

# Financial support for households and the demand for child protection services – a municipality-level analysis of income support for single-parent households and reimbursements for depression medicines

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## Abstract

**Purpose** – The study covers two different forms of financial support for households, income support for single parents and reimbursements for depression medicines, and explores their relationships with the demand for child protection services.

**Design/methodology/approach** – The data were retrieved from the Sotkanet, the Finnish Indicator Bank, and included 292 Finnish municipalities. It was hypothesised that the effect of income support for single-parent households on the need for child protection is mediated by reimbursements for depression medicines. The hypotheses were tested by using a conditional process analysis program, PROCESS (Model 4).

**Findings** – It was found that income support reduces the proportion of reimbursements for depression medicines in a municipality, which in turn reduces the need for child protection services. At the level of social policy, the study tentatively suggests that the social welfare system may affect the demand for child protection by investing in income support for single-parent households.

**Research limitations/implications** – The choice of variables does not fully explain the effect of the mechanism. The relationships that are found in this study can have hidden factors which affect them. Further, the data have only 292 cases, which is quite a small sample, and is limited to Finland.

**Originality/value** – The study suggests that the social welfare system may affect the demand for child protection by investing in income support for single-parent households.

**Keywords** Social work, Child protection, Income support

**Paper type** Research paper

## Introduction

In this article, we address two different forms of financial support for households, income support for single-parents and reimbursements for depression medicines, and we explore their relationships with the demand for child protection services. Previous research has



shown that household economic insecurity and the need for child protection services are inextricably associated (e.g. [Conrad-Hiebner and Byram, 2020](#); [Hunter and Flores, 2021](#)). The more economically insecure households there are in a municipality, the higher the demand will be for child protection services. In this sense, poverty is a significant factor in the demand for child protection. Poverty also affects the probability of having a parental mental health disorder ([Sylvestre et al., 2018](#)) which, in addition, increases the likelihood of the need for child protection ([O'Donnell et al., 2015](#)). In this sense, poverty and mental health problems create circumstances of risk that would require child protection.

Further, recent studies suggest that single parenthood is a social risk that promotes the need for child protection ([Kong et al., 2017](#); [Kratky and Schröder-Abé, 2018](#)). This finding may be based on the fact that single-parent households are more fragile regarding economic insecurity than families with two parents. Further, single-parent households may have lesser availability of protective factors against the stress of everyday living, compared to the families where parents can share such stress. In this sense, single parenthood presents a risk of stress and emotional burden (i.e. in terms of mental health). Single parenthood affects mothers and fathers slightly differently but, overall, it predicts the risk factors regarding the need for child protection interventions.

We study the relationship between income support for single-parent households and the need for child protection, and whether this relationship is mediated by reimbursements for depression medicines at the municipality level. The data were retrieved from Sotkanet, the Finnish Indicator Bank, and included 292 Finnish municipalities. Typically, research on the need for child protection has been conducted at the individual level, but in recent years this has also increasingly been at the community and societal levels ([Austin et al., 2020](#)). The present study is focused on the community level, which actually underlines the significance of differences in the municipality level social welfare system. This perspective is justified by the fact that there are disadvantaged regions (e.g. neighbourhoods and municipalities), and the lack of preventive services increases the need for child protection measures ([Bywaters et al., 2020](#)).

## Theoretical background

### *Municipalities and interventions in child protection services*

Previous studies have detected that deprivation in the neighbourhoods affects the need for child protection services ([Bywaters et al., 2016a, b](#); [Lotspeich et al., 2020](#)). The lower the level of education a neighbourhood has, the more scarcity there is regarding housing and services, hence, the more likelihood there will be of the need for child protection services. The impact of disadvantaged neighbourhoods has been linked to social resilience, which seeks to prevent the negative effects of hardship ([Bywaters et al., 2016a, b](#)). One of the indicators of deprivation is neighbourhood poverty, which has been shown to increase the risk of child abuse ([McLeighin et al., 2018](#)), and this in itself is a reason for child protection interventions. Social bonds between the community members decrease that risk, but the effect depends on the financial situation of community inhabitants ([McLeighin et al., 2018](#)). The need for intensive child protection, i.e. children's out-of-home placement, is more likely to occur in urbanised municipalities where there is a greater degree of population density, and also where more families are recipients of income support ([Harrikari, 2014](#); [Lotspeich et al., 2020](#)). Further, low education level and income rates are predictors of the need for intensive child protection services at the municipality level ([Harrikari, 2014](#)).

The need for out-of-home placements in child protection services has been found to be associated with the service system at the municipality level. For example, a municipality's

resources affect the need for out-of-home placements. The more resources that are allocated to child protection in the municipality, the greater the number of out-of-home placements that will be made. When a municipality places effort into resources in open care services in child protection, the social workers have more observations of children's situations and, as a result, more out-of-home placements are needed (Toikko *et al.*, 2021; Hiilamo and Kangas, 2010). On the other hand, large population size and poor resourcing in social work, will predict the increased need for out-of-home placements, but at the same time, these municipalities have also less clients in open care services is low (Harrikari, 2014). In addition, single parenting, the need for income support, alcohol abuse, and mild mental health disorder are linked to the need for out-of-home placements (Hiilamo and Kangas, 2010).

#### *Income support*

The research into child protection interventions has paid attention to the financial situations of families. A poor livelihood and labour market status increase the need for child protection interventions, and that effect has been found to be mediated through various environmental factors (Shook, 1999). Regional poverty is linked to an increased risk to child protection interventions, when a municipality's social expenditures have been taken into account (Esposito *et al.*, 2017). Parents' socio-economic background affects the risk of needing child protection interventions (Bradt *et al.*, 2015). The higher the income of the parent(s) is, the lower the need for child protection. For example, the income of the parent(s) increases the children's risk regarding physical abuse (Feely *et al.*, 2019; see also Kotch *et al.*, 1995; Hunter and Flores, 2021).

Along with other risk factors, family poverty can explain the need for child protection. In turn, family poverty is not a reason to made interventions, but poverty is associated with other factors which provide the reason for child protection interventions (Bradt *et al.*, 2015). In their study, Feely *et al.* (2019) conclude from their findings, that low income is a risk factor for child protection interventions. A financial support received by a single parent (e.g. child support) has been found to improve the financial situation of the family (Skinner and Meyer, 2006), mothers' opportunity to make acknowledged choices after a child's born (Sandfort and Hill, 1996), and decrease the poverty rate of families (Skinner *et al.*, 2017). The financial support also promotes the financial situation of families with two parents, but the effect is greater in single-parent families (Maldonado and Nieuwenhuis, 2015).

#### *Single-parent families*

Previous studies have shown that single parenthood increases the probability of the need for child protection interventions. For instance, Harrikari (2014) found this connection in a municipality-level analysis. The households of single mothers are at risk of the need for child protection interventions. Family size and parental unemployment increase the risk of child protection interventions in single-parent families (Bradt *et al.*, 2015). If the father is unemployed, unemployment, single parenthood, and poverty increase the risk for child abuse and maltreatment. However, the single parenthood of the unemployed father does not appear to increase the risk significantly (Gillham *et al.*, 1998). In turn, single mothers may not be able to provide enough material resources and educational support for their children to enable them to move up at the income level (Mclanahan and Percheski, 2008). According to some studies, presence and support of a second parent affect the family's resources and children's welfare (Mclanahan, 2009; Fallesen and Gähler, 2020; Maletta *et al.*, 2020; Mitchell *et al.*, 2015).

### *Parental mental health*

At the individual level, parental mental health disorders are a risk factor regarding the need for child protection measures. According to [Nevrianan \(2022\)](#), out-of-home placements are more likely among children whose parents have a mental disorder, but there is variation regarding the probability of out-of-home placements between different forms of mental problems. [Côté et al. \(2018\)](#) detected that parental mental health disorder increases the risk for children's out-of-home placements. Single motherhood was found to be an increased risk for mental health disorder ([Neises and Grüneberg, 2005](#); [Kong et al., 2017](#); [Cooper et al., 2008](#)). Further, a parent's socio-economic background affects the risk of a mental health disorder ([Neises and Grüneberg, 2005](#); [Nevriana, 2022](#); [Plass-Christl et al., 2017](#); [Kong et al., 2017](#)).

Stress from a deteriorating financial situation has been found to increase parental psychological symptoms of depression, which reduce parental affection for the children, and parental depressive symptoms increase adolescents' pro-social behaviour, but family stress reduces it ([Davis et al., 2020](#)). Also, [Cooper et al. \(2008\)](#) and [Rousou et al. \(2019\)](#) detected that financial burden increases single-parent risk of having a mental health disorder. Accumulated debt has been found to be a factor of single-mother mental disorders. [Cooper et al. \(2008\)](#) discovered that financial burden or support do not affect single-father risk of mental disorder, as with single mothers. [Kong et al. \(2017\)](#) emphasise that socio-economic background, in itself, does not explain an impaired state of mental health.

### *Finnish child protection services and family poverty*

In Finland, the Child Welfare Act defines a child as under 18 years of age and a young person as 18–24 years of age. The child and family welfare services are intended for children under the age of 18 years, and their families, but also the young people of 18–24 years of age can have these services. Every municipality provides the statutory services to children and families, either alone or through the associations that have been formed by several municipalities.

The need for child protection services (out-of-home placements) has increased during the period of 1991–2020. Specifically, the number of removals of children with the ages of 16–17 years have increased the most, compared to other age groups. There are differences in the proportion of out-of-home placements according to age groups: the older the children are, the higher the proportion of children who are placed out-of-home. The proportion of boys is higher than girls, but actually the proportion of boys and girls increased evenly from year 1991 ([Forsell et al., 2021](#)). There are differences in the duration of out-of-home placements. Child removals typically last more than 11 months ([Forsell et al., 2018](#)). The shorter duration the out-of-home placement is, the more likely it has been made as an emergency placement, or as a support intervention in open care services of child protection. Children over the age of 13 years have been the most common target for concerns and measures of child protection ([Forsell et al., 2021](#)).

Relative family poverty has increased since the 1990s; however, there has been a decrease since 2010, but taking housing costs into account, the family poverty rate actually has not been reduced. This is particularly true regarding the greater number of single-parent households compared to other households. The median of disposable income of single-parent households has been clearly smaller than other households and, particularly the factors of unemployment and low educational level are associated with poverty. Also, there has been a change in the national social policy as lower income redistribution has negatively affected the disposable income of families ([Salmi et al., 2016](#)).

## **Methodology**

### *Research questions*

In this study, we seek to determine which factors affect the need for child protection interventions at the municipality level. Based on previous research, any relative

disadvantages of the municipalities affect the need for child protection. In addition, an individual's weak financial situation, single parenthood, and mental health disorder are risk factors, which increase the probability of child protection interventions. On the other hand, previous studies have detected that income support has positive effects on family income, which in turn reduces the need for child protection. Focussing on the municipality level, we study whether the effect of income support for single-parent households on the need for child protection is mediated by reimbursements for depression medicines. More precisely, we have two separate hypotheses:

- H1.* The effect of short-term income support for single-parent households on child welfare notifications is mediated by reimbursements for depression medicines.
- H2.* The effect of short-term income support for single-parent households on out-of-home placements is mediated by reimbursements for depression medicines.

Based on research questions, we study at the municipality level, what is the function of short-term income support for single-parent households, and whether the support reduces the need for child protection in the municipalities. Further, we observe whether the proportion of a municipality's recipients of reimbursements for depression medicines, would modify the effect of income support on the need for child protection. In this study, when we refer to children, we mean children under the age of 18 years, in accordance with the definition in the Child Welfare Act.

#### *Data*

In this study, we used data from the national Sotkanet Indicator Bank, which is managed by the Finnish Institute for Health and Welfare (Terveyden ja hyvinvoinnin laitos, THL) [1]. The indicators of Sotkanet produce the current statistical information about Finnish municipalities and population.

#### *Dependent variables*

We had two dependent variables. The first dependent variable is child welfare notifications at the municipality level ("Children aged 0–17 years who are subjected to a child welfare notification, as % of total population of the same age", ind. 1086). The indicator's definition describes how many children have been controlled by a child welfare notification in a municipality, compared to other citizens of the same age. It is noteworthy, that the indicator shows only the proportion of notifications in a municipality, but not the total number of notifications.

In Finland, the reasons that lead to make child welfare notifications could be, for example, a child's educational challenges (when the measures of student care are not enough), the problems of a child's development (if health care could not provide support to child and family), problems concerning substance abuse, addiction, and mental health of child or parent, communication challenges, or violence towards child or parent. Officers such as teachers, the police, and health care professionals are mandated to make notifications, but citizens can also make notifications. The child welfare notification will initiate the child's case regarding possible child protection. A child protection official (social worker or other worker in child protection) has seven weekdays to evaluate the urgency of the notification, and make a decision about the need for child welfare measures.

The second dependent variable is an indicator for the proportion of out-of-home placements in a municipality ("Placements outside the home for those aged 0–17 years, as % of total population of the same age", ind. 191). The indicator defines how many children have been placed outside of their home, compared to the total number of citizens of the same age in a municipality. The indicator includes the information about children who have been placed

outside of their home as a part of child protection measures: emergency placement, open care placement, and residential care, professional family group home, or foster care (voluntary or involuntary). Aftercare placements have been excluded from the study because they concern young people over the age of 18 years.

In Finland, the Child Welfare Act defines the procedure of out-of-home placements. Social workers need to find out what are the opinions of the litigants (i.e. child, guardian) in all cases. An emergency placement is justified if a child is in immediate danger. The duration of placement is no longer than 30 days, but it can be extended with more periods of 30 days if necessary. The emergency placement means that a child will be appointed his or her own social worker from child protection services, unless the child is already a client of those services. Open care placement is made by the mutual understanding of one guardian/both guardians and a child over the age of 12 years. Child removal is the strongest and also the last-resort measure, whereby a child is removed to foster care, professional group home, or residential care. Child removal ends when a child turns 18 years of age, or when the criteria for out-of-home placement have ceased to exist and family reunification is in the best interests of the child. Child removal can have a voluntary or an involuntary start, according to the choice of the different actors.

#### *Independent variable*

Income support for single-parent households is an independent variable (“Social assistance, short-term recipient single-parent households, % of all recipient households” THL, Ind. 3038). The indicator defines the proportion of single-parent households that have received short-term income support with respect to the overall number of recipient households. The indicator includes both municipality- and state-based income support. A short-term income support lasts for a period of one to three months. In this study, we use the term “income support” because the indicator only refers to financial aid, although the municipality-based income support may also cover social support.

In Finland, the state-based basic income support is a last-resort financial aid, which aims to secure a person’s minimum income. Income support is generally intended to cover a person’s expenses, which he or she cannot cover with other income. The number of families who receive basic income support have increased since 2010 (Tanhua and Kiuru, 2021). Single parents have received more basic income support than couples with children during the period 2000–2020. The number of short-term basic income support recipients is the greatest of all recipients (Tanhua and Kiuru, 2021). The municipality-based income support measures are supportive and preventive social assistance structures. Supportive social assistance aims to cover a person’s specific expenses, which the basic income support does not cover or if person does not receive basic income support. The purpose of the preventive social assistance is that it is to be implemented before there are problems with income.

#### *Mediator*

The indicator for reimbursements for depression medicines is used as the mediator variable. (“Reimbursements for depression medicines, recipients aged 25–64 years, as % of total population of the same age” (THL), ind. 2356). The indicator represents how many citizens aged 25–64 years in a municipality have received reimbursements for depression medicines. In this sense, the indicator reflects the prevalence of depression at the municipality level.

The Social Insurance Institution of Finland (KELA) oversees the reimbursements for medicines. A person’s medical costs are not reimbursed in full, but he or she pays a certain deductible amount when buying a medicine from a pharmacy. After an annual deductible amount of 50 euros, citizens receive 40% reimbursements for medicines, which is almost 100% after the cost of the medicines reaches the annual upper limit of 592 euros (2020). After that, citizens always pay 2.50 euros per medicine.

*Confounding variables*

There are four confounding variables in this study. Firstly, there is the number of citizens ("Population at year end", THL, ind. 127). The indicator represents information about a municipality's population which resides in that municipality on a regular basis. This variable has been modified as an ordinal variable by its size, so that municipalities are in order from smallest to largest (1 = smallest population size; -292 = largest population size). The second variable is the child health clinics ("Child health clinic, 0–6 years of age/public health nurse person-year", THL, ind. 5153). The indicator shows person-years which are converted from the workload of nurses in child health clinics, in relation to the number of children aged 0–6 years in the health centre area. The third confounding variable is childcare ("Children of 1–5 years of age participating in early childhood education and care on 31st December, % of population of the same age, services paid for by the municipality", THL, ind. 1,225). The indicator presents information about children aged 1–5 years, who participated in childcare in a municipality compared to other citizens of the same age. The fourth, and last, confounding variable is adults' mental health visits in the public sector ("Mental health outpatient visits of adults per 1,000 persons aged 18 years and over", THL, ind. 3075). The indicator presents how many adults visit mental health outpatient service of primary health care per 1,000 persons in a municipality; hence, this indicator excludes visits at the special medical care centre. By using these confounding variables, we can control the effects of basic child and adult services in municipalities.

*Methods*

All analyses were conducted using IBM SPSS [2] (version 27) statistical software. The Spearman rank correlation coefficient (Spearman's Rho,  $\rho$ ) was used to explore associations between the factors. The hypotheses were tested by using a conditional process analysis programme, PROCESS [3] (Hayes, 2022). Model 4 (Mediation) was employed to estimate regression coefficients and follow-up bootstrap analyses with 5,000 bootstrap samples, in order to estimate 95% bias-corrected bootstrap confidence intervals (BCBCIs) for direct and indirect effects. In the mediation analysis, it was explored how  $X$  transmitted its effect on  $Y$ , and especially what was the role of  $M$  in the effect of  $X$  on  $Y$ .

Variables include information for a period of four years (2017–2020). The total number of municipalities is 308 in Sotkanet Indicator Bank. We excluded sixteen municipalities on the inhabited islands of Ahvenanmaa (archipelago) from the data, because these municipalities clearly have more missing values than the municipalities of mainland Finland. The archipelago consists of around 80 inhabited islands (total population was only 29,800 in 2019). The remaining 292 municipalities that are included only have missing data in the dependent variable ("out-of-home placements") and the independent variable ("income support"). The amount of missing data is in the range of 14–17% (Table 1). The lack of information is due, in particular, to the way Sotkanet collects data: if a municipality has less than five observations in some indicator, then those observations will be excluded from the sample. For example, if a municipality has informed that the number of out-of-home placements is less than five in a particular year, then the information about out-of-home placements is missing from that year.

In addition, we made a decision at the beginning of this study that, if values are not available for all four years, the average of two or three years can be taken into account. If a municipality's value was available for only one year, then that value was excluded from the data and handled as missing information. It is also possible that municipal associations have affected the lack of information. The qualitative evaluation of missing data has not been quantified in this study, except for the effect of missing data on the results of the statistical tests. Based on Little's MCAR (missing completely at random, or ignorable) test, lack of information is not necessarily completely random ( $\chi^2 = 140.744$ , DF = 8, Sig. = 0.000) (Little, 1988).

Variable	Min	Max	Mean	St. Deviation	N	Missing N (%)
Child welfare notification (%)	1.73	17.23	7.14	2.12	292	0 (0.0)
Out-of-home placements (%)	0.30	5.40	1.51	0.72	250	42 (14.4)
Reimbursements for depression medicines (%)	5.45	14.30	8.49	0.77	292	0 (0.0)
Income support (%)	3.25	13.20	5.60	1.62	242	50 (17.1)
Municipality size, ordinal scale	1.00	292.00	146.50	84.44	292	0 (0.0)
Childcare (%)	26.63	89.08	63.05	10.40	292	0 (0.0)
Child health clinic (person-year)	106	3010	317.13	268.48	292	0 (0.0)
Mental health outpatient visits (per 1,000 pop)	74.03	2279.53	510.52	257.49	292	0 (0.0)
<i>Descriptive statistics on control variables for population in municipalities (macro level)</i>						
Municipality size, real values <sup>a</sup>	707.50	650,517.25	18,803.44	50,422.30	292	0 (0.0)
Under-age population (%) <sup>b</sup>	9.93	38.80	18.72	4.56	292	0 (0.0)
Families with children (%) <sup>c</sup>	19.00	61.95	34.04	6.76	292	0 (0.0)
Single-parent families (%) <sup>w</sup>	5.73	29.00	19.99	4.12	292	0 (0.0)
Foreign nationals (%) <sup>e</sup>	0.43	13.35	2.29	1.77	292	0 (0.0)
Native language other than Finnish, Swedish, or Sami (per 1,000 inhabitants) <sup>f</sup>	3.55	195.88	30.49	25.21	292	0 (0.0)

**Note(s):** <sup>a</sup>Population at year end (ind. 127)

<sup>b</sup>Population aged 0–17 years as % of total population (ind. 1,065)

<sup>c</sup>Families with children, as % of all families (ind. 179)

<sup>d</sup>Single parent families, as % of all families with children (ind. 74)

<sup>e</sup>Foreign nationals as % of total population (ind. 3074)

<sup>f</sup>Native language other than Finnish, Swedish or Sami per 1,000 inhabitants (ind. 187)

**Table 1.**  
Descriptive statistics on control variables

## Results

### *Descriptive analysis*

All variables are presented in [Table 1](#), based upon which, the mean of out-of-home placements is 1.5% of children aged 0–17 years in municipalities. The average of child welfare notifications is 7.14% from children aged 0–17 years in municipalities. In addition, we have also observed other descriptive indicators. The population of municipalities changes greatly (Min = 707, Max = 650,517). There are a number of underage changes but any differences are not large. However, the number of under-aged children does not exceed the number of adults. Based on the population forecast of Statistics Finland, the birth rate has reduced in Finland which, clearly, will affect the dependency ratio in the coming decades ([OSF, 2021a](#)). Deduced from [Table 1](#), the amount of people with non-Finnish official languages and foreign background is still quite low. The number of people with foreign background is largest in the metropolitan area of Finland ([OSF, 2021b](#)).

We present the correlations between variables in [Table 2](#). The analysis was run using Spearman's rank correlation because the variables are not normally distributed (see, e.g. [Hauken and Kossowski, 2011](#), p. 89). Income support correlates negatively with the dependent variables that describe the need for child protection ([Table 2](#)). Instead, the variable, reimbursements for depression medicines, correlates positively with the need for child protection. Municipality size correlates positively with child welfare notifications, but there is no statistically significant correlation with out-of-home placements. The number of reimbursements for depression medicines correlates negatively with income support. Childcare and child health clinics correlated with each other and with municipality size, but adults' mental health visits correlates with other factors and the correlations are positive.



**Table 2.**  
Correlation  
coefficients,  
Spearman's Rho ( $\rho$ )

	Child welfare notification	Out-of-home placements	Income support	Reimbursements for depression medicines	Municipality size	Childcare	Child health clinic	Adults' mental health visits
Child welfare notification	1							
Out-of-home placements	0.603***	1						
Income support	-0.375***	-0.358**	1					
Reimbursements for depression medicines	0.405***	0.320***	-0.435***	1				
Municipality size	0.164***	-0.150	-0.427***	0.274***	1			
Childcare	0.051	0.172***	-0.072	-0.020	-0.225***	1		
Child health clinics	-0.070	-0.100	-0.071	0.052	0.165***	-0.128***	1	
Adults' mental health visits	0.247***	0.201***	-0.308***	0.346***	0.055	-0.122	0.040	1

**Note(s):** \*\*\* = sig, two-tailed <0.001

### Mediation models

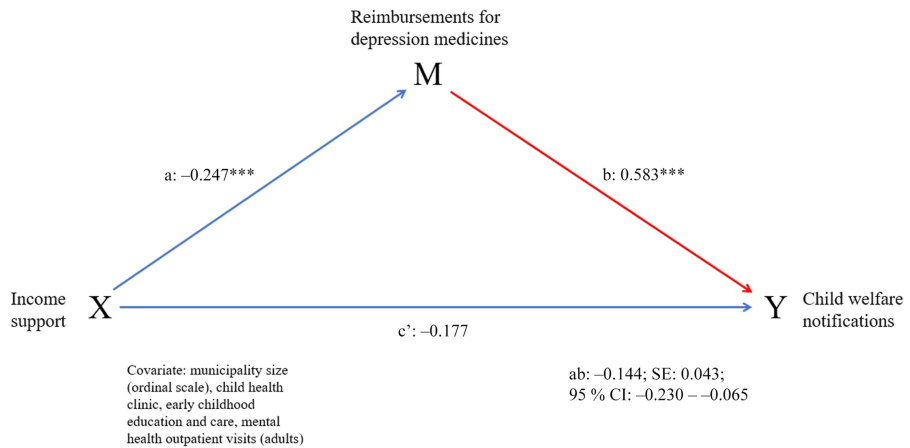
The main analyses were executed using the mediation method (see, e.g. Hayes, 2022). We carried out two analyses because of two dependent variables, “child welfare notification” and “out-of-home placements”. Both analyses have the same independent variable (“income support”) and mediator (“reimbursements for depression medicines”). An ordinal variable of municipality size, childcare, child health clinics, and adults’ mental health visits have been used as confounding variables in both analyses.

The first mediation model (Figure 1) includes information about the effect of income support on child welfare notifications, through the proportion of reimbursements for depression medicines. The first path ( $a: X > M$ ) is negative and statistically significant ( $\beta = -0.247^{***}$ ), whereby single-parent households receiving short-term income support reduce the proportion of reimbursements for depression medicines in a municipality. When two municipalities differ by one unit on income support for single-parent households, they are estimated to differ by  $-0.247$  units on reimbursements for depression medicines. The negative sign indicates that those municipalities having relatively more single-parent households receiving short-term income support have less reimbursements for depression medicines. The next path ( $b: M > Y$ ) is positive and statistically significant ( $\beta = 0.583^{***}$ ), whereby the number of reimbursements for depression medicines increases the amount of child welfare notifications in a municipality. When two municipalities which have a similar proportion of single-parent households receiving income support, but they have a one-unit difference in reimbursements for depression medicines, they are estimated to differ by  $0.583$  units on child welfare notifications. The positive sign indicates that those municipalities having relatively more reimbursements for depression medicines have more child welfare notifications.

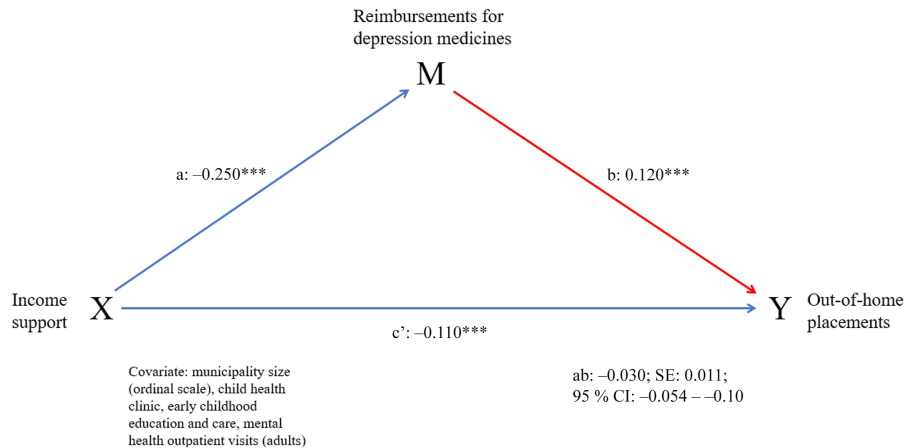
The indirect effect ( $ab$ ) evaluates the difference in  $Y$  between two cases which differ by one unit on  $X$  through the combined effect of  $X$  and  $M$  on  $Y$ . In Figure 1, the indirect effect ( $ab: X > M > Y$ ) is negative ( $\beta = -0.144$ ). Thus, two municipalities which differ by one unit in their proportion of single-parent households receiving income support are estimated to differ by  $-0.144$  units in their reported child welfare notifications, as a result of the tendency for income support to reduce reimbursements of depression medicines, which in turn translates into lower rates of child welfare notifications. To validate the results from the indirect effect, we investigated the Bootstrap Confidence Interval, based upon which we could reject its null hypothesis, indicating robust results (95% CI:  $0.230$  to  $-0.065$ ). Figure 1 shows that the direct effect ( $c': X > Y$ ) is negative ( $\beta = -0.177$ ), but the effect is not statistically significant (sig. =  $0.143$ ). The results mean that the direct effect does not persist under the indirect effect.

The second mediation model (Figure 2) includes information about the effect of income support on out-of-home placements, through the proportion of reimbursements for depression medicines. The first path ( $a: X > M$ ) is negative and statistically significant ( $\beta = -0.250^{***}$ ), whereby single-parent households receiving short-term income support reduce the proportion of reimbursements for depression medicines in a municipality. Hence, when two municipalities differ by one unit in income support, they are estimated to differ by  $-0.250$  units in reimbursements for depression medicines. The inference of the effect sign is the same as with the first mediation model. The next path ( $b: M > Y$ ) is positive and statistically significant ( $\beta = 0.120^{***}$ ), whereby the proportion of reimbursements for depression medicines increases the proportion of out-of-home placements in a municipality. When two municipalities differ by one unit on reimbursements for depression medicines, but are equal on income support, they are estimated to differ by  $0.120$  units in out-of-home placements. The positive sign indicates that those municipalities having relatively more reimbursements for depression medicines have more out-of-home placements. The effect is similar to the case of child welfare notifications in Figure 1.

The indirect effect ( $ab: X > M > Y$ ) is negative ( $\beta = -0.030$ ), whereby the proportion of single-parent households receiving short-term income support reduces the proportion of



**Figure 1.**  
First mediation model



**Figure 2.**  
Second mediation model

out-of-home placements in a municipality, when the effect goes through the proportion of reimbursements for depression medicines. Thus, two municipalities which differ by one unit in their proportion of single-parent households receiving income support are estimated to differ by  $-0.030$  units in out-of-home placements, as a result of the tendency for income support to reduce reimbursements of depression medicines, which in turn translates into lower rates of out-of-home placements. To validate the results from the indirect effect, we investigated the bootstrap confidence interval, based upon which we could reject its null hypothesis, indicating robust results (95% CI:  $-0.054$  to  $-0.010$ ). In [Figure 2](#), the direct effect ( $c'$ :  $X > Y$ ) is negative and statistically significant ( $\beta = -0.110^{***}$ ), in contrast to the first mediation model (child welfare notifications). In the other words, when two municipalities differ by one unit in income support but are equal on reimbursements for depression medicines, they are estimated to differ by  $-0.110$  units in out-of-home placements. The negative sign demonstrates that a municipality having more single-parent households receiving short-term income support, but having equal reimbursements for depression medicines, is estimated to be  $-0.110$  units lower in its reported out-of-home placements.

## Discussion

This study covers two different forms of financial support for households, income support and reimbursement for depression medicines, and explores their relationships with the demand for child protection services.

Firstly, the results show that single-parent households' short-term income support reduces the amount of reimbursements for depression medicines at the municipality level. By way of this result, we can infer relationships with previous studies, according to which, a weakened income is a risk factor of depression and mental health disorder (Davis *et al.*, 2020; Cooper *et al.*, 2008; Rousou *et al.*, 2019). Further, the socio-economic background strongly suggests a parental mental health disorder (Plass-Christl *et al.*, 2017; Nevriana, 2022; Neis and Grünberg, 2005; Kong *et al.*, 2017). These studies also highlight a higher risk of mental health disorder and stress for single parents compared to couples with children due to a deteriorating financial situation. Because income support is the last-resort aid in Finland, we can assume that these households are low-income families. Hence, one can speak of family poverty among those families receiving income support. In the present study, it is assumed that weakened income situation and possible poverty cause stress which is associated with a mental health disorder, such as depression. In this sense, receiving income support may reduce stress and in that way may also reduce the need for depression medicines.

Secondly, this study demonstrates that when the proportion of reimbursements for depression medicines increases at the municipality level, also the proportion of child welfare notifications and out-of-home placements of municipality increases. In this sense, the need for medical treatment for parental depression is seen as an indication for social risk, which is associated with the demand for child protection (measured as the number of child welfare notifications and out-of-home placements). This result is in accordance with previous research (Nevriana, 2022; Côté *et al.*, 2018). In the other words, the concerns about the welfare of children are increasing, because the reimbursements for depression medicines are increasing at the municipality level.

Thirdly, the short-term income support for single-parent households is in a negative relationship with the proportion of child welfare notifications and out-of-home placements. At the municipality level, the result shows that income support reduces the demand for child welfare protection. We can deduce that a short-term income support to the single-parent households works as a preventive intervention in relation to child protection. In this regard, the result is in accordance with previous studies (Hiilamo and Kangas, 2010; Harrikari, 2014; Bywaters *et al.*, 2016a, b; Bradt *et al.*, 2015; Shook, 1999; Feeley *et al.*, 2019; Lotspeich *et al.*, 2020; Esposito *et al.*, 2017). In this sense, the present study suggests that income support contributes positively to the circumstances of single-parent households (see Cancian and Meyer, 2018; Skinner and Meyer, 2006; Sandfort and Hill, 1996; Skinner *et al.*, 2017).

Fourthly, the main aim of this study was to explore whether reimbursements for depression medicines mediates the effect of income support for single-parent households on the need for child protection (child welfare notifications and out-of-home placements). It was found that short-term income support reduces the proportion of reimbursements for depression medicines in a municipality, which in turn reduces the need for child protection. In this sense, both Hypothesis 1 and Hypothesis 2 are supported. According to previous studies, household income insecurity (Davis *et al.*, 2020) and parental mental problems (Nevriana, 2022) are significant risks for the demand for child protection. However, the present study suggests that financial support for households, in the forms of income support for single-parents and reimbursements for depression medicines for adults, reduces the need for child protection, although reimbursement for depression medicines itself increases the need for child protection at the municipality level. The key factor is income support for single-parent households, which transmits its reducing effect, through reimbursement for depression medicines, onto the demand for child protection services. In this sense, the results of this

study tentatively suggest that social politicians should drive investment, particularly into income support for single-parent households. On the other hand, it is clear that income support or reimbursement for depression medicines alone will not necessarily resolve the demand for child protection, because the need for child protection is a complex issue.

Naturally, this study faces a few limitations. Firstly, the chosen variables do not completely explain the effect of the mechanism. There can be hidden factors which affect the relationships we found in this study. We aimed to control the effect of basic services in a municipality as confounding variables (child health clinics, childcare, and adults' mental health outpatient visits), in order that we would notice possible hidden effects. As a consequence, the basic services of the municipality did not change the effects of the variables. Therefore, we can assume that those basic services somehow affect this mechanism, and also that they have an important role at the municipality level. Secondly, the data consist of only 292 cases, which is quite a small sample, and is limited to Finland. It is possible that we would not achieve any parallel results in another country or region but, on the other hand, our results are in accordance with previous research. This could be taken as proof, in some way, that the mechanism is the same for a different country. Lastly, we cannot make any relevant inferences about the models or mechanisms at the individual level, based on this study. The results cannot be used in individual level studies because the nature of the models or mechanisms varies at different levels (micro, meta, macro). This means that one cannot use our results in individual level studies completely, but one could likely take influences from municipal level studies and transmute suitable analyses to individual level studies.

### Conclusion

The results of this study tentatively suggest that the social welfare system may affect the demand for child protection, by investing in income support for single-parent households. If the system widely recognises the need for income support, it follows that there is less need for imbursements for depression medicines, as a result of which there would be less need for child protection. Supporting the financial circumstances of low-income parents seems to be a potential way to prevent the need for child protection interventions. In this way, it can be assumed that it would be possible to ease a demand pressure of child protection system by intervening in the risk factors, such as financial insecurity of single-parent households.

It is noteworthy that this study is focused on the municipality-level system, and under its mechanism, poverty and depression are constructed from situations of individuals, but the effect is interpreted at the municipality level. As [Austin \*et al.\* \(2020\)](#) have considered, in recent years there has been an increasing number of studies conducted at the municipal level concerning the need for child protection. The strength of municipal-level analyses is that they can show differences between municipalities in the need for child protection, and also potential ways to smooth out the observed differences. Municipal level studies also bring information to the policymakers regarding what variables they should pay attention to in decision-making regarding improving the welfare of families. This study suggests that social politicians should drive investment especially into income support for single-parent households.

### Notes

1. Tilasto- ja indikaattoripankki Sotkanet.fi © Terveyden ja hyvinvoinnin laitos 2005–2022, CC BY 4.0.
2. SPSS® 27 for Windows, Version 27.0. IBM Corp., Armonk, NY, USA.
3. PROCESS® 2022 by Andrew F. Hayes.

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