not allow measuring the physical and mental health of children prior to their parent(s)'



emigration; therefore, there was no possibility to determine whether emotional and behavioural difficulties identified in the study appeared prior to the emigration of their parent(s), or only after the emigration. Finally, the study's cross-sectional design prevents us from drawing conclusions about the potential origins of the emotional and behavioural difficulties of children affected by parental emigration.

Despite the above-outlined limitations of the present study, this is one of the very few researches on the impact of parental emigration on children's health conducted in Lithuania; therefore, the obtained results of the research are beneficial in contributing to filling the gap of research both nationally and at the European level.

## CONCLUSIONS

1. In the course of the conducted systematic literature review, the relationship between parent(s)' emigration with the physical and mental health of a child who is left behind in the home country has been identified. In the low or medium income countries, parent(s)' emigration conditioned superior levels of the physical health of the child due to the accessibility of better nutrition and more advanced healthcare. Independently from the region, the negative impact of parent(s)' emigration was noticed for both physical health (emigrants' children more commonly suffered from diseases, unhealthy behaviour, injuries, and worse health in general), and mental health (more frequent behavioural and emotional problems). According to the data of numerous researches included into the analysis, social and demographical factors, such as the gender, the age, the family status and the conditions of life, had significant influence on the behavioural and emotional problems among the emigrants' children. In the course of systematic literature review, an exceptionally high number of researches of this field in China was identified in the context of the apparent lack of research in many other regions and countries.

2. Generally, emigrants' children reported their state of health as inferior, they suffered from more diseases or disabilities, had more somatic complaints, a larger share of them reported having depression, anxiety or withdrawal symptoms, they were experiencing social issues, problems of interaction with peers, as well as thought and attention focusing difficulties. They were more inclined to break the rules and adopt aggressive behaviour than those children who had not experienced the emigration of their parent(s).

3. The evaluation of the parents'/caregivers' reports demonstrated that emigrants' children more commonly had vision issues; however, the anthropometric data of these children, their health assessment, the diseases and disabilities with which they were struggling, along with other health issues without any apparent medical cause, as well as their emotional and behavioural difficulties

did not differ when comparing emigrants' and non-emigrants' children.

4. The female gender of the child, school-related problems, parent(s)' emigration and the residence in the countryside area was significantly related with inferior physical and mental health, whereas the chores and duties at home, the hobby or the sport one is practicing was related with the decreased risk of the development of behavioural and emotional issues.

5. The physical health indicators of children affected by parental emigration was similarly reported by the children themselves and their parents/caregivers; however, emigrants' children were inclined to report their mental health as being significantly inferior in comparison with the reports given by their parents/caregivers.

## RECOMMENDATIONS

- The European Commission, UNICEF, the International Organization for Migration and other international institutions working in the field of the migrants' rights should put all reasonable effort to provide favourable conditions for citizens to migrate together with their children.

- Lithuanian politicians, the Government of the Republic of Lithuania as well as other responsible institutions are advised to recognize the emigration of parent(s) as an important risk factor for the health and well-being of a child being left behind in the native country. Those children remaining in their native country whose parent(s) have emigrated should be recognized as a vulnerable group of society requiring specific attention.

- The Ministry of Health, the Ministry of Social Security and Labour, and the Ministry of Education, Science and Sport of the Republic of Lithuania should initiate implementation of evidence-based preventive programs and initiate the preparation of methodological materials on the challenges of physical and mental health experienced by emigrants' children and to set up preventive measures for various groups of society and specialists in the target fields (for the emigrating parent(s), for the one of the parent or caregivers staying behind with the child, for teachers, for the specialists of children's rights, psychologists, social workers and specialists of public health).

- The Public Health Bureaus of municipalities should educate the parents'/caregivers' skills of health, including mental health, literacy and parenting. The residents of municipalities should be educated on the physical and mental health challenges experienced by children affected by parent(s)' emigration. Priority conditions should be created for the parents and caregivers of emigrants' children to participate in evidence-based parenting programmes, whereas emigrants' children should be provided with psychological well-being and mental health promotion services.

- School administrations should ensure a favourable psycho-social environment at school, be more proactive in introducing bullying prevention programs and strengthening the mutual support of children and adolescents.

- School psychologists, social workers and public health specialists should provide information to the parent(s) planning emigration, and also to the parent(s)/caregiver(s) staying behind on the risk factors involved in emigration and suggest the potential preventive measures (e.g., a conversation with the child, maintaining regular contact with the child via the means of remote contact, etc.).

- The researchers should conduct more national, representative, epidemiological, longitudinal and qualitative research on the health and well-being of emigrants' children so that to gain higher-level understanding of the issues affecting emigrants' children in Lithuania.

## REFERENCES

1. UNICEF. Working paper Children "Left-behind" 2019. Available from: <https://www.unicef.org/media/61041/file>.
2. Edelblute HB, Altman CE. Father Absence, Social Networks, and Maternal Ratings of Child Health: Evidence from the 2013 Social Networks and Health Information Survey in Mexico. *Maternal and Child Health Journal*. 2018;22(4):626-34.
3. Smeekens C, Stroebe MS, Abakoumkin G. The impact of migratory separation from parents on the health of adolescents in the Philippines. *Social Science & Medicine*. 2012;75(12):2250-7.
4. Mo X, Xu L, Luo H, Wang X, Zhang F, Gai Tobe R. Do different parenting patterns impact the health and physical growth of 'left-behind' preschool-aged children? A cross-sectional study in rural China. *European Journal of Public Health*. 2015;26(1):18-23.
5. Hu H, Gao J, Jiang H, Xing P. A comparative study of unintentional injuries among schooling left-behind, migrant and residential children in China. *International Journal for Equity in Health*. 2018;17(1):47.
6. Tao S, Yu L, Gao W, Xue W. Food preferences, personality and parental rearing styles: analysis of factors influencing health of left-behind children. *Quality of Life Research*. 2016;25(11):2921-9.
7. Fellmeth G, Rose-Clarke K, Zhao C, Busert LK, Zheng Y, Massazza A, et al. Health impacts of parental migration on left-behind children and adolescents: a systematic review and meta-analysis. *The Lancet*. 2018;392(10164):2567-82.
8. Leskauskas D, Adomaitienė V, Šeškevičienė G, Česnaitė E, Šmigelskas K. Self-Reported Emotional and Behavioral Problems of Left-behind Children in Lithuania. *Child Indicators Research*. 2019;13(4):1203-16.

9. Vaiko Teisių Konvencija priimta Generalinės Asamblėjos 44/25 rezoliucija pagal Trečiojo komiteto pranešimą (A/44/736 ir Corr. 1). Jungtinės Tautos; 1989.
10. Bowlby J. Attachment: Attachment and Loss Volume One (Basic Books Classics). New York: Basic Books; 1983.
11. Griffiths S.M DD, Chung R.Y. Forgotten needs of children left behind by migration. *The Lancet*. 2018;392(10164):2518-9.
12. Huang Y, Song Q, Tao R, Liang Z. Migration, Family Arrangement, and Children's Health in China. *Child Development Basics*. 2018;89(2):e74-e90.
13. Valtolina GG, Colombo C. Psychological Well-Being, Family Relations, and Developmental Issues of Children Left Behind. *Psychological Reports*. 2012;111(3):905-28.
14. Malinauskas G. Pagalbos ypatumai vaikams, išgyvenantiems sunkumus, kai jų tėvai yra išvažiuavę dirbti į užsienį. *Socialinis darbas. Patirtis ir metodai*. 2008(1).
15. Glanville, Jeremy MG, Asbjørn H, Manoj ML, Tianjing L, Elizabeth WL, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. 2021.
16. Antia K, Boucsein J, Deckert A, Dambach P, Račaitė J, Šurkienė G, et al. Effects of International Labour Migration on the Mental Health and Well-Being of Left-Behind Children: A Systematic Literature Review. *International Journal of Environmental Research and Public Health*. 172020.
17. Morgan RL, Whaley P, Thayer KA, Schünemann HJ. Identifying the PECO: A framework for formulating good questions to explore the association of environmental and other exposures with health outcomes. *Environment International*. 2018;121(Pt 1):1027-31.
18. Quality assessment tool for observational cohort and cross-sectional studies: National Heart, Lung, and Blood Institute. Available from: <https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools>.

19. Žukauskienė R, Kajokienė I, Vaitkevičius R. Mokyklinio amžiaus vaikų ASEBA klausimynų (CBCL6/18, TRF6/18, YSR11/18) vadovas. Vilnius: UAB "Grafija"; 2018. 91 p.
20. Žukauskienė R, Kajokienė I. CBCL, TRF ir YSR metodikos standartizavimas naudojant 6–18 metų Lietuvos vaikų imties duomenis. *Psichologija*. 2006;33:31-45.
21. Gintilienė G, Girdzijauskienė S, Černiauskaitė D, Lesinskienė S, Povilaitis R, Pūras D. Lietuviškas SDQ – standartizuotas mokyklinio amžiaus vaikų „Galių ir sunkumų klausimynas“. *Psichologija*. 2004;29.
22. Li Q, Liu G, Zang W. The health of left-behind children in rural China. *China Economic Review*. 2015;36:367-76.
23. Gao Y, Li LP, Kim JH, Congdon N, Lau J, Griffiths S. The impact of parental migration on health status and health behaviours among left behind adolescent school children in China. *BMC Public Health*. 2010;10:56.
24. Jiang S, Chu J, Li C, Medina A, Hu Q, Liu J, et al. Alcohol consumption is higher among left-behind Chinese children whose parents leave rural areas to work. *Acta Paediatrica*. 2015;104(12):1298-304.
25. Yang T, Li C, Zhou C, Jiang S, Chu J, Medina A, et al. Parental migration and smoking behavior of left-behind children: evidence from a survey in rural Anhui, China. *International Journal for Equity in Health*. 2016;15(1):127.
26. Hipgrave DB, Fu X, Zhou H, Jin Y, Wang X, Chang S, et al. Poor complementary feeding practices and high anaemia prevalence among infants and young children in rural central and western China. *European Journal of Clinical Nutrition*. 2014;68(8):916-24.
27. Luo J, Peng X, Zong R, Yao K, Hu R, Du Q, et al. The status of care and nutrition of 774 left-behind children in rural areas in China. *Public Health Reports*. 2008;123(3):382-9.



28. Guo Q, Sun WK, Wang YJ. Effect of Parental Migration on Children's Health in Rural China. *Review of Development Economics*. 2017;21(4):1132-57.
29. Tian X, Ding C, Shen C, Wang H. Does Parental Migration Have Negative Impact on the Growth of Left-Behind Children?-New Evidence from Longitudinal Data in Rural China. *International Journal of Environmental Research and Public Health*. 2017;14(11).
30. Račaitė J, Lindert J, Antia K, Winkler V, Sketerskienė R, Jakubauskienė M, et al. Parent Emigration, Physical Health and Related Risk and Preventive Factors of Children Left Behind: A Systematic Review of Literature. *International Journal of Environmental Research and Public Health*. 2021;18(3):1167.
31. Tong YY, Luo WX, Piotrowski M. The Association Between Parental Migration and Childhood Illness in Rural China. *European Journal of Population*. 2015;31(5):561-86.
32. Dominguez GB, Hall BJ. The health status and related interventions for children left behind due to parental migration in the Philippines: A scoping review. *The Lancet Regional Health – Western Pacific*. 2022;28.
33. Vaičiūnas T. Psichosocialiniai mokyklos aplinkos veiksniai ir jų ryšys su paauglio gyvensena, fizine ir emocine savijauta. *Daktaro disertacija*. Kaunas: Lietuvos sveikatos mokslų universiteto Akademine leidyba; 2022.
34. Cebotari V, Siegel M, Mazzucato V. Migration and child health in Moldova and Georgia. *Comparative Migration Studies*. 2018;6(1):3.
35. Bălțătescu S, Strózik T, Soo K, Kutsar D, Strózik D, Bacter C. Subjective Well-being of Children Left Behind by Migrant Parents in Six European Countries. *Child Indicators Research*. 2023.
36. Wickramage K, Siriwardhana C, Vidanapathirana P, Weerawarna S, Jayasekara B, Pannala G, et al. Risk of mental

- health and nutritional problems for left-behind children of international labor migrants. *BMC Psychiatry*. 2015;15:39.
37. Vanore M. All in the family: Family-member migration and the psychosocial health of children in Georgia. *Migration Studies*. 2016;4(3):309-30.
  38. Antia K, Račaitė J, Šurkienė G, Winkler V. The gender gap in adolescents' emotional and behavioural problems in Georgia: a cross-sectional study using Achenbach's Youth Self Report. *Child and Adolescent Psychiatry and Mental Health*. 2023;17(1):44.
  39. Graham E, Jordan LP. Does Having a Migrant Parent Reduce the Risk of Undernutrition for Children Who Stay Behind in South-East Asia? *Asian and Pacific Migration Journal*. 2013;22(3):315-48.
  40. Gassmann F, Siegel M, Vanore M, Waidler J. Unpacking the Relationship between Parental Migration and Child well-Being: Evidence from Moldova and Georgia. *Child Indicators Research*. 2018;11(2):423-40.
  41. Lazdauskas T. Vaikų psichologinis prisitaikymas ir jo kaita vaikų išsiskyrimo su tėvais kontekste. Daktaro disertacija. Vilnius: Vilniaus universitetas; 2011.
  42. Giedraitytė M. Vaikų, kurių tėvai išvykę iš Lietuvos, psichosocialinis funkcionavimas viduriniojoje vaikystėje. Vilnius: Vilniaus Universitetas; 2011.

## LIST OF PUBLICATIONS

### ARTICLES (In *Web of Science* database):

1. Antia, Khatia; Boucsein, Johannes; Deckert, Andreas; Dambach, Peter; **Račaitė, Justina**; Šurkienė, Genė; Jaenisch, Thomas; Horstick, Olaf; Winkler, Volker. Effects of international labour migration on the mental health and well-being of left-behind children: a systematic literature review // *International journal of environmental research and public health*. Basel : MDPI. ISSN 1661-7827. eISSN 1660-4601. 2020, vol. 17, iss. 12, art. no. 4335, p. 1-17. DOI: 10.3390/ijerph17124335.
2. **Račaitė, Justina**; Lindert, Jutta; Antia, Khatia; Winkler, Volker; Sketerskienė, Rita; Jakubauskienė, Marija; Wulkau, Linda; Šurkienė, Genė. Parent emigration, physical health and related risk and preventive factors of children left behind: a systematic review of literature // *International journal of environmental research and public health: Migration and Global Health*. Basel : MDPI AG. eISSN 1660-4601. 2021, vol. 18, no. 3, p. 1167-1181. DOI: 10.3390/ijerph18031167.
3. **Račaitė, Justina**; Antia, Khatia; Winkler, Volker; Lesinskienė, Sigita; Sketerskienė, Rita; Maceinaitė, Rūta; Tracevskytė, Ingrida; Dambrauskaitė, Elena; Šurkienė, Genė. Emotional and behavioural problems of left behind children in Lithuania: a comparative analysis of youth self-reports and parent/caregiver reports using ASEBA // *Child and adolescent psychiatry and mental health*. London : BMC. eISSN 1753-2000. 2024, vol. 18, art. no. 33, p. [1-12]. DOI: 10.1186/s13034-024-00726-y

### CONFERENCE ABSTRACTS IN INTERNATIONAL DATABASES:

1. **Račaitė, Justina**; Antia, Khatia; Winkler, Volker; Lesinskienė, Sigita; Dambrauskaitė, Elena; Tracevskytė, Ingrida; Šurkienė, Genė. Self-reported emotional and behavioural problems among

- adolescents with migrant parents in Lithuania // European journal of public health. Oxford : Oxford University Press. ISSN 1101-1262. eISSN 1464-360X. 2023, vol. 33, suppl. 2, abstract no. ckad160.1533, p. ii612. DOI: 10.1093/eurpub/ckad160.1533.
2. **Račaitė, Justina**; Antia, Khatia; Winkler, Volker; Dambrauskaitė, Elena; Tracevskytė, Ingrida; Lesinskienė, Sigita; Šurkienė, Genė. Self-reported physical and emotional health among left behind children in Lithuania. A pilot study // European journal of public health: vol. 32, suppl. 3 : 15th European Public Health Conference Strengthening health systems: improving population health and being prepared for the unexpected Berlin, Germany 9–12 November 2022. Oxford : Oxford university press. ISSN 1101-1262. eISSN 1464-360X. 2022, vol. 32, suppl. 3, p. 586. DOI: 10.1093/eurpub/ckac131.433.
  3. **Račaitė, Justina**; Lindert, Jutta; Antia, Khatia; Winkler, Volker; Sketerskienė, Rita; Jakubauskienė, Marija; Wulkau, Linda; Šurkienė, Genė. Parent emigration and physical health of children left behind: a systematic review of literature. // European journal of public health. Oxford : Oxford university press. ISSN 1101-1262. eISSN 1464-360X. 2021, vol. 31, suppl. 3, p. 327-328. Prieiga per internetą: <[https://academic.oup.com/eurpub/issue/31/Supplement\\_3](https://academic.oup.com/eurpub/issue/31/Supplement_3)>.
  4. Antia, Khatia; Boucsein, Johannes; Deckert, Andreas; Dambach, Peter; **Račaitė, Justina**; Šurkienė, Genė; Jaenish, Thomas; Horstick, Olaf; Winkler, Volker. Impacts of international labor migration on the mental health and well-being of left-behind children // European journal of public health: 16th World Congress on Public Health 2020 Public Health for the future of humanity: analysis, advocacy and action. Oxford : Oxford University Press. ISSN 1101-1262. eISSN 1464-360X. 2020, vol. 30, suppl.. 5, p. 255-256. DOI: 10.1093/eurpub/ckaa165.691.
  5. **Račaitė, Justina**; Šurkienė, Genė; Jakubauskienė, Marija; Sketerskienė, Rita; Wulkau, Linda. Parent emigration and physical health of children left behind: systematic review of the literature // European journal of public health. Oxford : Oxford university

press. ISSN 1101-1262. eISSN 1464-360X. 2019, vol. 29, suppl. 4, p. 392. DOI: 10.1093/eurpub/ckz186.024.

6. **Račaitė, Justina**; Šurkienė, Genė; Jakubauskienė, Marija. Children left alone as a public health concern: a case of Lithuania // *European journal of public health*. Oxford : Oxford university press. ISSN 1101-1262. 2016, vol. 26, suppl. 1, p. 58. Available from: <[https://ephconference.eu/documents/vienna\\_2016/2I.pdf](https://ephconference.eu/documents/vienna_2016/2I.pdf)>

#### CONFERENCE ABSTRACTS IN OTHER DATABASES:

1. **Račaitė, Justina**; Lesinskienė, Sigita; Antia, Khatia; Winkler, Volker; Tracevskytė, Ingrida; Dambrauskaitė, Elena; Šurkienė, Genė. Self-reported health and emotional / behavioural difficulties among left behind children during Covid-19 pandemic in Lithuania (pilot study) // 22nd EAA congress – 15th ISGA congress – 5th international conference of evolutionary medicine, August 24-27, 2022 Vilnius, Lithuania : abstract book. Vilnius : Vilnius University Press, 2022. ISBN 9786090707593. eISBN 9786090707609. p. 194. (Vilnius University Proceedings, eISSN 2669-0233; vol. 27). DOI: 10.15388/EAA-ISGA-ICEMMeeting.2022.
2. **Račaitė, Justina**; Lesinskienė, Sigita; Antia, Khatia; Winkler, Volker; Tracevskytė, Ingrida; Dambrauskaitė, Elena; Šurkienė, Genė. Self-reported health and emotional / behavioural difficulties among left behind children in Lithuania // International Association for Child and Adolescent Psychiatry and Allied Professions Conference: Child and Adolescent Mental Health: Shaping The Future, December 5-9, 2022 Dubai, United Arab Emirates.

#### ORAL PRESENTATIONS:

1. 9th European Public Health Conference ‘All for Health, Health for All’. November 9–12, 2016. Vienna, Austria. Topic of the presentation: Children Left Alone as a Public Health Concern: a

- Case of Lithuania. Authors of the presentation: Justina Račaitė; Prof. Dr. Genė Šurkienė; Assoc. Prof. Dr. Marija Jakubauskienė.
2. Annual Conference of the Lithuanian Academy of Sciences Committee of the Mother and the Child to commemorate the International Child Protection Day ‘Modern Pediatrics 2017’. June 1, 2017. Vilnius, Lithuania. Topic of the presentation: Consequences of Parental Emigration on the Health of their Children Staying behind in Lithuania. Authors of the Presentation: Justina Račaitė; Prof. Dr. Genė Šurkienė; Assoc. Prof. Dr. Marija Jakubauskienė.
  3. 14th European Public Health Conference ‘Public Health Futures in a Changing World’. November 10–12, 2021. A virtual event. Topic of the presentation: Parent Emigration and Physical Health of Children Left Behind: a Systematic Review of Literature. Authors of the presentation: Justina Račaitė, Prof. Dr. Genė Šurkienė; Prof. Dr. Jutta Lindert, Khatia Antia; Prof. Dr. Volker Winkler; Assoc. Prof. Dr. Rita Sketerskienė; Assoc. Prof. Dr. Marija Jakubauskienė; Linda Wulkau.
  4. Scientific-practical conference ‘Health-Favourable Environment for all Children’. April 4, 2023. A hybrid event. Vilnius, Lithuania. Topic of the presentation: ‘Children Touched by Parental Emigration: Aspects of Physical and Mental Health’. Authors of the presentation: Justina Račaitė, Prof. Dr. Genė Šurkienė, Prof. Dr. Sigita Lesinskiėnė.
  5. 12th National Remotely Held Conference ‘Modern Pediatrics’. June 1, 2023. A remote event. Topic of the presentation: Latest Research of the Impact of Parental Emigration on the Health of the Children Staying Behind in Lithuania. Authors of the presentation: Justina Račaitė, Prof. Dr. Genė Šurkienė, Prof. Dr. Sigita Lesinskiėnė.

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Print run 42